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by

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Table of Contents

QUESTION 1	1
Basic Research Methods	1
Descriptive Research	1
Purpose, measurement, and statistics of descriptive research	3
Causal-Comparative Research	4
Purpose, measurement, and statistics of causal-comparative research	5
Correlational Research	6
Purpose, measurement, and statistics of correlational research	7
Similarities And Differences of the Three Models	9
Similarities	9
Differences	9
Validity	10
Test/Measurement Validity	11
Criterion-Related Evidence	12
Content-Related Evidence	13
Evidence from response processes and internal structures	13
Evidence from relationship to other variables	14
Evidence from consequences of testing	15
External Validity	15
Internal Validity	16
Reliability	17

Test-retest reliability	18
Parallel forms reliability	19
Split-half reliability	19
Measuring Success: Possible Research Method	20
References	24
QUESTION 2	26
A New Paradigm For Instructional Design	26
Instructional Design - Moving Toward Performance Improvement	27
Trends in Instructional Design – Design and Development	30
Learning Objects	31
SCORM and LMS	35
Other General Trends of Note	36
Trends in Instructional Design – Assessment	37
Assessment Terminology	37
Where Assessment is Headed	38
Trends In Instructional Design – Evaluation	39
Linking To the Strategic Direction of the Organization	40
Evaluation Processes Measure the Success of Training	41
Return On Investment (ROI)	42
Smaller World, Bigger Opportunities	43
References	45
QUESTION 3	47
Learning To Compete	47

Brain-based Learning	48
How the Brain Learns	48
Left or Right Brain	51
Learning Cycles	51
Optimal Learning Environments	53
Kolb's Learning Styles	54
Optimal Learning Strategies	56
Multiple Intelligences	57
Optimal Learning Environments and Strategies for Each MI	57
Successful Training Strategies	63
Physical Environment	64
Strategies That Overlap	65
Conclusion	67
References	68
QUESTION 4	70
Introduction	70
Effective And Fair Online Assessment	71
Effectiveness	71
Fairness	72
Strengths with Regard to Effectiveness and Fairness	75
Weaknesses with Regard to Effectiveness and Fairness	76
Copyright, Privacy, and Freedom of Speech	78
Copyrights	79

Privacy (Security and Confidentiality) and Freedom of Speech	84
Impact on Online Assessment	88
Conclusion	88
References	91
QUESTION 5	94
The Importance of Learning Transfer and Retention	94
How Memory Works	95
Building Expertise	96
Near or Far Transfer	97
Experts vs. Novices	98
Instructional Architectures	100
Factors Of Learning Transfer	101
Why Learning Transfer Fails	102
Instructional Design And Effective Learning Transfer and Retention	103
Avoiding Working Memory Overload	105
Clearing WM with Frequent Rehearsal	106
Bypassing WM	108
Instructional Design Models to Manage Cognitive Load on WM	109
Strategies to Support Attention	111
Instructional Design Factors to Optimize Attentional Capacity	112
Strategies to Support Encoding into LTM	113
Instructional Design Methods To Stimulate Elaborative Rehearsal	113
Avoiding Inert Knowledge	115

Instructional Design Strategies to Support Retention and Transfer of Expertise	116
The Instructional Design Process: Phases That Affect Learning Transfer And Retention	117
Reference Guide for ID Strategies that Support Learning Transfer/Retention	118
Instructional Design and Building Expertise	119
References	120
Appendix	122
QUESTION 6	123
Description and Analysis of the Leadership Models	123
Principle-Centered Leadership	123
Characteristics of a Principle-Centered Leader	124
Levels and Dimensions of Principle-Centered Leadership	126
Chronic Organizational Problems	127
The Principle-Centered Leadership (PCL) Paradigm	129
The Leadership Challenge – A Leadership Model by Kouzes and Posner	130
The Five Practices of Exemplary Leadership	132
Leadership In Education	135
Sustainable Leadership	136
Leadership Or Management?	138
Leadership Versus Management	139
ED7504 Current Course Syllabus	140
Leadership for Instructional Design	141
Equivalent Required Capella Courses	143
Why Covey, Kouzes and Posner?	144

Where the Leadership Models Overlap And Differ	145
Including Leadership Models into ED7504 Leadership for Instructional Design	146
The Future of Leadership	147
References	149

QUESTION 1

Compare and contrast descriptive, causal-comparative, and correlational research methods. Examine each research method in terms of how appropriate it would be to study how organizations measure the success of their volunteer training programs. Discuss validity and reliability of these methods.

Basic Research Methods

Educational research begins with a question or a problem. "Educational research develops new knowledge about teaching, learning, and educational administration. This new knowledge is of value because it will lead eventually to the improvement of educational practice" (Gall, Gall, & Borg, 2003, p. 3). Someone wants or needs to know if one instructional strategy works better than another, or if workers perform better when they know why they are in training. Once the question has been posed, the researcher must decide the purpose of the study. Will the study inform or describe? Or will it try to find if X causes Y? Or perhaps the study will consider whether there is a connection between two or more things. The purpose of the study guides which research method should be used. Descriptive studies inform and of course, describe. No determination on relationships or cause and effect is made. Correlational studies explore the relationships between variables but do not show cause. Causal-comparative research attempts to determine cause and effect. A discussion of each of these research designs follows, after which a question of general interest to the author as a possible dissertation topic will be introduced and the most appropriate design chosen to study the problem.

Descriptive Research

Descriptive research is non-experimental and is concerned with determining what is. The research is being done to identify or determine the "general state of things" (Dereshiwsky, 1998).

Descriptive studies form the basis for further study because they may be used to "...develop theory, identify problems with current practice, justify current practice, make judgments, or identify what others in similar situations may be doing" (Simon & Francis, 2001, p. 27).

Descriptive studies cannot be used to predict the future or show cause. Instead, descriptive studies apply "the scientific method to identify the various characteristics of a particular situation" (Geller, 2004, p. 25). Descriptive studies are non-experimental since the research will study only the data as it exists instead of using a control group and manipulating variables. A descriptive study can take two forms: descriptive and longitudinal. A descriptive study looks at the phenomena at one point in time, while longitudinal studies are done over time.

Longitudinal studies can take one of four forms: trend studies, cohort studies, panel studies, and cross-sectional studies. Trend studies "describe change by selecting a different sample at each data-collection point that does not remain constant" (Gall, et al., p.292). An example of this is when a researcher collects a sample from an organization's rolls one year, then the next year, when the membership has changed a bit, the researcher collects more data, using the same surveys or tests as the year before. The population changes, the measurements do not. Cohort studies keep the same measurement methods, and the base population remains the same, but the individuals who are surveyed or observed change from year to year over the life of the study. An example of a cohort would be a class of freshman, where one-fourth of them were tested or surveyed one year, and a different fraction surveyed the next time. Panel studies use the same people and the same measurement methods over time. This gives the researchers the ability to track individual changes over time, but also adds the risk of bias due to repeated testing and attrition. It is natural for people drop out of the testing and those who drop out are likely to

be different from those who stay. Cross-sectional studies use a population differing in age or developmental stages, then survey them all at one point in time, so that the need for long-term studies are eliminated, but at the risk of changes in the general make-up of the population. An example might be a cross-section of seventh graders through twelfth graders who are all surveyed at the same time. This means the researcher has a sample with the subjects at different developmental levels and ages that can be surveyed all at once instead of once a year for five or six years. The population could be slightly skewed because it contains all seventh and eighth graders possible, but by the time they are juniors and seniors, the make-up has changed as students drop out (Gall, et al., pp. 291-295).

Purpose, measurement, and statistics of descriptive research.

A large proportion of educational research is undertaken to establish cause-and-effect relationships or to test new instructional methods or programs (Gall, et al., 2003, p. 290). Although a descriptive study cannot be used to document cause-and-effect, or compare the results of one program to another, they are valuable because they establish a base from which these other studies can be performed. The researcher must be able to make reasonable decisions about what variables can be compared, or what relationships can be established. Descriptive studies can give the researcher that information, simply because a description of the situation will include discussion of variables and possibly point to areas where further research is needed. A specific use of descriptive study on a small scale can be found in an organization's safety department. While filling out an injury report, the safety officer is conducting a descriptive study, since he or she is describing the events that led to an injury, and although this knowledge

may be used to prevent future injuries, it should not be considered a causal analysis (Geller, 1996, p. 25).

The type and quality of measurements for descriptive studies are limited. They may include standardized tests, attitude scales, questionnaires, and interviews. The researchers also often "...work intensively on developing new measures or perfecting ones that already have been developed in order to describe precisely and accurately the phenomena of interest to them" (Gall, et al., p. 290). Once the variables have been defined and measured, the researchers will compute descriptive statistics, mainly measures of central tendency (mean, median, mode) and validity (standard deviation, variance, range).

Causal-Comparative Research

Causal-comparative research designs are non-experimental investigations "...in which researchers seek to identify cause-and-effect relationships by forming groups of individuals in whom the independent variable is present or absent—or present at several levels—and then determining whether the groups differ on the dependent variable." (Gall, et al., 2003, p. 296). The key word in a causal-comparative design is difference. The researcher is trying to find out if there are differences between two or more groups. The design is non-experimental since the research is "ex post facto" (after the fact) and observations are made as they naturally occur rather than the independent variable being manipulated by the researcher. The main purpose of a causal-comparative study is to attempt to establish cause and effect. "Causal-comparative is similar to experimental research since both usually involve a comparison of groups and an attempt is made to establish cause-effect relationships" (Simon & Francis, 2001, p. 28). The reason that causal relationship studies can only be attempted is that the studies are non-

experimental, and even though a cause-and-effect may be established, it is very difficult to eliminate variables that are not studied, but could still have a large effect on the results (Simon & Francis).

The independent variable is measured using categories or scales. The categories can be nominal, ordinal, or interval/ratio.. It should be noted though, that interval or ratio scales are better suited to correlational studies because there are possibly many categories, and instead of finding just differences, it establishes a relationship between the variables. An example of a causal-comparative study using a nominal scale might be finding the differences (if any) in academic achievement and creativity between students who have home computers and those who do not. The same question on an ordinal scale would be finding the differences (if any) between students who use computers out of school one, two, three, four, five, six, or seven times a week. A study using an interval scale is discussed with the correlational study section.

Purpose, measurement, and statistics of causal-comparative research.

Causal-comparative research designs are useful for "initial exploratory investigations or in situations where it is impossible to manipulate the independent variable" (Gall, et al., p. 295). Caution when reporting the results is needed because although the study is conducted to find causes and effects, strong conclusions are not permitted since the variables cannot (and should not) be manipulated. If the variables are not manipulated by the researcher, "the most one can hope for is to show evidence of a relationship of some kind" (Helberg, 1996, para. 14). Results from studies that use an ex post facto method cannot accurately determine cause.

The statistics will vary depending on the data that is collected, but could include descriptive statistics such as mean or standard deviation as well as a t-test. A t-test determines

the significance of the difference between means. Even if there is a statistically significant difference, a causal-comparative study will not result in showing cause-and-effect. The t-tests may be parametric, which are based on assumptions about shape or variance of the population scores; or nonparametric where no assumptions are made about the shape or variance of the population scores (Gall, et al., pp. 304-316).

To implement a causal-comparative study, the researcher first chooses a group to study. The group should have the characteristic that the researcher wishes to study and in order for the results to be meaningful, the independent variable must be precisely defined. Once the defined group is chosen, a second group should be selected as well. The second group does not have the characteristic of interest, or has it to a lesser degree (Gall, et al., 2003, pp. 300-301). The researcher should try to make the second group similar to the first one (except for the characteristic being studied) so that any differences cannot be attributed to other factors. Measuring instruments can include surveys, observation, tests, and interviews. The data is then collected and analyzed.

Correlational Research

Correlational research design collects data about relationships, associations, and predictive abilities. In other words, correlational studies can be used to predict or establish relationships between variables. Correlational studies "...are quantitative, multi-subject designs in which participants have not been randomly assigned treatment conditions" (Thompson, Diamond, McWilliam, Snyder & Snyder, 2005, p. 182). Care should be taken when undertaking a correlational study so no cause is attributed to the results. Just because there is a relationship between the variables, a correlational study does not prove that one variable was an effect of

another. Even if the study is used as a prediction, no cause and effect is established. Like the causal-comparative research, correlational research can only serve as a starting point for true cause-and-effect studies. A correlational study will show if there is a positive or negative relationship and if the correlation is significant. If cause and effect is the goal, then an experimental study needs to be undertaken. Correlational studies are done *ex post facto* (after the fact) because the research has been conducted "...after the variations in the independent variable have occurred naturally" (Simon & Francis, 2001, p. 27).

Purpose, measurement, and statistics of correlational research.

The purpose of a correlational study is to show relationships or predict future possible results. "One purpose is to search for variables, measured at one point in time, that predict a criterion variable measured at a subsequent point in time" (Gall, et al., 2003, p. 319). College aptitude tests are used in this manner, i.e., to predict a student's possible success in college. "Another purpose is to search for possible causal patterns among variables" (Gall, et al., p. 319). The types of correlation are represented by the correlation coefficient, or how well and in what pattern the points make a line. A perfect correlation is either +1.00 or -1.00. No correlation is 0.00. A perfect correlation allows the researcher to predict with a high degree of accuracy. If a study results in a perfect correlation between two variables, then when a student gets a certain score on one variable, it is easy to predict their score on the other. When the correlation coefficient is low (or 0.00), it is impossible to make predictions of one variable based on the other. However, even high correlations and accurate predictions still do not indicate one variable can cause an effect. If the researcher studies more than one variable, the statistical calculations will have to be bi- or multivariable instead of just the correlation coefficient.

Prediction studies have three main purposes, depending on the type of information they provide: the degree of accuracy of the prediction, development of a theory about what variables should be observed in order to accurately predict behavior, and gathering evidence about the predictive validity of the tests used to determine the correlations of the variables. Prediction studies are similar in design to causal studies because both of them compare correlations of a complex behavior pattern, the criterion, and variables thought to be related to the criterion. The big difference is when the variables are measured. In a prediction study, the other variables are measured sometime before the criterion behavior occurs. These variables are sometimes called predictor variables. In a causal study, all the variables and the criterion behavior are measured at the same time, or in no particular order. Also, prediction studies aim to "maximize the correlation between the predictor variables and the criterion, whereas causal relationships seek to describe the extent of the relationship..." (Gall, et al., p.330). Causal studies note only that the correlation is high, moderate, or low.

There are additional statistical factors to consider when undertaking predictive studies. Although a study may be valid in a predictive sense, when using a measure during group selection, the selection ratio and base rate must be accounted for as they also influence the effectiveness of the study. The selection ratio is the "...proportion of the available candidates who must be selected." (Gall, et al., 2003, p. 333). The predictive ability of the study increases when the selection ratio is low; that is, fewer candidates are selected based on their scores. If the number of selections to be made is large, and the only ones not selected are at the bottom of the rankings, the predictability decreases. The base rate is the "...percentage of candidates who would be successful if no selection procedure were applied" (Gall, et al., p. 333). The other

factor that should be monitored is shrinkage, which means that the predictive validity decreases with repeated studies. Shrinkage occurs because some measures will show high correlations by chance. The way to avoid shrinkage is to cross check the measures with another sample and any correlations that become insignificant should be dropped.

Similarities and Differences of the Three Methods

Although it is technically not a similarity or difference, descriptive, causal-comparative, and correlational methods are connected in their purposes. The descriptive study gives researchers enough knowledge to know what variables may be appropriate to use in a causal-comparative or correlational study.

Similarities

Descriptive, causal-comparative, and correlational methods are all quantitative. This means that the "researchers generate numerical data to represent the social environment...and use statistical inference to generalize findings from a sample to a defined population" (Gall, et al., 2003, p. 25). All three methods are non-experimental. They are done *ex post facto* (after the fact), meaning the researcher cannot manipulate the variables to see how they affected other variables. The methods rely on the researchers observing, not steering, the way the relationships between the variables occur.

Differences

The statistical calculations needed for descriptive, causal-comparative, and correlational methods are different. Descriptive studies employ measures of central tendency and variance. The causal-comparative and correlational use correlation coefficients. Although both causal-comparative and correlational studies study relationships between variables, the predictive

purpose of a correlational study tries to maximize the correlation while the causal-comparative only notes if the correlation is low, medium, or high.

Obviously, the purposes of each study are different. Description, cause-and-effect, and strengths of relationships characterize the variety of purposes. A descriptive study cannot find any relationships or causes of any phenomena, nor can it be used to predict future behavior. "There is no manipulation of variables and no attempt to establish causality" (Simon & Francis, 2001, p. 27). And while causal-comparative and correlational studies both study relationships, correlational studies examine the degree or strength of the relationship while causal-comparative studies attempt to establish cause-and-effect.

Validity

Sound results of any research design are based on the data collected from the measurement tools. The measurement tools, or instruments, which can be surveys, tests, interviews, etc., must possess validity and reliability. A valid instrument is one that measures what it says it is measuring. A reliable one is consistent and predictable. Validity and reliability are not really about the instrument itself, but about the results the instrument produces (Ary, Chester-Jacobs, Razavieh, 1996, p. 262).

Validity asks the question of whether researchers are measuring what they say they are measuring. "Validity is defined as the appropriateness, meaningfulness, and usefulness of the specific inferences made from the test scores" (Ary, et al., 1996, p. 262). Validity is test/situation specific. If a test has validity for one purpose in one situation, then it is valid only for that purpose and situation. Because much of what is measured in educational research is not directly observable, researchers must take care that they are measuring what they mean to. For

example, since there is no directly observable measure of motivation, the researcher has to define what behaviors represent motivation, and measure those. Along with defining those behaviors, the tool is only valid if no other variable influences or contaminates the results.

If researchers want to study student achievement, they must take several measures that all together, indicate high achievement, because achievement is not something that can be measured directly. A student scoring high in all the areas would be considered a high achiever, while one who was a low scorer would be a low achiever. However, there could be extenuating circumstances in some cases. Perhaps a student has missed a lot of school due to illness or family situations. They could score low on all the measures, but not because they are low achievers. They score low because they have been ill or gone. So in the end, that study did not gauge student achievement accurately because other factors influenced the results.

Although validity is applied to both quantitative and qualitative studies, there is a basic difference in the definition used by both types of researchers. In quantitative studies, validity is partly based on the generalizability of the results; that is, a study is valid if the findings can be applied across a whole population instead of just the sample. In qualitative studies, generalizability is not an important factor when considering the validity of the research (Winter, 2000 para. 20).

Test/Measurement Validity

Tests, surveys, and questionnaires should all be valid and reliable since they are the researcher's data collection tools. However, questionnaires and surveys are often held to less strict standards for validity and reliability than tests. The responses on a survey are likely to be valid, as well as highly structured. For example, the survey might ask for years of schooling.

The respondent's answer is valid because it measures the years of schooling. And in the cases where the interest is in "the average response of the total group" (Gall, et al., 2003, p. 223), a lower level of reliability is acceptable than is necessary on an individual basis. Even though a survey of perceptions may not need a high degree of validity, it is critical that tests or questionnaires used for promotional purposes have a high level of validity (Geller, 1996, p. 26). There are standards for surveys, though. Any test, survey, or questionnaire should have face validity. That is, the measurement tool should have relevant questions on it. (Ary, et al., 1996, p. 462). A survey about leadership characteristics should not have questions about football, for example. In order to assess the validity of an instrument, the researcher (and others) will look at several forms of evidence.

Criterion-related evidence.

This is evidence that must be gathered to guard against contamination. Criterion-related evidence "...shows the extent to which scores on a measuring instrument are related to an independent external variable (criterion) believed to measure directly the behavior or characteristic in question" (Ary, et al., 1996, p. 265). The emphasis is on the criterion and the measurement procedures used to get criterion scores. The criterion measure is not only crucial to the success of the investigation, but it should also contain certain characteristics. The most important is relevance. The researcher needs to decide if "...the criterion chosen really represents successful performance of the behavior in question" (Ary, et al., p. 265). The criterion measure should also be consistent over time as well as be free from contamination, or as Ary, et al. (p. 265) say it—it should be free from bias. Criterion related evidence might be measuring math aptitude/achievement to predict success in a profession like accounting or engineering.

Content-related evidence.

Surveys and other measurement tools should be valid in other ways as well. Content related evidence is typically "...determined systematically by content experts, who define in precise terms the universe (domain) of specific content that the test is assumed to represent, and then determine how well that content universe is sampled by the test items" (Gall, et al., 2003, pp. 191-192). The content experts should also establish that the test is free from irrelevant factors that may influence the outcome of the test. Reading speed and vocabulary should not influence a student's performance on a math test (Ary, et al., 1996, p. 264). Content-related validity evidence should be present not only in the tests, but also in the surveys, questionnaires, and interviews that a researcher uses for a study. Content-related evidence is particularly important when selecting tests to use for measuring student achievement on different instructional methods (Gall, et al., p.192).

Evidence from response processes and internal structures.

The test also needs to be valid in the cognitive processes the takers use to get their responses. These processes must be relevant to the construct that the test is supposed to measure. The validity of the test score interpretations will then show evidence that the processes the test-takers use are the ones that are "consistent with a particular construct or constructs" (Gall, et al., 2003, p. 193). If students are asked to take a test to gauge their reasoning abilities to solve certain problems, but the students use learned techniques to solve the problems, then the validity of the test-score interpretations is jeopardized.

A test also needs to show evidence from internal structures. Since most tests have more than one item to measure the needed construct (or multiple constructs), there must be evidence

that a student's response on one item for a construct will be similar to other items testing that same construct. A correlational study "...should demonstrate that an individual who answered a certain item a certain way (e.g., correctly) is more likely to answer other items the same way than an individual who answered it differently" (Gall, et al., 2003, p. 193).

Evidence from relationship to other variables.

The validity of a test can also be explored by "hypothesizing how a sample will perform on it in relation to measures of other variables" (Gall, et al., 2003, p. 193). Ary, et al (1996, p.268) call this "construct-related evidence....The objective in gathering construct evidence is to determine what psychological construct is being measured by a test and how well it is being measured." Construct-related evidence is gathered using different methods. Gall, et al (p.194) list these types of construct-related or relationship evidence:

1. Convergent Evidence – A sample's test scores correlate positively with their scores on other measures that are hypothesized to measure the same construct.
2. Discriminant Evidence - A sample's test scores correlate negatively with their scores on other measures that are hypothesized to measure the same construct.
3. Concurrent Evidence – A sample's test scores correlate positively with their scores on a measure of a criterion variable administered at approximately the same time, and this evidence comprises statistical results indicating how accurately test scores can predict criterion scores obtained at approximately the same point in time.
4. Predictive Evidence – Comprises statistical results indicating how accurately test scores can predict criterion scores obtained at a later point in time.

Researchers need to be aware that a test yields evidence only for the sample of participants who took it and it may not apply to other populations or measures of the criterion variable (Gall, et al., p.194)

Evidence from consequences of testing.

This type of evidence results in consequential validity. Consequential validity is "the extent to which the values implicit in the constructs measured by a test and in the intended uses of the test are consistent with the values of the users, test-takers, and other stakeholders" (Gall, et al., p. 621). What this means is that the constructs measured by test scores, and the social uses of the test scores are value laden. The results of test scores could be used inappropriately or have unintended consequences. Fair Test is an online advocacy group that details some of the unintended consequences or what they feel are inappropriate uses of standardized test scores (Fair Test What's Wrong Page, n. d.).

External Validity

External validity applies directly to experimental designs, but some of the factors influencing or biasing the external validity of experimental research can also affect non-experimental studies; so they will be discussed briefly. External validity pertains to the generalizability of the study. "In other words, can we be reasonable (sic) sure that the results of our study consisting of a sample of the population truly represents the entire population" (Heffner, 2003, para. 12). According to Johnson and Christensen (2004) there are five components of external validity:

1. Population validity is the ability to generalize the study results to an entire population from the sample.

2. Ecological validity is the ability to generalize the results across different settings.
3. Temporal validity is the ability to generalize the results across time.
4. Treatment variation validity is the extent to which the results of the study can be generalized across variations of the treatment.
5. Outcome validity is the degree to which the results can be generalized across different but related dependent variables.

As stated before, qualitative studies are not generally concerned with generalizing their results, although it is becoming more important (Johnson, para. 36). Qualitative researchers can increase the external validity of their studies by replication, which is performing the study at different times with different participants.

Internal Validity

Internal validity is "...the extent to which extraneous variables have been controlled by the researcher" (Gall, et al., 2003, p. 368). Again, this is not strictly applicable to non-experimental designs, but the researcher does need to keep the premise in mind, especially during causal-comparative studies. Johnson and Christensen (2004) even goes so far as to call internal validity "causal validity" which he defines as "...the approximate validity with which we infer that a relationship between two variables is causal" (Cook & Campbell as cited by Johnson & Christensen, p. 230). A study that shows high internal validity shows significant causality, and implies that there is little chance or evidence of contamination by extraneous variables. Qualitative designs are also affected by internal validity. The researcher must be cognizant of the threats to internal validity as noted by Heffner (2003, paras. 3-10):

1. History – any event outside the study that can alter or effect subjects' performance.
2. Maturation – the natural physiological or psychological changes that take place as we age. This is not a concern in short-term studies.
3. Testing – the chance that a subjects performance will improve if they are pre- then post-tested.
4. Statistical Regression – the tendency for subjects who score very high or very low to score more toward the mean with subsequent testing.
5. Instrumentation – if the measurement device(s) used change during the course of the study, any changes in scores may be due to the instrument rather than the independent variables.
6. Selection – the manner in which subjects are selected to participate and the manner in which they are assigned to groups.
7. Experimenter Bias – the researchers may be biased toward the results they want and observation errors or skewed results could be the consequence.
8. Mortality – subjects dropping out of the groups can drastically affect the results.

Reliability

While validity is concerned with systematic errors, reliability is concerned with random errors. Reliability is a measure of consistency and stability. A reliable instrument has a low degree of measurement error. A test or measure may be reliable without being valid, that is, it may be consistent but not measure what we think it is measuring. However, measures cannot be valid without being reliable. Random errors lower an instrument's reliability. Ary, et al.

identifies these errors as being inherent in the instrument itself, due to scoring procedure, inherent in the administration of the instrument, or due to pupil error. The reliability of a test (or other survey or questionnaire) may be estimated by correlating the scores "...obtained by the same individuals on different occasions or with different sets of equivalent items" (Ary, et al., p. 277).

A reliability coefficient is calculated to determine the reliability of a given instrument. Generally, a reliability coefficient of 0.80 (where 1.00 is perfect, and 0.00 is no reliability) or higher is considered sufficient for most research purposes (Gall, et al., 2003, p. 196). It should be noted again that an instrument with high reliability is not appropriate if the measure is not valid as well.

Test-retest reliability

Test-Retest reliability measures the reliability across time. The test is given at one time, then the exact same test is given to the same set of participants a second time (at some point in the future) and the two sets of scores are correlated. If the correlation is positive and high, the test can be considered reliable. This correlation is sometimes called the coefficient of stability (Gall, et al., 2003, p. 197). The drawbacks to this method include the memory effect and the practice effect (Dereshiwsky, 1998). The memory effect is when the subject remembers the first test and retains some of the answers. The practice effect is that the subject simply gets better taking the test because they have seen it before. Finally, the time between tests can affect the outcome. If the interval is too short, the memory effect will enter into the calculation. If the interval is too long, other factors could affect the results.

Parallel forms reliability

Parallel forms reliability is also called alternate forms reliability or equivalent forms reliability. This assessment process counteracts the memory effect from the test-retest method. The test is given, then a second test is given to the same subjects at a later time, except the second test is not made up of the exact questions from the first test. The second test contains equivalent items. The scores of both tests are used to calculate a correlation coefficient, which then tells the reliability of the exam. This method eliminates the memory effect, but the practice effect may still contaminate the results (Dereshiwsky). The correlation here is called the coefficient of equivalence (Gall, et al., 2003, p. 197).

Split-half reliability

Split-half reliability gives the researcher a coefficient of internal consistency (Gall, et al., 2003, p. 197). To eliminate the practice effect and the memory effect, the researcher creates only one test, with the second half of the test a duplicate of the first half, except it uses equivalent questions instead of repeating them exactly. Scores for each half are calculated for each participant and then a correlation is calculated. The two halves of the test must be equivalent, or a true reliability coefficient cannot be calculated. Cronbach's Alpha is not dependent on a single split half calculation. Instead, it takes the mean of all the splits and gives a more stable reliability coefficient (Dereshiwsky, 1998). This method works if the scale is based on three points. If the scale is only two points (yes/no or correct/incorrect) and ordered, the reliability coefficient can be calculated using Kuder-Richardson 20. If the data is not ordered, use Kuder-Richardson 21 to calculate a reliability coefficient.

Measuring Success: Possible Research Method

The first consideration of the researcher should be quality. No matter which design is employed, the quality of the research determines if the study has been successful. "High quality research is designed to rule out alternative explanations for both the results of the study and the conclusions that researchers draw" (Odom, Brantlinger, Gersten, Horner, Thompson, & Harris, 2005, p. 141). In order for the researcher and the readers to have confidence in the study and its results, the methodology must be applied to the question precisely and stringently. A more rigorous approach to the study will provide for higher quality and more confidence in the results and conclusions.

In order to facilitate selecting a research design, a general topic is needed. This author has chosen to use non-profit organizations and how they measure their success in training their volunteers. Organizations are making evaluation of training and educational programs part of their protocols and are taking a more systematic and methodical approach to the overall evaluation programs and services. They are evaluating their training to see if it is linked to the strategic direction of the company. "Training and development are closely linked to the strategic direction of the organization" (Phillips, 1999, p. 12). If they do this, they can be sure that their training efforts are not wasted. Non-profit organizations will have to do the same thing, if they have not yet begun. "It is crucial to match research questions with research designs, and some questions are best answered with non-experimental designs" (Thompson, et al., 2005, p. 181) The following sections will take a brief look at how each of the non-experimental, quantitative methods might be used to investigate how non-profit organizations measure the success of their volunteer training programs.

Regardless of which method is used, the study will be quantitative and non-experimental and the data collection tool will likely be surveys and interviews. Because of that, the researcher should take some ethical and technical points about surveys into consideration. First, any survey done over email is neither anonymous nor particularly representative (Barribeau, Butler, Corney, Doney, Gault, Gordon, et al., 1997, paras. 2-4). For example, for the study of interest here—nonprofits and how they measure training success—if the survey is distributed via email, perhaps not all non-profits have email, or access to email. The ones that do have it may have fundamental differences in how they measure the success of their training than those organizations that do not have email access.

The survey itself will have to be constructed to elicit answers about organization size, locus of control (is training more local or national), numbers of paid staff, etc. Those questions will have to be in addition to the ones about training methods, evaluation and assessment methods, and how training ties to the organization's mission (and if they have a mission, or what it is).

Before writing the survey, the researcher should make sure the questions have relevance and that the survey actually has a purpose. The title of the survey should get the respondents' attention and summarize the survey's objectives (Day, 2005, para. 3). Another consideration regarding surveys is that the questions be easy to understand (no ambiguous questions or questions that use jargon) and not too long. Ask only one question at a time, and do not influence the respondents. The survey should also be an appropriate length. Too long, and respondents are more likely to give up. Too short, and all the needed material may not be covered. Once the questions are written, it is a good idea to have others who are not involved

with the study review them. Also be sure to have a test run of the survey so the questions are clear. The researcher should also have an idea of how the data will be compiled before giving the survey so they know the types of questions they should ask. Finally, let the respondents know when the results will be available and thank them for their participation. It should be noted that many surveys, especially those that assess perceptions, are descriptive in nature, so they cannot be used to assign cause or make correlations (Geller, 1996, p. 25).

A descriptive study might be the first step since there might be little or no previous information available and this type of study would determine the general state of things—how non-profits measure their success with volunteer training. Lynn (2002) suggests that descriptive studies may be detrimental though, since there is a tendency to assume that the findings are indicative of the opinions and practices of the entire industry, and that these opinions and practices are the best.

Underlying most descriptive research is the (usually implicit) assumption that the collective wisdom of the industry is correct and, therefore, managers should consider adopting those common opinions and practices. However, that assumption is wrong.

Popular opinion and procedures are not necessarily reliable guides to best practices (para. 3).

Lynn (2002) maintains that causal research or correlational research would be more useful to managers in his industry. "In place of descriptive research, hospitality academics should do more causal research...that identifies a causal relationship between two or more variables....Research that identifies the variables under managers' control that can produce specific desired outcomes is of real value..." (Lynn, paras. 5-6). This approach of using

correlational or causal-comparative methods in place of a descriptive one might be applicable in many other industries as well.

Correlational and causal-comparative studies will yield information that may help an organization solve problems or change some of their strategic goals. "...correlational evidence can be used to inform causal inferences and thus, evidence-based practices...This approach is statistically based, and involves statistically testing rival alternative causal models, even though the design is correlational (Thompson, et al. 2005, p. 182).

At first glance, it appears that a study of how the success of volunteer training is measured would best be done using a descriptive method. Upon further reflection, a correlational or causal-comparative study may yield more useful results, since the real reason behind finding out how volunteer organizations measure training success is to see how many of them tie their training to their mission, and a descriptive study would not give evidence of that. A correlational study would give preliminary evidence of that. A causal-comparative study would make that relationship even more evident. This shows again just how important it is that the research question be specific so the research design can be chosen. If the aim is to find out if and how organizations measure training success, a descriptive study is the best choice. If the purpose of the study is to find a connection between mission-based training and success, then a correlation or causal-comparative design is the most appropriate.

In conclusion, the research design cannot be chosen until the research question has been decided and the ultimate purpose of the study has been settled.

References

- Ary, D., Chester-Jacobs, L., & Razavieh, A. (1996). *Introduction to research in education* (5th ed.). New York: Harcourt Brace College Publishers.
- Barribeau, P., Butler, B., Corney, J., Doney, M., Gault, J., Gordon, J., et al. (1997). Ethical considerations of using e-mail surveys. In *Writing @ CSU: Writing Guide*. Retrieved February 21, 2005, from <http://writing.colostate.edu/references/research/survey/com2d3.cfm>
- Day, M. (2005). *20 Top tips to writing effective surveys*. Retrieved February 21, 2005, from <http://www.constant-content.com/article/999/20-Top-tips-to-writing-effective-surveys>
- Dereshiwsky, M. (1998). *Online Class Lectures and Notes for Introduction to Research-EDR610*. Retrieved September 2, 2003, from Northern Arizona University Online <http://jan.ucc.nau.edu/~mid/edr610/class>
- Fair Test What's Wrong Page, (n. d.). Accessed: January 5, 2005, from <http://www.fairtest.org/facts/whatwron.htm>
- Gall, M. D., Gall, J. P., & Borg, W. R. (2003). *Educational research: An introduction* (7th ed.). Boston: Allyn and Bacon.
- Geller, E. S. (2004, September). Assessing SH&E research. *Professional Safety*, 49, 22-29. Retrieved March 19, 2005, from Academic Premier database.
- Heffner, C. L. (2004, March 11). Variable, validity, and reliability. In *Research methods* (chap. 7.4) Retrieved October 18, 2004, from <http://allpsych.com/researchmethods/experimentalvalidity.html>
- Helberg, C. (1996). *Pitfalls of data analysis*. Washington, DC: ERIC Clearinghouse on Assessment and Evaluation (ERIC Document: ED410231).
- Johnson, R. B. , & Christensen, L. B. (2004). *Educational research: Quantitative and qualitative approaches* (2nd ed.). Boston: Pearson Education, Inc.
- Lynn, M. (2002, April). The industry needs less descriptive and more causal research. *Cornell Hotel and Administration Quarterly*, 43. Retrieved February 25, 2005 from ABI/Inform Global, ProQuest Psychology Journals database.
- Odom, S. L., Brantlinger, E., Gersten, R., Horner, R. H., Thompson, B., & Harris, K. R. (2005, Winter). Research in special education: Scientific methods and evidence-based practices.

Exceptional Children, 71, 137-148. Retrieved March 19, 2005, from Academic Search Premier database.

Phillips, J. (1999). *HRD trends worldwide*. Houston, TX: Gulf Publishing Company.

Simon, M. K., & Francis, J. B. (2001). *The dissertation and research cookbook: From soup to nuts*. (3rd ed). Dubuque, IA: Kendall/Hunt Publishing Company.

Thompson, B., Diamond, K. E., McWilliam, R., Snyder, P., & Snyder, S. W. (2005, Winter). Evaluating the quality of evidence from correlational research for evidence-based practice. *Exceptional Children*, 81, 181-194. Retrieved February 25, 2005, from Academic Premier database.

Winter, G. (2000, March). A comparative discussion of the notion of 'validity' in qualitative and quantitative research. *The Qualitative Report* [On-line serial], 4 (3/4). Accessed: October 18, 2004 from <http://www.nova.edu/ssss/QR/QR4-3/winter.htm>

QUESTION 2

Identify and discuss at least three current trends in Instructional Design with emphasis on design/development, evaluation, and assessment.

Introduction

Most careers require a person to grow and develop in order to keep their skills and knowledge current. It is essential to keep track of evolving trends in order to know which skills will become important. Trends in Instructional Design are influenced by increased global competition. Because organizations must operate in a more competitive arena, their responses need to be adaptable and flexible. Trends in design/development, evaluation, and assessment reflect the increased versatility required by organizations to operate successfully.

A New Paradigm For Instructional Design

Instructional design as a process is changing at a rapid pace in order to keep up with the ever-increasing speed of business and life in general. Piskurich (2000) noted that we needed “to consider how to make both the learning and doing of instructional design faster” (p. xi).

Instructional designers must be vigilant about their own development and stay current in a variety of areas: design, development, assessment, evaluation, learning theories, and software. As the nature of education changes from the Industrial age sorting mechanism where learning situations separated learners into either employees or managers to the Information age with its more student-directed environment, trainers and educators must adapt as well. The current paradigm in training and education “...was never designed for learning; it was designed for sorting” (Reigeluth, 1999, p.18). Now, business needs a creative, flexible workforce, and a standardized controlled educational system cannot provide that. Instructional design itself is often under attack from the organizations they are meant to train. “In practice, ...ISD

(instructional design) encourages a blind preoccupation with means over ends"(Gordon & Zemke, para. 8). Instead of making certain the training and learning was actually improving performance, instructional designers were more concerned with the systems and procedures used to create the training courses. Because designers felt compelled to follow an ISD system, there was no place to be flexible or adaptable.

Instructional design – moving toward performance improvement.

Part of the new paradigm of Instructional design is the move toward performance improvement. Technically, instructional design and training are separate professions. For instructional designers in a corporate or business setting, chances are that their job description includes training or performance improvement responsibilities, just as a trainer likely needs to know how to design instruction. Certainly, they both perform some of the same duties such as needs analysis or evaluation of an instructional program. Since there is some overlap between the two vocations, trends that affect trainers are also relevant for instructional designers working in a business.

As change in the business world continues to come at a breakneck pace, training professionals and designers need to "rethink what they are doing now and what they should be doing in the future" (Colteryahn & Davis, 2004, para.1). Instructional designers working in a corporate setting are likely to be under even more pressure to adapt to the fast pace of change in their profession. With businesses needing to justify costs and maximize profits, every department has to add value. For trainers and instructional designers, this means proving that their projects add to the growth and development of people, which then adds to the value of the business.

Colteryahn and Davis (2004) have identified eight trends of which corporate-based instructional designers need to be cognizant. In their ASTD-sponsored study, *Mapping the Future: Shaping New Workplace Learning and Performance Competencies*, they used interviews, focus groups, and surveys to discover trends affecting the training and performance improvement profession.

One trend necessitates taking the uncertain economic conditions into account. Corporations will have to improve their products and services while continuing to control costs. Performance improvement professionals will have to help organizations learn how to create and innovate because they will have to learn how to do more with less (Colteryahn & Davis, 2004, para. 4). Growth and development of the workforce will be even more important if predictions of a prolonged labor shortage come true. In a seller's market, corporations will have to offer more benefits to potential employees. One of those might be training that will benefit the employee indirectly on the job and throughout their lives. Those trainings might include more of the 'soft' skills like leadership, conflict-management, or other things that are not directly tied to their job in the organization.

Another trend that affects the professional lives of trainers and instructional designers is the blurring of lines between work and home. With more and more organizations using telecommuting as one solution to the less is more dilemma, the effect on the employees is added stress. They are on the job nearly all the time, and as a result, the quality of their family lives deteriorates. This means that organizations are almost obligated to give the employees the skills to deal with the extra stress. "People want to be living while they are working, not just working for a living" (Colteryahn & Davis, 2004, para. 6). Another facet of this trend is that there will be

more temporary and contract workers, and more older workers as Baby Boomers reach retirement age, but continue to work. Older workers have different needs and wants and that will have to be recognized by organizations.

The shrinking world—globalization—and more diversity are two more trends that organizations must face. Nations' economies are increasingly dependent on each other (Colteryahn & Davis, 2004, para. 8). This affects the education arm of the business since they now have diverse cultures and societies to deal with. Communicating becomes vitally important, even as it gets more complicated. Not only do the trainers and educators in a company now collaborate across national borders, but even within the local company, the employee structure is more diverse. We do not have the homogeneous work force of the past (Kouzes & Posner, 2002, p. xxi). Everyone from the CEO to the newest hire must learn how to deal with contrasting cultures and backgrounds.

Speed and technology highlight the next two trends. Speed is how fast the organization adapts to "change—whether to respond to opportunities or react to potential threats" (Colteryahn & Davis, 2004, para. 12). Businesses must respond quickly, meaning they have to have a workforce that learns quickly, whether it is new production techniques or new ways to market a product. Technology has changed the face of business with e-mail, video conferencing, and cellular phones by changing the way employees communicate, learn, and complete tasks.

No list of trends is complete without mentioning security and ethics. Organizations and governments are more aware of the need for higher levels of security, both personal and organizational. "There's cynicism, pessimism, and anxiety about the future. The threat of terrorism is an ongoing concern worldwide. It has created a renewed focus on workplace

security and the increased vulnerability of intellectual property" (Colteryahn & Davis, 2004, para. 15). Trust in leaders is low after the scandals involving large companies like Enron. Not only is credibility damaged in such cases, but the very existence of the company is put at risk. Integrity and ethics are emphasized more. Employees are more thoroughly scrutinized before being hired, and watched more closely after. Issues about corporate responsibility to the community and workforce are being raised (Colteryahn & Davis, para. 16).

Overall, the impact of these trends means that instructional designers in a corporate setting are more than trainers and course developers. They must become partners and develop training that aligns with organizational goals and missions and results have to be evaluated to demonstrate the value of the training. Another result of the expanding roles for trainers and instructional designers is the opportunity to help the organization when it comes to recruiting and retaining employees. Not only can the designers specify the skills needed but also develop the training programs based on those needs. Organizations with their eyes on the future will want to be attractive to the best people who are committed to contributing not only to the company's bottom line, but also to the world and society as a whole (Senge, as cited by Colteryahn & Davis, para. 47).

Trends In Instructional Design - Design And Development

As global competition requires organizations to respond quickly and decisively to problems (and opportunities), it is becoming apparent that the linear, almost-rigid methods of instructional design make it difficult for companies to respond. A less linear, more cyclical technique must be employed. Some instructional designers have taken this non-linear view and developed alternative methods of instructional design. Instead of the traditional ADDIE

(Analyze, Design, Develop, Implement, Evaluate) model Sims and Jones (2002, para. 43) propose a more cyclical model where the iterative steps are: develop baseline, implement/evaluate/develop, and maintain/evaluate. The baseline phase of their model is the creation of delivery components. Phase two contains the implementation and delivery of the unit, then assessment and evaluation of the components, followed by more development as needed. This happens simultaneously as the unit is delivered to learners. The maintenance phase includes the addition or removal of components or resources based on feedback. This phase continues until a more formal review is undertaken (Sims & Jones, para. 35). Instead of a step-by-step process occurring, instructional design needs to be more of a circle, with overlapping phases. The same steps happen, but some of them take place simultaneously rather than one after the other. This type of model is not restricted to academia, but is also applicable to other organizations such as training and development in businesses.

Technological advances help make the application of an iterative design process more efficient and effective by allowing the designer to create an object or a portion of a course once, then use it over and over again. This is part of a technological design trend where the objects that are designed are called learning objects. The learning objects then fit into a learning management system (LMS).

Learning Objects

In the first rush of developing online learning courses, designers stayed within known parameters. Courseware was comprehensive, and contained information across an entire subject, including assessment items and perhaps even interactive exercises (MacLaren, 2004, p. 65). The student moved through the course, usually in a linear path. These packages presented some

problems for instructors. For one thing, the course could not be specific to each and every school or group of students. "...it would be unlikely that they would match all of the specific learning objectives of each course, or the particular needs of each cohort of students" (MacLaren, p. 65). Also, the underlying pedagogy was not developed by the instructors who would be using it. The developers of the course decided on the framework employed in the course, and it was probable that it would not be the same one the local instructor prefers. Many of the packages were based on behaviorist theories, while in-class instruction was moving away from behaviorism. This was an all or nothing scenario, as the teachers would have to take the whole package or do without. They could not purchase just the parts of the course and integrate those pieces into their own classrooms. Learning objects help alleviate some of the problems with the comprehensive courseware packages (MacLaren, p. 66).

Learning objects "can be used as standalone or interchangeable resources....An object might simply be a text file, a diagram, a video or sound clip, an interactive exercise, a quiz or a computer simulation" (MacLaren, 2004, p. 66). Wiley (2000) introduces the learning object concept by offering a working definition of them as: "any digital resource that can be reused to support learning" (p. 7). In order to better explain learning objects, the learning object community has compared them to LEGOs, a child's toy that can be used to build bigger structures. Every LEGO fits with every other LEGO, they can be reused in other structures, and even children can use them. Wiley takes exception to this metaphor as too limiting and simplistic and argues that based on this, learning objects with the properties of LEGOs "cannot produce anything more instructionally useful than LEGOs themselves can" (p. 16). Instead, he

proposes a new metaphor to really show the potential of learning objects: the atom (Wiley, p. 17).

An atom is a small "thing" that can be combined and recombined with other atoms to form larger "things." This seems to capture the major meaning conveyed by the LEGO metaphor. However, the atom metaphor departs from the LEGO metaphor in some extremely significant ways:

1. Not every atom is combinable with every other atom.
2. Atoms can only be assembled in certain structures prescribed by their own internal structure.
3. Some training is required in order to assemble atoms.

The implications of these differences are significant. The task of creating a useful, real-world learning object system is complicated enough without the requirement inherited from LEGO-type thinking that each and every learning object be compatible (or combinable) with every other learning object. This requirement is naïve and oversimplistic, and if enforced, may keep learning objects from ever being instructionally useful.

If a learning object can be combined with any other learning object, like a LEGO, what is essentially being said is that the creator of the learning object does not care what instructional theory the user is applying because the learning object does not have to be based on one to work as a learning object.

Unless learning objects are created in partnership with good instructional design principles, the end result may not be able to support learning (Wiley, p. 29). The LEGO

metaphor indicates that anyone can 'grab' a variety of learning objects and put them together and they have an instructionally viable course, which may or may not be true. If it is not something that supports learning, it may as well be a toy castle. Other authors re-emphasize the point that learning objects must be based on sound instructional theories and practices. "Learning object systems present yet another technology-based instructional delivery environment with exciting features and attributes that can empower learner-driven experiences and promote cognitive processing if pedagogical considerations are taken into account in their development and evolution" (Bannan-Ritland, Dabbagh, & Murphy, 2000, p. 1). While there has been some work done to ensure that learning objects do take important pedagogical principles seriously, the next progressive step is to consider alternate pedagogies, like constructivism. In some quarters, instructional design itself is leaning towards constructivism (Smith & Ragan, 2000); it is only natural that learning objects should mirror that.

Learning object systems are well suited for these objectives integrating with ease clearly delineated, traditional taxonomies of learning into these compartmentalized, searchable systems and capitalizing on efficient, reusable content in the often arduous instructional design and development tasks. While these efforts demonstrate appropriate consideration of pedagogical principles, to our knowledge, the incorporation of alternative perspectives on learning related to constructivist philosophy have not yet been considered for application to learning object systems. (Bannan-Ritland, Dabbagh, & Murphy, p. 2)

Hodgins (2000) sees a bright future for learning objects, even beyond their use as learning tools. "...tools and technology that truly have the ability to learn....Learning about technology is important. Technology for learning enables amazing results and advances.

However, technology that can learn is going to provide the most revolutionary and significant change!" (p. 10)

SCORM and LMS

Shareable Content Object Reference Model (SCORM) and Learning Management Systems (LMS) are two related instructional design and development trends. SCORM is a "framework used to define and access information about learning objects so they can be easily shared among different learning management systems (LMSs)" (SCORM definition, n. d.) The model was developed by the United States Department Of Defense (DoD) in an effort to promote the standardization of e-learning. In 1997, they formed the Advanced Distributed Learning (ADL). The purpose was to "create a way to make learning content portable across various systems" (SCORM definition).

The model takes course content and related administrative information (like student records) and facilitates moving them from one platform to another. The course content is made into modules that can be reused in other courses. SCORM specifications include criteria on representing course structures, content-to-LMS data modeling, and content launching. The goal of ADL is now to motivate vendors to adopt SCORM specifications. But as with learning objects, the concerns of SCORM specifications stem from the fact that they must be instructionally sound and based on pedagogical principles. "The SCORM spec is going to be successful almost by default, but unless all e-learning specifications turn the focus from infrastructure to pedagogical soundness, they are in danger of becoming instructionally irrelevant" (Thor Anderson, as cited by Welsch, n. d.).

A Learning Management System (LMS) is "a software application or Web-based technology used to plan, implement, and assess a specific learning process" (LMS definition, n. d.). The SCORM specifications are available to encourage standardization of LMSs. A learning management system gives instructors the ability to "create and deliver content, monitor student participation, and assess student performance" (LMS definition). Some systems include interactive features such as threaded discussions, chat modules, and conferencing abilities. With a large number of vendors in the LMS market, it is difficult to choose the best one. Brooke Broadbent (n. d.) offers some tips when selecting a vendor. Obviously, cost is important, but it is not the only criteria to consider. Other questions that should be answered include: content and if the courses are instructionally sound, maintenance and updating, standardization, and uniqueness, to name a few. Virtual Learning Environments, (VLEs), are closely related to learning management systems, and are probably familiar to most online learners. The two largest VLEs are WebCT and Blackboard. Though they do offer courses, the schools and instructors that use them probably supply their own content, so they are the ones that have to make them instructionally sound.

Other General Trends of Note

Designers will not only need to create sites that are accessible by learners with disabilities, but with the shrinking world, they will also need more culturally sensitive programs and multi-lingual and international collaborative communities (Kilby, 2001, para. 23). As technology is able to offer solutions so that disabled learners are able to participate in online instruction, designers will need to make their designs accessible using proper interface design

protocols. Designing sites to appeal to different learning styles or sites that are comfortable for learners with different types of intelligence can also be accommodated.

Trends In Instructional Design - Assessment

Assessment Terminology

Given the trend in measuring outcomes of training and academic programs, instructional designers need to develop expertise in assessment procedures. Since assessment and evaluation are terms that are often used interchangeably, for purposes of this paper, assessment measures the progress toward a goal (achievement), and evaluation is used to make judgments about assessment information (Simonson, Smaldino, Albright, & Zvacek, 2000). Assessment can essentially do one of two things: "to determine level of competence and to compare or rank learners' abilities" (Smith & Ragan, 1999, p. 93). Criterion-referenced assessments measure the learner's performance by comparing it to an absolute standard with no regard for others' scores. Norm-referenced assessments compare learners against each other (Worthen, White, Fan, & Sudweeks, 1999, p. 64). Tests measuring competence should not be used to rank learners. "The primary purpose of assessment is to increase students' learning and development, rather than simply to grade or rank student performance" (Morgan & O'Reilly, 1999, p. 13).

Rowntree, as cited by Morgan and O'Reilly (1999), identifies two purposes for assessments: "To provide support and feedback to learners and to improve their ongoing learning or to report on what they have already achieved, whether this be a grade or a written assessment" (p. 15). The first purpose, that of giving feedback, is called formative assessment. It includes feedback for assignments, self-assessments, and any other activity meant to motivate, enhance the learner's understanding, or give them a way to gauge their progress. Summative assessment is

the report of what the learners have already achieved and takes the form of end of unit tests, assignments that count toward the course grade directly, and final course exams. Generally, summative assessments are graded or scored.

Where Assessment Is Headed

Trends in assessment in general can almost be categorized by extremes. On one end of the spectrum are the high-stakes standardized tests. At the other end are the alternative/authentic tests. The government pushes for standardized testing to hold schools and teachers accountable. Educators, students, and parents oppose standardized tests as the only measure of accountability. This means that instructional designers must be cognizant of which purpose their course or training program fulfills and then be flexible and adaptable in designing the proper assessment to fit. If the learners are to be judged on their competence, standardized tests are not suitable as a course assessment. An alternative type of assessment may be a more effective measure of the learners' competence. If the learners are to be ranked for promotion or selection purposes, then non-standardized tests are inappropriate because of the potential for such tests to be biased or misused. For instance, some standardized placement tests have been found to exclude a disproportionate number of minority applicants as well as include questions about skills not specifically needed on the job (Fair Test Home Page).

This author experienced one example of an irrelevant test being used for placement/certification while working for a contract lab company at an open pit coal mine in North Eastern Wyoming. The federal government, through the Mine Safety and Health Administration (MSHA, a division of the Occupational Safety and Health Administration—OSHA) requires employees and contractors at open pit coal mines in Wyoming to take a

standardized test in order to read carbon dioxide meters and fill out a log every shift. The test is the same every year, and the students read and memorize a pamphlet as preparation. Until just a few years ago, the test-takers did not even have to prove they could use the meters. The test was about the effects of carbon dioxide (and lack of oxygen) and how to spot possible dangerous situations where carbon dioxide could build up. The thing that made this a problem for the mines and contractors was that in order to fill out the log, you had to be certified to read the meters, and there was a monetary fine involved if the log was not filled out. That meant that every person who worked in those areas had to be able to fill out the log, so they had to pass the certification test. Since the test did not require knowing how to read the meters, nobody was concerned with teaching the employees how to do that. Instead, they gave them a pamphlet with the correct answers from the test and that was that. They passed the test, and were certified, even if they could not read the meter. This situation could be avoided if an iterative instructional design process where the training and the assessment procedures were both evaluated, adjusted, and evaluated again.

Trends in Instructional Design - Evaluation

As businesses have to operate in an increasingly competitive market, they demand that every department prove its value. Obviously, production departments can quantify their value to the business. The training (or education) department used to prove their worth by tallying the number of training programs they ran or how many employees they trained. It was not the usual practice to place a value, monetary or otherwise on the types or content of the training that was being done. This change calls for flexibility and adaptability as well, since designers and trainers need to learn new ways to communicate their value to their organization, and be able to prove it.

Because businesses are the ones driving the changes in training by asking for accountability, the trends that follow are closely associated with businesses, but could be applied to academic and/or non-profit settings as well.

Linking to the Strategic Direction of the Organization

"Training and development is closely linked to the strategic direction of the organization" (Phillips, 1999, p. 12). In most organizations, the development of strategic direction begins with a mission. Peter Senge suggests that a mission (or shared vision) is one of five essential ingredients to create a successful (learning) organization (1990).

A shared vision is not an idea...It is, rather, a force in people's hearts, a force of impressive power. It may be inspired by an idea, but once it goes further—if it is compelling enough to acquire the support of more than one person—then it is no longer an abstraction. It is palpable. People begin to see it as if it exists. (p. 206)

Organizations spend time and effort on formulating strategic objectives and plans in order to fulfill their mission and vision.

Some of the main drivers behind this trend of linking to the strategic direction of the organization include: (Phillips, 1999, pp. 16-18)

1. Training and development must be linked to organizational goals and strategies in order to achieve desired results and add value.
2. Organizations change, and training and development are often seen as the drivers behind the change process. The training function must be closely aligned with strategy in order to facilitate these changes.

3. As measurable returns are demanded, training and development must create programs with specific business impact objectives, which are derived from an analysis of the business needs, which are defined by the business direction, creating a cycle of strategy, needs, objectives, results.
4. The shift from training to performance improvement means that training functions will move into solving business problems and improve business performance. Business performance is defined by the strategic direction.

The connection between the strategic direction of a business and training and development will continue to be important to stakeholders. This connection to strategic initiatives is important for designers. As their jobs become more geared to performance improvement, they will have to be accountable for providing training that increases productivity or matches another organizational goal.

Evaluation Processes Measure the Success of Training

"Organizations are taking a more systematic and methodical approach to the overall evaluation of programs and services" (Phillips, 1999, p. 141). Phillips notes that this trend is closely related to another trend: Organizations are committing more resources to needs assessment and analysis. Part of effective evaluation means that the training or performance improvement solution results in filling a business need. In order to know what the needs are, it follows that the needs assessment must be completed on some sort of regular basis. The needs analysis should be one step in the evaluation process. A systematic process is necessary "to ensure that training and development processes are efficient and effective..." (Phillips, p. 144). This trend indicates that evaluation must be built into the entire development process, and not

added as an afterthought since completing a thorough evaluation requires some pre-planning and preparation. The needs analysis is part of the pre-planning process. This trend will undoubtedly continue because the drivers behind it will likely intensify. "Because a systematic approach brings more efficiency and effectiveness to the evaluation process, this approach will be needed more in the future" (Phillips, p. 161).

Return On Investment (ROI)

"An important trend of increased accountability for training results made the measurement of return on investment (ROI) a routine part of evaluation processes in many organizations" (Phillips, 1991, p. 162). When a business person asks for the results of a project or program, they want real data about effectiveness. For training and development, the type of data provided was how many people attended the training and how many training programs were run in the last month, or last quarter, or last year. Executives and clients are demanding accountability and want to know what training programs add the most value to the business. This information is found in a calculation of net program benefits divided by program costs (Phillips, p. 176). Benefits are anything that add to the bottom line of the organization, and should include money saved, i.e., the amount of travel costs saved by holding the training on line instead of having participants travel to a central location. Costs include not only development and materials costs, but also items such as the cost of the learner's time away from the job and training department overhead. Some of this information is already being tracked, so it can be compiled from existing financial and accounting documents. For the data that is not directly available, decisions will have to be made about how to convert data into the correct format, and how to include intangibles. Because this can be a complex and time-consuming process, the ROI should

not be calculated for every project as it could cost more to calculate than the information would be worth.

Despite the push for more evaluation and measurements, it should be noted that data by itself is not evaluation. "Merely collecting and reporting data does not in itself place a value on anything. Evaluation requires saying what the data means" (Horton, 2001, p. 119).

Conclusion

The impact of globalization will continue to influence how instructional designers perform their work in organizations. Flexibility and adaptability will be needed in areas where more rigid procedures were previously the norm. This paper has examined the impact of globalization on instructional design and instructional designers with an emphasis on design/development, assessment, and evaluation.

Instructional Design as a profession is not only moving toward more of a performance improvement paradigm, but designers are also required to respond quickly to changing situations. Design and development in Instructional Design needs more flexibility and adaptability. Earlier linear models may be too rigid in the face of quicker response time requirements. Learning objects contribute to a designer's ability to develop training more quickly, although care needs to be taken that the objects are instructionally sound.

Like design, assessment requires flexibility and adaptability. This is due to the tension existing between the need for accountability, which is measured most easily with standardized tests, and the need to motivate and encourage learning transfer and retention through more formative type assessments.

Evaluation has moved closer to accountability as well, with trainers and designers needing to adapt to methods that prove the training is worthwhile, and at the highest level of evaluation, that the training provides a suitable return on investment. Training and instructional design are also being held accountable for the appropriateness of the content of training programs they offer. Organizations are increasingly concerned that the training has a direct effect on productivity; so the training has to be tied to organizational goals and mission.

It is perhaps ironic that globalization makes it appear that the world is shrinking, but the analysis of trends reveals that it also creates new questions, opportunities, and challenges for instructional designers and educators as they become more flexible and adaptable in the new world situation.

References

- Bannan-Ritland, B., Dabbagh, N. & Murphy, K. (2000). Learning object systems as constructivist learning environments: Related assumptions, theories, and applications. In D. A. Wiley (Ed.), *The Instructional Use of Learning Objects: Online Version*. [Electronic Version] Retrieved February 13, 2005, from: <http://reusability.org/read/chapters/bannan-ritland.doc>
- Broadbent, B. (n. d.) Selecting a learning management system. Retrieved February 13, 2005, from http://www.e-learninghub.com/articles/learning_management_system.html
- Colteryahn, K., & Davis, P. (2004, January). Trends you need to know. *T & D*, 58. Retrieved September 3, 2004, from Academic Search Premier database.
- Fair Test Home Page, (n.d.). Accessed: January 5, 2005, from <http://www.fairtest.org>
- Gordon, J., & Zemke, R. (2000, April). The Attack on ISD. *Training*, 37. Retrieved January 17, 2003, from Business Source Premier database.
- Hodgins, H. W (2000). The future of learning objects. In D. A. Wiley (Ed.), *The Instructional Use of Learning Objects: Online Version*. [Electronic Version] Retrieved February 13, 2005, from: <http://reusability.org/read/chapters/hodgins.doc>
- Horton, W. (2001). *Evaluating e-learning*. Alexandria, VA: American Society for Training and Development.
- Kilby, T. (2001). The direction of web-based training: A practitioner's view. *The Learning Organization*, 8. Retrieved September 2, 2004, from ABI/Inform Global, ProQuest Psychology Journals database.
- Kouzes, J. M., & Posner, B. Z. (2002). *The leadership challenge* (3rd ed.). San Francisco: Jossey-Bass.
- LMS definition (n. d.). Retrieved February 13, 2005 from http://searchcio.techtarget.com/sDefinition/0,,sid19_gci798202,00.html
- MacLaren, I. (2004, March). New trends in web-based learning: objects, repositories, and learner engagement. *European Journal of Engineering Education*, 29. Retrieved September 2, 2004, from Academic Search Premier database.
- Morgan, C., & O'Reilly, M. (1999). *Assessing open and distance learners*. London: Kogan Page.

- Phillips, J. (1999). *HRD trends worldwide*. Houston, TX: Gulf Publishing Company.
- Piskurich, G. (2000). *Rapid instructional design*. San Francisco: Jossey-Bass Pfeiffer.
- Reigeluth, C. (1999). What is instructional-design theory and how is it changing. In C. Reigeluth (Ed.), *Instructional-design theories and models: A new paradigm of instructional theory*. Mahwah, NJ: Lawrence Erlbaum Associates.
- SCORM definition (n. d.). Retrieved February 13, 2005 from http://searchwebservices.techtarget.com/sDefinition/0,,sid26_gci796793,00.html
- Simonson, M., Smaldino, S., Albright, M. & Zvacek, S. (2000). *Teaching and learning at a distance: Foundations of distance education*. Upper Saddle River, NJ: Prentice-Hall
- Sims, R., & Jones, D. (2002). Continuous improvement through shared understanding: Reconceptualising instructional design for online learning. In A. Williamson, C. Gunn, A. Young, & T. Clear (Eds.) *Winds of Change in the Sea of Learning*. Proceedings of the 19th Annual Conference of the Australasian Society for Computers in Learning in Tertiary Education. Auckland, NZ: UNITEC Institute of Technology.
- Smith, P., & Ragan, T. (1999). *Instructional design* (2nd ed.). New York: John Wiley & Sons.
- Welsch, E. (n. d.). SCORM: Clarity or calamity. *Online E-Learning Magazine*. [Electronic Version] Retrieved February 13, 2005 from http://www.onlinelearningmag.com/onlinelearning/magazine/article_display.jsp?vnu_content_id=1526769
- Wiley, D. A. (2000). Connecting learning objects to instructional design theory: A definition, a metaphor, and a taxonomy. In D. A. Wiley (Ed.), *The Instructional Use of Learning Objects: Online Version*. Retrieved February 13, 2005, from <http://reusability.org/read/chapters/wiley.doc>
- Worthen, B. R., White, K. R., Fan, X., & Sudweeks, R. R. (1999). *Measurement and assessment in schools* (2nd ed.). New York: Addison Wesley Longman, Inc.

QUESTION 3

Brain-Based Learning, Gardner's Multiple Intelligences, and Kolb's Learning Style Preferences all present different ways that learners actually learn and know. Evaluate the three theories on how learners learn. Apply this information to the design and development stages of the instructional design process by making some course design recommendations that connect the different learning styles/preferences to sound instructional design methods.

Learning to Compete

Organizations are looking for new methods of training in order to keep their employees learning and motivated. Any organization that can respond, create, innovate, learn, and adapt has a definite competitive edge over one that does not. The old stand and deliver method just does not work all the time. In that scenario, the instructor is the giver of information and the learner is the sponge. The learners may actually retain that information long enough to pass a test right after the class, but there is no transfer of knowledge back to the job. That is mainly because there is no knowledge created or stored in the learners' brains. Training must be taken back and applied to the job in order to be effective. A vast amount of money and time is wasted if employees sit and listen to someone lecture for eight hours over something that has no relevance to their jobs. A new training model is needed. "The new training model takes into account the diversity of the learners and the environmental conditions essential for learning. Unfortunately, many training models are content-centered...where the main concern is to cover the curriculum in a specified time period" (Dwyer, 2002, p. 265). Brain-based learning (BBL), learning styles, and multiple intelligences (MI) give instructors a "powerful repertoire of skills and knowledge, bringing to the training environment an attitude that takes into account the unique abilities of all learners" (Dwyer, p. 265).

Brain-based Learning

Neuroscientists, psychologists, and educational researchers, along with others, have not only found out more about how the brain operates, but also brought up new ways to think about learning. Some findings from neuroscience and cognitive research are expanding the knowledge of how the brain learns. Among these findings: The brain's physical structure is changed with learning; learning organizes and reorganizes the brain; and different parts of the brain learn at different times (National Research Council, 2000, p.115).

How the brain learns.

The human brain is as powerful as it is due to the existence of neurons and neural networks. Groups of neurons interact via chemical and electrical signals. "Learning takes place when certain patterns of thoughts, actions, and emotions are repeated or habitualised. In the brain this represents a strengthening of the connections between appropriate neural networks" (Routledge, 1999a, p. 704). The brain actually grows as it is used. It develops more neural networks and connections between existing networks as a person learns more. Jensen (2000, pp. 31-32) uses his understanding of how the brain learns to propose an optimal learning sequence:

1. Pre-exposure or preparation – This stage provides a framework for new learning and primes the learner's brain with possible connections.
2. Acquisition – This stage can be achieved directly through providing handouts or indirectly with putting up related visuals. The neural connections are made during this stage.
3. Elaboration – This stage explores the interconnectedness of topics and encourages depth of understanding. In this stage, the right neural connections are developed.

4. Memory Formation – This stage cements the learning, so what was learned one day can be retrieved the next. This stage is where the neural connections are strengthened.
5. Functional Integration – This stage reminds us to use the new learning so that it is further reinforced and expanded upon.

Pre-exposure is important because that is where the connections can be formed at first. The neural pathways can be formed and prior learning can be connected. "The best predictor of what students learn is what they already know....New learning is more easily achieved if there is an existing pathway or framework waiting for it" (Hunt, 1998, p. 3). Even a short introduction to a subject may allow those prior experiences the chance to surface so learning the new material will be easier.

Since learning only happens when neural connections are made and the neural networks grow, the most important steps in the learning sequence are acquisition, elaboration, and memory formation since that is where connections are made, developed the right way, and strengthened.

Just because a connection is made in the acquisition stage, it does not mean that learning actually takes place. Sometimes, a moment of insight occurs when a connection is first made but if the moment is not reinforced, no learning takes place. In order to remember something, elaboration must take place. Jensen (2000, p. 33) quotes a Chinese saying that emphasizes this. "Learning is not a singular event; it is the process of using it over time." Acquisition is also highly dependent on prior knowledge to make the needed connections, and the greater the prior knowledge, the greater the likelihood of a moment of insight.

For new learning to make the right neural connections, elaboration must take place. Elaboration is error correction and depth of learning. There is a gap between what the teacher explains and what the student understands, and the use of some different strategies like discussion, reading, simulations, and projects will give the learners (and their brains) time to "sort, sift, analyze, test, and deepen the learning" (Jensen, 2000, p. 35). This stage is where the learner is using trial and error to forge the neural networks. In fact, this is where learners developed higher order thinking because they may not get the right answers the fastest, but they can eliminate the wrong ones better. The rote learning developed for taking standardized tests may give the right answers on the test, but it does not develop higher level thinking. What this should tell all instructors is that feedback can come from any source, not just the instructor or teacher. If only one person gives feedback, the learners will not get to experiment and use trial and error enough, and there is no higher level thinking developed.

After the interaction and feedback during the elaboration stage, the brain still has not permanently encoded the learning for future retrieval. Other factors contribute to the ability of the learner to retrieve the information include "adequate rest, emotional intensity, context, nutrition, quality and quantity of associations, stage of development, learner states, and prior learning" (Jensen, 2000, p. 37). Routledge (1999a, p. 707) reinforces the tie between learning and emotion, and the affect physical states have on emotion. "...in order to learn and remember something, there must be sensory input and a personal emotional connection....Emotions interpret our experience and help us organize our view of the world and our place in it."

Left or right brain.

There is a lot of discussion about left- or right-brained learners, and though much of original research remains valid, current brain research is causing some revision of those principles. For instance, Jensen (2000, pp. 16-19) and Routledge (1999a, p. 709) both mention that there really are no such things as left- or right-brained learners. Learners may have a preference to use one hemisphere over the other, but current brain research says that in order to be proficient, both sides of the brain must be engaged. Left-brain dominant learners will likely prefer: details, sequential order, words, symbols, language, structure, predictability, orderly instructions, factual information, and are more internally focused. Right-brain dominant learners prefer: wholes as opposed to parts, randomness, pictures, graphs, charts, spontaneous environments, surprises, relationships instead of facts, intuition/feelings, and are more externally focused.

Learning cycles.

There are optimal states, or environments, in which the brain learns. Instructors should be aware of the fluctuating biological cycles that the brain goes through during the day. Days are solar cycles (twenty-four hours) while humans follow lunar (twenty-five hours) cycles. This means that a learner's efficiency moves ahead an hour each day and is often out of sync. In addition, humans follow a seven-day cycle, which impacts physiological and psychological functions such as blood pressure, pulse rate, mood, concentration level, learning, and memory, among others (Jensen, 2000, p. 41). To further cloud the situation, humans also fluctuate for alertness/sleep, body strength, and mood along twelve-hour cycles. Women show differences in

learning due to menstrual cycles. Even breathing can influence which hemisphere is dominant (Jensen, 2000).

On average, we breathe through one nostril for about three hours until the tissue becomes slightly engorged; then we switch to the other side. The nostril we breath (sic) through affects which brain hemisphere we use. When our breathing is left-side dominant, our learning will be right-brain dominant, and vice-versa. (Jensen, 2000, p.42)

Attention and right or left hemisphere efficiency cycle every ninety minutes. This means that the ability to pay attention goes from high to low and back to high, while hemisphere dominance fluctuates from high verbal/low spatial to low verbal/high spatial efficiencies.

Instructors should be aware of some general principles. Short-term memory, literal learning memory (facts, names, numbers, and formulas), and reading speed peak in the morning. Long-term memory, reading comprehension, overall intellectual performance (problem solving, thinking, debating), inferential learning memory (poetry, conversation, etc.), and integration of new information with prior learning peak in the afternoon. (Jensen, 2000, pp. 44-47).

Instructors need to realize that the "brain does not learn 'on demand' by a school's rigid inflexible schedule" (Jensen, p. 44). Varying activities and the time of day that they are done, as well as giving the learners a choice as to the type of activity they want to use will help suit their bio-cognitive cycles. Ultimately, this means that:

We may have greater influence over the quality of our learning than previously thought. By understanding bio-patterns and fluctuations, we can better learn to take preventative action....Emphasize the importance of repetition and investing effort at various times of the day. Discuss how nutrition, rest, and activity impact learning, as well. (Jensen, p. 45)

Optimal learning environments.

Instructors have the opportunity and responsibility to set the psychological and physical environment for optimal learning. Of course, the physical environment for online training is out of the instructor's control, although they may have some say in how the online classroom looks. They certainly have control over the emotional and psychological mood in the course room/discussion thread. Learners need to feel low threat-high challenge in the classroom (traditional or online) in order to do their best (Routledge, 1999b, p. 751) . The instructor to learner relationship should be characterized by "...trust, safety, and mutual respect..." (Jensen, 2000, p. 55). The learner should feel relaxed, but not lethargic, and there should be minimal stress along with challenges high enough to engage and interest, but low enough so the learners do not get frustrated.

In the physical arena, if it is not online, there should be colors and images along with strong natural light in the room. Sometimes, soft non-distracting music and plants, as well as certain aromas (such as peppermint) also enhance the learning environment (Jensen, 2000, pp. 55-66). Campabello, De Carlo, O'Neil, and Vacek (2002) studied the effects of using music to help learners with initial learning and recalling facts. They found "the use of music as an intervention generally created a more positive emotional connection for both initial learning and recall of facts introduced with music" (p. 64). Obviously, they purposely used music during the lessons, but non-distracting music in the background can provide some of the same effects. "Brain studies indicate that exposure to music alters and increases brain function to make the necessary connections for higher order thinking" (Campabello, et al., p.1). If it is online, good web design principles should be followed. Some of these include the use of animation (minimal)

and being cognizant of white space, the necessity for scrolling (it should not be needed) and not using colors or backgrounds that are too distracting (Nielsen, 2000). In a more traditional classroom setting, the instructor also needs to pay attention to the non-verbal cues they give out so they are congruent with what they say. A positive feeling of encouragement and confidence goes a long way toward creating an optimal learning environment also (Jensen, p.107).

A brain-based learning environment does not totally eliminate some of the more traditional teaching methods such as rote learning and drill, but those activities are limited to areas where these techniques are effective (Valiant, 1996, p. 3). Overall, the brain-based learning environment is more constructivist in nature, where the student guides their own learning, and the instructor provides more support and guidance than lecturing. The instructor can also use music, odors, tastes, and video clips to provide a hook for the students, a new or novel way of seeing something and gaining the learners' attention.

It should be noted that brain-based learning is not a list of procedures to follow, it is "being aware and making yourself familiar with the most recent research that is out there about how brains learn and what facilitates brains' learning, and incorporation that in what we do" (Carroll County School District, GA, 1999, p. 3).

Kolb's Learning Styles

According to Merriam and Caffarella (1999, p. 209), learning style "attempts to explain learning variation between individuals in the way they approach learning tasks." Learners develop a preference for the way they approach learning tasks, and follow it consistently. The learning process can be broken down further into: cognition, conceptualization, and affective parts (Litzinger & Osif as cited by Blackmore, 1996, para. 2). Cognition is how knowledge is

acquired, conceptualization is how information is processed, and affective includes motivation, decision making styles, values, and emotional preferences.

Kolb has attempted to categorize a range of how learners approach learning. Blackmore (1996, para. 5) explains the theory. First, Kolb defined continuums describing perception on one axis and processing on the other. On either end of the processing continuum are active experimentation, which is using theories to solve problems or make decisions and reflective observation, which is watching others or developing observations. The two ends of the perception continuum are concrete experience, which is being involved in a new experience, and abstract conceptualization, which is creating theories to explain observations. Chapman (n. d.) uses more direct terminology for the ends of the continuums. Processing is doing and watching and perception is feeling and thinking.

Based on where a person falls on the continuums, Kolb has identified four learning styles: accommodators, divergers, convergers, and assimilators. Each type can be defined as follows: (Blackmore, 1996, paras. 7-10)

1. Accommodators fit into the concrete experience/active experimenter quadrant.

Accommodators are motivated by the question, 'what would happen if I did this?'

Chapman (n. d.) calls this type an activist because they are hands-on and rely on intuition rather than logic.

2. Divergers are in the concrete experience/reflective observation quadrant.

Divergers are motivated to discover relevancy or 'why' of a situation. Chapman's term for divergers is reflector because they look at things from different perspectives, and prefer to watch rather than act.

3. Convergers are on the abstract conceptualization/active experimenter ends of the continuums. They want to discover the relevancy or 'how' of a situation. They often want details and prefer technical tasks. Chapman calls them pragmatists.
4. Assimilators are the abstract conceptualization/reflective observer types. They are motivated by the question, 'what is there to know?' They are uncomfortable with random exploration and like a concise, logical approach. Chapman names this type the theorist.

Smith, (2000, para. 19) elaborates on these descriptions. He suggests that accommodators are risk takers and solve problems intuitively; divergers have strong imaginations and are interested in people; convergers are unemotional with narrow interests; and assimilators are concerned with abstract concepts rather than people.

Optimal learning strategies.

Each learning style prefers certain learning strategies. The accommodators/activists work best through independent discovery and actively participating in their own learning. Simulations, case studies, and homework are valuable to them (Clark, 2000, para. 3). This type of learner may ask 'what if?' or 'why not?' type questions. Divergers, also called reflectors, need lectures that focus on specifics and details, and instructors can provide organized summaries for them. They need time to reflect on the information, and because of that, logs, journals, and brainstorming works well with divergers (Clark, para. 4). Convergers, or pragmatists, need interactive instruction, with computer assisted instruction or workbooks and problem sets giving them the chance to explore. The instructor becomes more of a facilitator. This learner prefers laboratory, field work, and observations. Assimilators or theorists do well with lectures followed

by demonstrations and time for them to reflect. They prefer lectures and papers along with case studies.

Multiple Intelligences

Gardner (1999) has challenged the traditionally accepted view that intelligence is "...a single faculty and that one is either 'smart' or 'stupid' across the board" (p. 34). Before Gardner's work on multiple intelligences, most information on intelligence relied on psychometric principles and research. The subject would take a test and a number score would be assigned as that person's intelligence level. Gardner did not rely only on the "results of psychometric instruments" (Gardner, p. 35). Instead, he compiled a list of criteria that each candidate intelligence had to meet before it was actually deemed one. The criteria had roots in biology, logical analysis, developmental psychology, and traditional psychological research (Gardner, pp. 35-39). One of the "most remarkable features of the theory of multiple intelligences is how it provides eight different potential pathways to learning" (Armstrong, 2000, para. 5).

Optimal learning environments and strategies for each MI.

Verbal-Linguistic intelligence is one that is highly valued in school and "involves sensitivity to spoken and written language, the ability to learn languages, and the capacity to use language to accomplish certain goals" (Gardner, 1999, p. 41). A person with well-developed verbal-linguistic tendencies learns through listening, reading, writing, and discussing and uses them to remember, communicate, discuss, explain, create knowledge, and construct meaning. They also respond to sound, rhythm, color, the spoken word and exhibit an ability to learn other languages (Campbell, Campbell, & Dickinson, 1999, p. 4).

Learning strategies for verbal-linguistic intelligence should include reading and writing, especially topics that have relevance for the learner; they should also listen, read aloud, join in discussions, tell stories, and give reports (Campbell, et al., pp. 5-26). Of course, using writing and verbal skills in other subjects is useful too. Technology tools to use with this intelligence include word processors, desktop publishing programs, discussion lists and forums, chats, and email (Lamb, 2001, para. 13).

Logical-Mathematical intelligence is highly valued in schools and Western society in general (Gardner, 1999, p. 42). This intelligence is one of the principle bases for Intelligence Quotient (IQ) tests along with the linguistic-verbal. Logical-Mathematical intelligence involves several components: "mathematical calculations, logical thinking, problem-solving, deductive and inductive reasoning, and the discernment of patterns and relationships" (Campbell, et al., 1999, p. 35). Learners with well-developed logical-mathematical intelligence will show the following characteristics: perception of objects and their function in the environment, familiarity with concepts of time, quantity, and cause and effect, demonstrate skill at logical problem solving, perception of patterns and relationships, enjoyment of complex operations, such as calculus, physics, or computer programming, and think mathematically by making hypotheses, formulating models, and building strong arguments (Campbell, et al., p. 35).

An environment conducive to the logical-mathematical intelligence includes: the teaching of logic and the scientific method, using syllogisms and Venn diagrams for deductive logic, and analogies for inductive logic; enhancing thinking and learning by incorporating diverse questioning strategies, and mediating learning. Teaching mathematical thinking processes with patterning, working with data, codes, and graphs; and using numbers such as averages,

percentages, measurement, calculations, probability, and geometry. Other good tools are story problems across the curriculum and math themes in other subject areas (Campbell, et al., pp. 37-58). Technology tools that appeal to those with logistical-mathematical intelligence include organizational software such as calendars, address books, and other personal information management tools like Palm handhelds; databases, spreadsheets, statistics, graphing software, and project management or problem solving software (Lamb, 2001, para. 16).

Tactile-Kinesthetic intelligence "entails the potential of using one's whole body or parts of the body" (Gardner, 1999, p. 42). This intelligence is often undervalued as other problem solving methods are thought to be 'better.' Learners with well-developed tactile-kinesthetic intelligence prefer to touch, handle and manipulate what is to be learned, develop coordination and timing, learn best by participation and remembers most clearly what was done rather than what was said, demonstrate balance, grace, dexterity, and enjoy concrete learning experiences such as field trips or role playing (Campbell, et al., 1999, p. 68).

A learning environment favorable to tactile-kinesthetic learners includes lots of physical activity across the entire curriculum by including games, role plays, simulations, puzzles, field trips, and exercise breaks. Technology that can be used to good effect by these learners include basic keyboarding, mouse, joystick, and other input devices; digital cameras, handheld computers and Palms, video production, and construction type games (Lamb, 2001, para. 22).

Visual-Spatial intelligence learners use visual imagery and manipulation of patterns. It is worth noting that visual imagery served as a "way of knowing that is older than linguistic symbolism" (Campbell, et al., 1999, p. 96). Although not all visual-spatial learners have every characteristic, they show some of the following: learning by seeing and doing, recognizing faces,

objects, shapes, and scenes; navigating self and objects through space; thinking in pictures, visualizing detail, decoding graphs, charts, and maps; enjoying drawing and constructing three-dimensional objects, and is proficient at abstract design (Campbell, et al., p. 97).

The optimal learning environment for visual-spatial intelligence includes the use of flow charts, mind-mapping, visuals as a complement to lectures, and highlighting with color. The use of mnemonics and the instructor's non-verbal communications also help these learners in the classroom (Campbell, et al., 1999, pp. 98-127). Technology tools are especially helpful in visual-spatial learning. Animation software, desktop publishing, graphics software, video conferencing, presentation software, and mind-mapping software are just a few of the tools available (Lamb, 2001, para. 19).

Musical intelligence "entails skill in the performance, composition, and appreciation of musical patterns" (Gardner, 1999, p.42). Learners with musical intelligence are sometimes hard to distinguish because though they may have some of the characteristics associated with this type of intelligence, no one learner has them all. Campbell, et al. (1999, p. 135) have identified some possible traits of musical intelligence. Learners with musical intelligence: listen and respond to a variety of sounds including the human voice, respond to music in a variety of modes by creating or performing it, analyzing it and by evaluating it, collect music, may play or sing, enjoy listening to music, and use the vocabulary and notations of music.

The creation of a musical learning environment means that music is playing in the background, music and songs are included as content in other subjects, and other subjects are taught through music and singing (Campbell, et al., 1999, pp. 136-153). Sound and music clips,

audio CDs, music composition software, and interactive books with audio elements are just a few of the technology tools that can be used during instruction (Lamb, 2001, para. 25).

Interpersonal intelligence "denotes a person's capacity to understand the intentions, motivations, and desires of other people, and consequently, to work effectively with others" (Gardner, 1999, p. 43). Someone with well-developed interpersonal intelligence will show the following characteristics: forms and maintains social relationships, uses a variety of ways to relate to others, perceives thoughts, feelings, behaviors, and motivations of others, participates in collaborative efforts, communicates effectively both verbally and non-verbally, perceives diverse perspectives in social or political issues, and develops skills in mediation, organizing others, or working with others of diverse backgrounds (Campbell, et al., 1999, pp. 160-161).

A learning environment conducive to interpersonal intelligence includes group work, conflict management, collaborative learning, multicultural education, and learning through service (Campbell, et al., 1999, pp. 161-188). Interpersonal intelligence is comfortable with email projects, chat, forums and discussions, video and teleconferencing, collaborative computer software, group presentations, and video recording (Lamb, 2001, para. 30).

Intrapersonal intelligence is "the capacity to understand oneself, to have an effective working model of oneself—including one's own desires, fears, and capacities—and to use such information effectively in regulating one's own life" (Gardner, 1999, p. 43). Some of the character traits of a person with well-developed intrapersonal intelligence are: awareness of their range of emotions, finding approaches and outlets to express their feelings and thoughts, developing an accurate model of self, working independently, attempting to seek out and

understand inner experiences, and establishing and living by an ethical values system (Campbell, et al., 1999, p. 196).

A self-nurturing environment will include peer support, individual goal sheets, helping learners to find a purpose, encouraging journal-keeping, and giving feedback. (Campbell, et al., 1999, pp. 197-224). Technology tools incorporate electronic journaling, mind or concept mapping software, self-paced problem solving software, self-paced online research, and multimedia portfolios (Lamb, 2001, para. 28).

"A naturalist demonstrates expertise in the recognition and classification of the numerous species—the flora and fauna—of his or her environment" (Gardner, 1999, p. 48). In the Western world, the word naturalist is "readily applied to those with extensive knowledge of the living world" (Gardner, 1999, p. 48). This intelligence was not included in Gardner's original list of intelligences. After he put it up against his eight criteria of an intelligence, he added it in 1995. Campbell, et al (1999, p. 232) describe some traits that a person with well-developed naturalist intelligence has: explores human and natural environments with interest and enthusiasm, seeks out opportunities to observe, identify, interact with, or care for objects, plants, or animals, recognizes patterns among members of a species or classes of objects, wants to understand how things work, and is interested in how systems change and evolve.

A learning environment conducive to the naturalist intelligence includes natural science themes, drawing close observations, sightless observing, classifying objects, forging community relationships, nature walks, and developing a questioning frame of mind (Campbell, et al, 1999, pp. 234-256). Technology tools that will appeal to a naturalist learner include video cameras to

record the world, digital cameras, word processing for journaling, databases and spreadsheets for organizing, and microscopes and probes (Lamb, 2001, para. 33).

Gardner considers existential intelligence the "most unambiguously cognitive strand of the spiritual" (Gardner, 1999, p. 60). By applying the eight criteria to the candidate intelligence, now called existential, Gardner believed that it could become the ninth intelligence. It did pass the criteria, just as the first eight intelligences had. This intelligence contains the ability to "locate oneself with respect to the furthest reaches of the cosmos...and the related capacity to locate oneself with ...the significance of life, the meaning of death...and such profound experiences as love of another person or total immersion in a work of art" (Gardner, 1999, p. 60). Ultimately, Gardner does not actually say that existential intelligence is actually the ninth intelligence. "Despite the attraction of a ninth intelligence...I am not adding existential intelligence to the list. I find the phenomenon perplexing enough and the distance from the other intelligences vast enough to dictate prudence...at most I am willing...to joke about 8 ½ intelligences." (Gardner, 1999, p. 66). Therefore, even though this intelligence is mentioned in some of the literature, it will not be discussed further here.

Successful Training Strategies

Information on brain-based learning, learning styles, and multiple intelligences borders on overload and trying to incorporate learning strategies from all three into instruction can be a complicated endeavor. There are, however, some common areas that the instructional designer can use when developing a class or course. An overall strategy for effective learning would be to use the principles of brain-based learning as the foundation, then apply various strategies that appeal to different styles or intelligences.

An ideal learning environment has the characteristics: emotional safety, free from intimidation and rejection, high in acceptable challenge, active participation, and being a place where learners can experience a relaxed alertness (Dwyer, 2001, p. 312). A low threat, high challenge environment can even be built online. The instructor can do a lot toward building an accepting community atmosphere in a discussion room.

Physical Environment

The physical environment that is optimal for brain-based learning is also optimal for all four of Kolb's learning styles and any of the multiple intelligences. An offline classroom that uses strong natural light, has plants and color and aroma triggers, is not too warm or cold, and non-distracting music is played in the background at times, these are the best conditions for the brain to learn. Those are certainly conditions that would appeal to a visual-spatial intelligence or someone with a musical intelligence. In addition to the physical comfort, the instructor should make water available so the learners stay hydrated. The instructor should encourage the learners to maintain their health by getting enough rest and eating nutritiously (Jensen, 2000, p. 76). If the learning is over the Internet, the instructor can give tips to the learners to create their own comfortable learning environment. And as mentioned earlier, the online interface should use good design principles when fonts, colors, and navigation schemes are chosen.

After the environment is properly arranged, the schedule should accommodate the learning cycle issues. Problem solving and more complex tasks are best in the afternoon, while facts, dates, or numbers are better learned in the morning. Alternating tasks that require low and high attention and taking breaks for reflection also fit into the students' learning cycles. Alternating low verbal/high spatial activities is another accommodation to the learning cycle.

Another way to facilitate learning is to work within the limitations of the memory systems and the instructor should provide frequent rehearsal times so the information is properly encoded into long-term memory (Clark, 1999, p. 29).

Strategies That Overlap

Once the environment and overall strategy is settled, then each lesson can be designed to take different learning style preferences and multiple intelligences into consideration. Independent discovery in the form of simulations and case studies appeal to Kolb's accommodators, tactile-kinesthetic intelligence and intrapersonal intelligence. If the simulations and case studies are group projects, they appeal to interpersonal intelligence. Divergers/reflectors will need lectures and guided study sheets and will use logs, journals and reflection time. Verbal-linguistic intelligence will respond to text and language based lessons and the journaling process. If the lecture is performed with visual aids and includes music or sound files, the visual-spatial and musical intelligences will likely benefit as well. The visual-spatial and kinesthetic intelligences could use mind mapping software or techniques for note taking purposes.

Convergers need interaction, where the instructor becomes more of a facilitator. The interaction should appeal to almost all the intelligences, while the more facilitative role of the instructor will appeal to the intrapersonal intelligence. Assimilators need lectures and demonstrations, and time to reflect. Visual-spatial intelligence will appreciate the more abstract aspects of the learning that assimilators need as well.

Reading aloud and discussion from verbal-linguistic, problem solving from logic-mathematical, manipulating of objects from tactile-kinesthetic, as well as mind-mapping,

listening, and group work from visual-spatial, musical, and interpersonal intelligences will all work with accommodators/activists.

Several other learning strategies for both online and offline instruction overlap between various intelligences and learning style preferences. Actually, there could be numerous combinations of each learning style with any of the intelligences. The key is to offer a variety of delivery methods and speak to almost all the senses: sight, hearing, smell, and touch. The use of online instruction can also appeal to each learning style and intelligence with the use of group chats and discussions, graphics, sound, text, animations, and need for kinesthetic participation with the input devices. "With its accessibility and user friendliness, Web-based instruction is probably one of the most flexible types of instruction, providing a forum where all intelligences can be represented..." (Osciak & Milheim, 2001, p. 369).

A good overall look at the design is necessary to see if all the intelligences and several learning styles are represented. That can be accomplished by asking a short series of questions about the instruction. The questions are from Forte and Schurr as cited by Scott (2002, para. 11).

1. What tasks require students to write, speak, or read?
2. What tasks require students to engage in problem solving, logical thought, or calculations?
3. What tasks require students to create images or visual aids and to analyze colors, textures, forms, or shapes?
4. What tasks require students to employ body motions, manipulations, or hands-on approaches to learning?

5. What tasks require students to incorporate music, rhythm, pitch, tones, or environmental sounds in their work?
6. What tasks require students to work in groups and to interact with others?
7. What tasks require students to express personal feelings, insights, beliefs, and self-disclosing ideas?

Conclusion

P. J. Smith (2001) advocates not only designing instruction for learner preferences, but also informing the learner what their preference is. This way, they can help make decisions on the type of learning they prefer. They tend to have more confidence and are often more motivated to learn when they have more outward control of how they wish to approach the learning (p. 713). It might be beneficial to have the class take a short learning style inventory to see their approximate preference.

Brain-based learning, learning style preferences, and multiple intelligences are not cure-alls for training and instruction problems, but they are also not just theoretical discussion topics. They can all be used and integrated into offline and online instruction. Build the foundation with brain-based learning principles, give the learners an idea of their learning preference, and develop the instruction to incorporate more than one delivery method so it appeals to more than one style or intelligence.

References

- Armstrong, T. (2000). *Multiple intelligences*. Retrieved December 7, 2002, from http://www.thomasarmstrong.com/multiple_intelligences.htm
- Blackmore, J. (1996). *Pedagogy: Learning styles: Preferences*. Retrieved October 18, 2004 from <http://www.cyg.net/~jblackmo/diglib/styl-d.html>
- Campabello, N., De Carlo, M. J., O'Neil, J., & Vacek, M. J. (2002). *Music enhances learning*. Retrieved March 6, 2005, from <http://www.eric.ed.gov> (ERIC Document: ED471580).
- Campbell, B., Campbell, L., & Dickinson, D. (1999). *Teaching and learning through multiple intelligences* (2nd ed.). New York: Allyn and Bacon.
- Carroll County School District, GA (1999). *A framework for literacy in a brain-compatible environment*. Retrieved March 6, 2005, from <http://www.eric.ed.gov> (ERIC Document: ED 432000).
- Chapman, A. (n. d.). *Kolb learning styles*. Retrieved October 18, 2004 from <http://www.businessballs.com/kolblearningstyles.htm>
- Clark, R. (1999). *Building expertise: Cognitive methods for training and performance improvement*. Washington, DC: International Society for Performance Improvement.
- Clark, D. (2000). *Kolb's learning styles* (Revised ed.) Retrieved October 18, 2004, from <http://www.nwlink.com/~donclark/hrd/history/kolb.html>
- Dwyer, B. (2001). Successful training strategies for the twenty-first century: Using recent research on learning to enhance training. *The International Journal of Educational Management*, 15, 312-318. Retrieved October 28, 2004, from ABI/Inform Global, ProQuest Psychology Journals database.
- Dwyer, B. M. (2002, November). Training strategies for the twenty-first century: Using recent research on learning to enhance training. *Innovations in Education & Teaching International*, 39, 265-270. Retrieved October 27, 2004, from Academic Search Premier database.
- Gardner, H. (1999). *Intelligence reframed*. New York: Basic Books.
- Hunt, N. P. (1998). *Designing instruction for the web: Incorporating new conceptions of the learning process*. Retrieved March 6, 2005, from <http://www.eric.ed.gov> (ERIC Document: ED428673).

- Jensen, E. (n. d.). *Brain-based learning: Truth or deception*. Retrieved October 13, 2001, from <http://www.jlcbrain.com/truth.html>
- Jensen, E. (2000). *Brain-based learning: The new science of teaching and training* (Revised ed.). San Diego, CA: The Brain Store.
- Lamb, A. (2001). *Technology and multiple intelligences*. Retrieved November 22, 2002, from <http://www.eduscapes.com/tap/topic68.html>
- Merriam, S. B., & Caffarella, R. (1999). *Learning in adulthood: A comprehensive guide* (2nd ed.). San Francisco: Jossey-Bass Publishers.
- National Research Council (2000). *How people learn: Brain, mind, experience, school* (Expanded ed.). Washington, DC: National Academy Press.
- Nielsen, J. (2000). *Designing web usability*. Indianapolis, IN: New Riders Publishing
- Osciak, S. Y., & Milheim, W. D. (2001). Multiple intelligences and the design of web-based instruction. *International Journal of Instructional Media*, 28, 355-361. Retrieved December 5, 2002, from Academic Search Premier database.
- Routledge, C. (1999a). Brains, learners and trainers. Part 1 – the structure and processes of the human brain. *Training & Management Development Methods*, 13, 701-713. Retrieved October 28, 2004, from ABI/Inform Global, ProQuest Psychology Journals database.
- Routledge, C. (1999b). Brains, learners and trainers. Part 2 – learners. *Training & Management Development Methods*, 13, 741-758. Retrieved October 28, 2004, from ABI/Inform Global, ProQuest Psychology Journals database.
- Scott, R. (2002). *Using multiple intelligences as an instructional or assessment tool*. Retrieved December 7, 2002, from <http://www.ehhs.cmich.edu/~rmscott/241MI.html>
- Smith, M. K. (2001). David A. Kolb on experiential learning. *The encyclopedia of informal education*, Retrieved October 18, 2004 from <http://www.infed.org/b-explrn.htm>.
- Smith, P. J. (2001). Using learner preferences to assist in training design. *Training & Management Development Methods*, 15, 713-722. Retrieved October 28, 2004, from ABI/Inform Global, ProQuest Psychology Journals database.
- Valiant, B. (1996). *Turn on the lights! Using what we know about the brain and learning to design learning environments*. Retrieved March 6, 2005 from <http://www.eric.ed.gov> (ERIC Document: ED 460568).

QUESTION 4

Evaluate the strengths and weaknesses of online assessment procedures with regard to: privacy (confidentiality and security), fairness, copyright, freedom of speech, and effectiveness.

Introduction

Assessment and evaluation are terms that are often used interchangeably. In this paper, assessment measures the progress toward a goal (achievement), and evaluation is used to make judgments about assessment information (Simonson, Smaldino, Albright, & Zvacek, 2000). The purpose of assessment is two-fold: "to determine level of competence and to compare or rank learners' abilities" (Smith & Ragan, 1999, p. 93). Determining the level of competence is done by comparing a learner's performance to an absolute standard with no regard for others' scores. This is called criterion-referenced assessment. Ranking and comparing learners against each other is called norm-referenced assessment (Worthen, White, Fan, & Sudweeks, 1999, p. 64). Online or not, the assessment purposes remain the same.

The assessment must be valid, reliable, and practical (Smith & Ragan, 1999, p. 98). Online assessments can be formative or summative, and in fact, ongoing assessment may actually be more of a requirement in an e-learning environment as a support function to the learners since they do not get the face-to-face feedback as learners in a traditional classroom would. "Since e-learning is such a complex process, students will benefit from incremental support through assignments which encourage them to build their skills gradually, and provide feedback on their efforts" (Macdonald, 2004, p. 225). On line assessments should meet the same standards of any other assessment in terms of fairness, effectiveness, and confidentiality.

Effective and Fair Online Assessment

Assessment is necessary to measure outcomes and can also serve as a measure of accountability when it is used in the evaluation process. If the learners are successful meeting the learning goals, they should do well on the assessment. Because the course or training program is often judged on the results of assessments, they should be valid, reliable, effective, and fair. With an increase in online learning, using technology to deliver assessments is a must. Technology can provide some innovative ways to deliver online assessment by possibly including video or audio files, animated graphics, and linking to locations outside of the actual test document if necessary. Technology gives students and instructors new ways to create and track progress in electronic journals or with online projects.

Effectiveness

Alternative assessments, such as portfolios or other projects, can offer side benefits besides just learning content. For instance, portfolios are based on the premise that the students can evaluate their own learning when they choose what to emphasize and include as part of the assessment. Since there are no right or wrong answers, the learners have more control over their own learning, and the classroom really is more learner-centered (National Capital Language Resource Center, 2004, para. 3). The learners can concentrate on what is relevant for them, which is a large part of transferring the learning back to the job or daily life. Alternative assessments are also generally more complex and require the learner to use higher order and critical thinking. Alternative assessments like portfolios, papers, or projects will aid the student

in communicating in a written form. This is particularly true of the assessments at Capella University, where the learners are assessed on discussion responses as well as papers and projects.

A side benefit to online assessments may be that the learners will likely learn how to use software programs to work online. As long as the instructor separates the software learning from the content, and perhaps recognizes that the content may not be as thorough at first while the learner negotiates the technical learning curve, the student not only learns the content of the course, but gains some skill with software as well (Macdonald, 2004, p. 222). This makes an online learning and assessment experience effective and efficient.

Ricketts and Wilks (2002) suggest that although the online assessments provide some benefits, thought needs to go into the presentation in addition to the content, because the actual formatting of the test can affect student performance. "In particular, we suggest that the mode of presentation of assessments can significantly influence student performance, and that appropriate screen design is perhaps the most important factor in online assessment" (p.478). While the screen design of the test may not be the most important factor, as Ricketts and Wilks suggest, there is no argument that the interface design of any online component is important. Colors, graphics, font size, and organization are of vital importance in the simplest personal website. Effective online assessments will require superior interface designs as well.

Fairness

While fairness is usually perceptual in nature, when used in conjunction with online learning and assessment, it encompasses access (to information and technology) and the

cultural/academic environment. Access to the right technology is paramount. The computers that the students use need to meet minimum requirements for speed, memory, and software packages. Limited access or inadequate technology will negatively affect the learner's performance.

The environment within which the learners and instructors operate can affect the learners' performance by influencing the perception of fairness (or lack of fairness). The institution's view of distance learning and distance learners affects how fairly the instructors, administrators and support services treat online learners. When these learners are treated with less respect than the on-campus students, chances are their performances will suffer in comparison. For example, this author was recently made aware that some faculty do treat distance learners differently than their on-campus students. A nursing school in northern Minnesota offers both on-campus and distance programs. The final assessments, given before graduation, are held on-campus and all the students are required to travel to the school to take the tests. When the tests were completed and the results distributed, over half of the distance learners had failed. The on-campus student failure rate was much lower at roughly two percent. The distance learners found out that the instructor for the majority of their classes had supplied the on-campus students with extra study guides. The study guides had purposely been withheld from the distance students because the instructor wanted to prove that the online courses did not work as well as the traditional ones (S. Hubbard, personal communication, May 2, 2005).

If the administration and instructors have a less positive view of online learning (and assessment), then decisions affecting the program may be less than favorable. Ultimately, the appropriate technology and services may not be offered or funded, which means that the overall learning experience of the distance learners is lessened. For instance, distance learners possibly

need more, not less contact with services and administration (Bothel, 2001). Since most of a distance learner's contact with technical support, financial aid, the registrar, and even their advisor is over the phone or e-mail, they need to feel valued, possibly without ever meeting other learners or instructors face-to-face.

The instructors in a distance learning program also need to be valued and appreciated for their efforts, which may be considerable in launching a new distance course, or revamping one. The time they take to work on the class materials is often time away from research projects, and could ultimately hurt their chances for tenure. Administrators need to create an environment that supports the efforts of both instructors and learners involved in distance learning in order to increase the perception that all aspects (including assessment) of the program are fair. This may include compensating the instructors monetarily or accepting the time and effort applied to distance learning tasks as part of tenure requirements. The faculty can also be supported by being allowed to develop the skills necessary to teach in a distance learning program and having the technology and technical support to do so.

Administrators and faculty will both have to provide superior customer service to the learners, in order to compensate for the lack of face-to-face interaction. Speedy responses to emails or phone calls should be a top priority. Easy access to technical and administrative support, and easy-to-find contact information for instructors, advisors, and administration is paramount. When the students feel valued, their perceptions will be more positively slanted.

Standardized tests are another issue related to the issue of fair assessments. Fair Test Computerized Testing (n. d.) states several concerns with standardized tests in general, and computerized tests in particular (paras. 4-12). Computerized tests will obviously favor those who

use computers more, so those without access to them are at a disadvantage. Considering that those without regular access to computers are probably already minority students or in lower economic brackets, the gap between the haves and the have-nots might significantly affect the test results. In addition, computerized tests are more expensive than paper and pencil tests, so even fewer lower income students have access to computerized tests like the Graduate Record Exam (GRE) because it costs more to take it. Computerized tests favor those who can manipulate keys or a mouse better, so disabled students are at a disadvantage. Instead of opening opportunities up to more people with computerized tests, Fair Test proposes that it does just the opposite, and that, "unfortunately, simply automating bad tests does nothing to solve their long-standing problems and may actually compound them" (Fair Test Computerized Testing, para. 1).

Strengths with regard to effectiveness and fairness.

Some specific strengths of online assessment that increase their effectiveness and fairness have been cataloged by Wall (2000) in describing the characteristics that make online assessment a "diamond or a rock....Under the right conditions and with proper use, a marriage of technology and assessment can shine like a diamond. Used without proper care or forethought, however, it can be a rock" (para. 2). The "diamonds of assessment" (Wall, paras. 4-9) include:

1. Accessibility – Learners can have access to information that they may not have had before.
2. Immediate Feedback – The potential for immediate feedback and scoring is a key advantage of technology-delivered assessment. It can be a significant motivator

because the learner can find out their status quickly and use the information to make decisions or take action.

3. More Efficient Testing – The use of computer-adaptive testing, as opposed to computer-administered testing, allows people to take tests that are targeted more accurately to their ability levels.
4. Judging Portfolio Information – Portfolios become portable with the ability to put them on a floppy disc or CD or transfer them electronically.
5. Ability to Assess Higher Order Skills – Test developers can use techniques to create situations that are difficult or impractical to construct in regular paper/pencil assessments. Technology allows the creation of simulations or more real-world situations.
6. Helping Persons With Disabilities – Assistive technologies can help not only in assessments, but also with giving people with disabilities access to information and testing opportunities that were not available before.

Some of the characteristics that make online assessments more effective also increase their fairness (or their perceived fairness). Greater accessibility and assistive technologies increase the perceived fairness of online assessments by making them available to a wider audience than more traditional assessments. Immediate feedback and targeted testing also add to the learners' sense of fairness by showing how well they are performing and allowing their abilities to be more accurately assessed.

Weakness with regard to effectiveness and fairness.

Wall (2000, paras.13-20) highlights some of the potential problems with technology and assessments. The design of an online assessment can be a major weakness if the learner has to spend an inappropriate amount of time navigating from page to page or trying to read the questions. Lack of accessibility is an important concern because access to computers and the Internet is highly dependent upon income, racial or ethnic groups, and where the student lives. Higher income students in an urban setting have more access to technology and high speed Internet connections than their rural counterparts. Security and privacy are also concerns. The test taker's identity must be assured, and the confidentiality of the results and other private information must be assured.

The decision to move toward online assessment must be made carefully. An effective online assessment incorporates all the requirements of a more traditional type of assessment as well as the additional considerations involving technology, accessibility, security and a user-friendly interface. The environment within which online learners operate can also be a weakness if the institution cannot or will not take into consideration the sense of isolation and the need for additional service to its online learners. If the instructors or administrators do not support the online programs or assessments, it is likely that the students will be aware that their participation is valued less than that of their on-campus counterparts and their perception of fairness will decrease.

Copyright, Privacy, and Freedom of Speech

Cyberspace and technology offer a unique set of circumstances that are changing the way people work, learn, shop, and spend their free time. As people and society become more dependent on technology and information, and citizenship is defined by social security or

account numbers, the need to protect privacy and personal freedom becomes more and more evident (Rogerson & Bynum 1995, para. 4).

The information revolution has become a tidal wave that threatens to engulf and change all that humans value. Governments, organisations and individual citizens therefore would make a grave mistake if they view the computer revolution as "merely technological." It is fundamentally social and ethical. (Rogerson & Bynum, para. 2)

Because cyberspace is so new and different, governments are unsure of their exact role and boundaries. "For now...cyberspace is a chaotic wild west frontier full of highway bandits and subject to only the roughest kind of vigilante justice" (Spar & Bussgang as cited by Harshman, Fisher, Gilliespie, & Yeager, 1998, para 5). The government must balance personal privacy with security, and legislation to do so will take time. This means that it is up to the users and citizens of cyberspace to regulate themselves.

The Electronic Frontier Foundation (EFF) is an advocacy group dedicated to fighting "measures that threaten basic human rights" (Electronic Freedom Frontier Home Page, n. d.). The EFF not only keeps track of different legal issues, but also encourages self-regulation among Internet users. The blue ribbon campaign asked web sites to support free speech but also to provide warnings about the content of their site. Their thinking on this was to regulate themselves voluntarily so the government would not do it for them. Now though, since September 11, 2001, the government wants more access to things that citizens would rather keep private. Laws might not even be needed to directly monitor Internet users. The government can regulate Internet Service Providers (ISPs) so that they have to monitor their customers. Groups like the EFF and others advocate for the highest ethical standards to be applied to cyberspace; it

is too easy to move from freedom to control and not even notice it. "Moral values must be the ultimate regulator for cyberspace, not the code of engineers" (Spinello, 2000, p. 42).

The biggest issues in cyberspace put the need for control and authority on one end of the spectrum and basic human rights on the other. The right to privacy is offset by the need to find criminals and criminal activity. The right to free speech means that everyone has the right to voice their opinions, even if others find them offensive. The need to protect intellectual property is tempered by the desire and need to disseminate information. The imperative to provide access to everyone, no matter physical disabilities or socio-economic status, is prohibited by the cost of the technology to do so. All of these issues affect online activities including assessment. In fact, given the latest trend of high-stakes testing, access, privacy, and confidentiality may become even bigger issues as more emphasis is put on the results of such tests. With school funding, college placement, and hiring and promotions relying more and more on these standardized tests, and with more of them turning to computerized versions, access, privacy, and fairness will definitely become bigger issues, not smaller.

Copyrights

Web-based training and online education have blurred copyright issues. Because of the ease of digital transfers, there is often no physical copy of a piece of music or a story and since copyrights were created to protect printed material, it is difficult to adapt the laws to electronic media. With so much misinformation around about copyrights, perhaps it is prudent to see exactly how the United States Copyright Office (2005) defines copyright.

Copyright is a form of protection provided by the laws of the United States (title 17, U.S. Code) to the authors of “original works of authorship,” including literary, dramatic, musical, artistic, and certain other intellectual works. This protection is available to both published and unpublished works. Section 106 of the 1976 Copyright Act generally gives the owner of copyright the exclusive right to do and to authorize others to do the following:

1. To reproduce the work in copies or phonorecords;
2. To prepare derivative works based upon the work;
3. To distribute copies or phonorecords of the work to the public by sale or other transfer of ownership, or by rental, lease, or lending;
4. To perform the work publicly, in the case of literary, musical, dramatic, and choreographic works, pantomimes, and motion pictures and other audiovisual works;
5. To display the copyrighted work publicly, in the case of literary, musical, dramatic, and choreographic works, pantomimes, and pictorial, graphic, or sculptural works, including the individual images of a motion picture or other audiovisual work; and
6. In the case of sound recordings, to perform the work publicly by means of a digital audio transmission.

If controls and copyrights are too strict, then the freedom of speech and the free flow of ideas stop. Since the freedom of speech and ideas are rights that provided the framework for the nation, copyrights have become and will continue to be a problem that will likely have to be worked out in the courts. "As Justice Sandra Day O'Conner pointed out...the purpose of

copyright is not to reward the labor of authors, but to promote the Progress of Science and useful Arts....through the creation and free exchange of ideas..." (Copyright Website, n. d.). The framers of the United States Constitution created a balancing act between the commercial needs of artists, writers and copyright owners and society's need for the free exchange of those ideas. "The Fair Use provision of the Copyright Act basically allows reproduction and other uses of copyrighted works under certain conditions for purposes such as criticism, comment, news reporting, teaching, scholarship or research" (Copyright Website).

Of course, educational institutions have special exemptions because they are educational. These exemptions are covered under the Fair Use Provision. Although there is room for interpretation, the basics behind fair use are: the item must be used for nonprofit educational purposes rather than commercial use; the amount of the item used is limited; the effect the item's use has on the potential market value of the copyrighted work; and the nature of the copyrighted work (United States Copyright Office). The line between infringement and fair use is not clearly defined. For one thing, the amount of material that it is acceptable to use is not specified. Also, merely acknowledging that the material is copyrighted does not substitute actually obtaining permission.

With the advent of the technological revolution and the Internet, artists and authors were concerned that the copyright laws and the Fair Use Provision were too lenient, and if their works could not be protected, soon the free exchange of ideas would end because the creators of the ideas would have no incentive to keep creating. The government answered with the Digital Millennium Copyright Act of 1998 (DMCA). The DMCA contained anti-circumvention provisions (Copyright Website, n. d.). "...these provisions prohibit the breaking of copyright

protection schemes. While this seems eminently reasonable on its face, upon reflection, one can imagine myriad circumstances when a fair use would require the circumvention of a copyright protection scheme" (Copyright Website). In other words, the DMCA essentially destroys the idea and application of fair use. To preserve fair use, the authors of the law added language that made the act of gaining unauthorized access prohibited. Unauthorized copying of a work is not prohibited. The DMCA also prohibits the "sale or distribution of technology that would enable either the unauthorized access to a work or the unauthorized copying of a work" (Copyright Website). In essence, as long as you can hack your way into a site or database and copy the work, there has been no law broken because the DMCA does not prohibit the circumvention of a "technological counter measure that prevents copying" (Copyright Website). Only the sale of technology to gain access is prohibited, so if you do not sell or buy the technology, you have not broken the law if you hack in and copy the protected work. The end result of the DMCA was to restrict the free flow of ideas in order to preserve the commercial interests of copyright owners. The general public has made its views on copyright very clear. "In particular, the tens of millions of users of Napster and other sharing protocols have made it clear that they do not intend to respect copyright in the digital age" (Coyle, 2002, para. 8). By ignoring the public and using only their own interpretations of the law along with a few comments they received, the Copyright Office exacerbated the problem. Finding an acceptable middle ground will undoubtedly keep the courts and policy makers busy for years.

Copyright law affects assessment indirectly, but restricting the flow of information and ideas, and limiting fair use will make it much more difficult for educators and educational institutions to find and use research of any kind. Already libraries are shifting their

understanding of "collection development from an ownership model to an access model." (Russell, 2001, para. 11). Instead of keeping hard copies of journals and periodicals, now they pay a subscription fee to electronic databases. If the library fails to pay the subscription price, they lose all access to the database and the information it contains.

A more direct effect of copyright on assessment is part of copyright law from the United States Copyright Office. Under the heading of 'who can claim copyright,' the listing includes the author and "those deriving their rights through the author" (U. S. Copyright Office, 2005). A publisher, to whom the author assigns a copyright, would be someone who derives their rights through the author. Employees or those contracted to author something for a business are excluded from claiming a copyright. In cases where the business or contracting person is the copyright owner, the actual author has no claim to the product.

The works made for hire include instructional texts, tests and answer material for a test. This creates conflict potential for instructors and institutions when it comes to ownership of any online (or offline) course material such as lectures or assessments. McAlister, Rivera, and Hallam (2001) suggest being proactive and settling the intellectual property issues before committing to anything (para. 12). One solution is for the instructor to develop the online course, and get compensated. The course then becomes the property of the institution. If the institution does not have a procedure in place for getting permission to use copyrighted material from other sources, they should implement a procedure to do so.

Privacy (Confidentiality and Security) And Freedom of Speech

The rights to privacy and free speech are also issues that must be considered during the assessment process. These rights come from an ethical rights based theory called

contractarianism or contractualism. "It looks at moral issues from the viewpoint of the human rights that may be at stake. A right is simply an entitlement or claim to something" (Spinello, p. 11). Rights can be positive or negative. Positive rights means that "the holder of this right be provided with whatever one needs to pursue one's legitimate interests" (Spinello, p. 12). A negative right, then, "implies that one is free from external interference in one's affairs" (Spinello, p. 11). A positive right in the United States is an education (at least elementary and secondary). Negative rights include the right to free speech and privacy. Privacy has three facets: physical, communication, and information. In other words, people are entitled to physical privacy, privacy in their communications, and the right to keep personal information private (Gotterbarn, 1999, p. 147).

The Internet has had an impact on all three forms of privacy. A few clicks and a physical address and map can be found. Web sites can plant cookies on personal computers and track Internet surfing and shopping patterns. Certainly privacy was being compromised before the rise of the Internet, but now, the scale of information gathering has increased enormously, and the kind of information gathered has been changed. Instead of just gathering personal historical information, detailed information of work productivity can be collected (Gotterbarn, 1999, p. 148). While some of this is a benefit, the fast exchange of information presently can be used negatively as well. On the one hand, quick reporting of credit card abuse will make fraud show up sooner, but on the other, the Internal Revenue Service can look at magazine subscriptions to estimate income (Gotterbarn, p. 148).

Solutions to protecting informational privacy online fall into three categories. "Technological approaches...protect through public-key encryption, and software that blocks

cookies..." (Michelfelder, 2001, pp. 129-130). Self-regulation and legislative solutions are the other two main methods of protection. The right to privacy is guaranteed by the Fourth Amendment and has been expanded upon by different agencies like the Federal Trade Commission. The FTC has "argued for federal legislation mandating the application to commercial web sites of the four principles of fair information practice" (Michelfelder, 2001, p. 131).

1. Notice – requires the commercial web site to let their visitors know what personal information is being gathered, as well as how it is being gathered.
2. Choice – involves letting online consumers decide if the information they knowingly provide to a web site for a particular purpose can then be used by that site for other reasons.
3. Access – gives consumers the ability to examine the data collected about them by a site and make corrections, if necessary.
4. Security – Web sites need to protect the personal information they collect from falling into the hands of unauthorized others.

Technological solutions for guarding privacy include privacy-enhancing technologies (PETs) like Anonymizer, which is a tool bar that installs on a browser and can be used to travel the Internet without giving up the user's identity (Tavani, 2000, para. 3). The use of PETs brings the conflict between privacy and national security into clear focus. Although the technology can guard a user's privacy, the same technology can seriously hamper attempts by law enforcement officials to track illegal activities, with terrorist operations being the most notable. The need here is for balance between the rights of the individual and the larger social good (Tavani, para. 22).

Conflict and balance are the key words when discussing the right to privacy. The right to privacy is often in conflict with other basic rights; the most serious one is between privacy and free speech (Spinello, 2000, p. 104). Free speech advocates call privacy regulations a form of censorship because they interfere with an organization's ability to collect and send out information. Thus, more stringent privacy laws would have a negative side effect on access to information.

In an educational setting, privacy violations may occur without anyone even being aware of them. For example, an instructor asks students to keep an online journal. Though it seems beneficial to help them develop writing skills (among others), any writing prompts that are given to the students must not require the students to reveal personal information like parents' income or their opinion on religion. Online discussion boards offer another place where privacy might be unintentionally violated. Learners may not know that the board is being monitored, or that their conversations on the board could be made public. Participants may also feel somewhat anonymous and/or invulnerable due to the non face-to-face nature of discussion, and use this to harass other learners (Brem, 2002, para. 2).

Other confidentiality issues that must be dealt with in online learning or assessment situations include safeguarding assessment results, establishing the identity of the learner, and, if needed, finding ways to recognize plagiarism. Formative assessments and final projects, like Capella University uses, are good ways to cut down on having imposters take the final tests. The learner has an established writing pattern and style, which should be recognizable in the final paper or project. Tying a final project or assessment to the learners' job or profession is another way to cut down the chances that they will plagiarize. If online tests are required, there are

technical ways to check the learner's identity. Internet protocol (IP) numbers can be traced and cataloged, each computer on the Internet has a unique number, so a sudden change in it could signify a different person is logged on for that learner. At some point, retinal scanning or fingerprinting may be possible, even from a home computer. Safeguarding the results of assessments and other personal information is of utmost concern in order to ensure the learners' trust in the system and technology. Learners and organizations will all have to use firewalls and other security measures to protect themselves and their information. This author has gone from a simple dial up connection to a broadband, always-on Internet connection and from no security to using a router, firewall, anti-virus software, anti-spyware programs, and an anonymous service to have a secure presence online. In just a matter of a year or two, these measures have gone from an over-reaction to the common sense thing to do.

The Internet gives just about anyone a forum to express an opinion. This right of free speech is guaranteed by the First Amendment, and it is the area of greatest conflict with privacy. "Human rights such as free speech have taken a place of special prominence...these basic rights now collide with the state's inclination to reign in this revolutionary power enjoyed by Internet users" (Spinello, p. 45).

Free speech has conflicts with privacy because regulating privacy stops the free flow of information, intellectual property because stringent copyright or trademark laws slows down or stops the creative process, and security because if criminal conversations and activities are not monitored, someone could get hurt. "In addition, speech is at the root of most other major ethical and public policy problems in cyberspace, including privacy, intellectual property, and security" (Spinello, p. 45). The right to free speech probably does not affect online assessment

directly, but it could certainly influence a learner's participation in a course room, or the view they take on a paper or project. If they feel that their views have been or will be censored, they may change the substance of a response or paper. If the responses to discussions are part of the formative assessment process, then that could even directly affect that learner's grades. The loss of free speech may also inhibit finding information on certain topics if people cannot publish it on the Internet without fear of censure.

Impact on online assessment.

At the heart of the debate over copyrights is the issue of control. Too much government control and basic human rights are violated and eliminated. Too little government control, and the unwillingness by the participants to self-govern, and there is anarchy. Copyright, privacy, and freedom of speech, as applied to online assessment, are also a matter of balance. There must be enough freedom and access to make information available, but not so much that people are discouraged from creating and sharing their work.

Knowledge and awareness on behalf of the learners and instructors will advance the creation of a workable balance between accessibility and protection. Organizational policies regarding copyright, freedom of speech and privacy issues should be easy to access and clearly defined. Instructors and learners should be aware of the limits of fair use for copyright purposes. Learners need to know if discussion boards are monitored, or if their discussions could be made public. Instructors and learners should know what happens to their work once it is submitted, i.e., where papers and/or portfolios or projects are distributed (if at all) and who has access to them.

Conclusion

Online assessment procedures present designers and instructors with challenges not present with traditional assessment. The design of an online assessment requires the learners to develop skills navigating online as well as using software just to take the test. This is beyond knowing the content on the exam itself. Instructors need to develop their skills as well, in order to design the assessment with an easily navigable interface. Not only must the online assessment be user-friendly, but it also has to meet the same validity and reliability criteria of a traditional assessment.

An effective online assessment is valid, reliable, and fair. Even though fairness is a perceived characteristic, there are ways to increase a learner's perception that an online assessment is fair. Administrators and instructors are instrumental in creating an environment to support distance learners in their learning and assessment experiences online. The more supportive the environment, the more the learners feel valued, and their perception of fairness will increase.

Online assessments have strengths and weaknesses in regards to fairness and effectiveness that appear as dichotomies. One of strengths is more accessibility, meaning that online assessments and education are more readily available to those who are unable to attend traditional classes. At the same time, one of the weaknesses of online assessments is the lack of accessibility, meaning that people in certain socio-economic groups are unable to get computer and Internet access. Another strength is the ability of an instructor in designing targeted assessments, meant to individualize the process. At the same time, a weakness of online activities is the isolation of the learner.

Privacy, freedom of speech, and copyright protection are often at opposite ends of the spectrum, in regards to online assessments. If information is over-protected, then its availability and utility is reduced. If information is under-protected, then there is a reluctance to make it available. Privacy conflicts with security, since the need to verify a learner's identity and other information means that the learner must be willing to supply that information, and trust that it will be used only for the purposes specified.

Developing online assessment procedures that are effective, fair, protected, and accessible requires the designer to perform a balancing act in order to maximize the strengths and minimize the weaknesses of online learning environments.

References

- Bothel, R. (2001, Spring). Bringing it all together. *Online Journal of Distance Learning Administration, IV*. Retrieved December 15, 2002, from <http://www.westga.edu/~distance/ojdla/spring41/bothel41.html>
- Brem, S. K. (2002). *Some ethical considerations and resources for analyzing online discussions*. College Park, MD: ERIC Clearinghouse on Assessment and Evaluation (ERIC Document ED: 470201).
- Copyright Website (n. d.). Retrieved February 20, 2005, from <http://www.benedict.com/Default.aspx>
- Coyle, K. (2002, Summer). What the copyright office got wrong. [Electronic Version]. *The CPSR Journal, 20*. Retrieved December 13, 2002, from <http://www.cpsr.org/publications/newletters/issues/2002/Summer/coyle.html>
- Electronic Frontier Foundation Home Page (n. d.). Accessed February 20, 2005 from <http://www.eff.org/>
- Fair Test Computerized Testing (n.d.). Accessed March 7, 2005, <http://www.fairtest.org/facts/computer.htm>
- Gotterbarn, P. (1999). Privacy lost: The net, autonomous agents, and virtual information. *Ethics and Information Technology, 1*, 147-154. Retrieved October 27, 2004, ABI/Inform Global, ProQuest Psychology Journals database.
- Harshman, E., Fisher, J., Gilliespie, J., & Yeager, F. (1998, Fall/Winter). Gated communities in cyberspace. [Electronic Version] *Issues in Ethics, 9*. Retrieved December 15, 2002, from <http://www.scu.edu/ethics/publications/iie/v9n3/gated.html>
- Kuther, T. L. (2003, Fall). A profile of the ethical professor. *College Teaching, 51*, 153-160. Retrieved October 20, 2004, from Academic Search Premier database.
- McAlister, M., Rivera, J., & Hallam, S. (2001, Summer). Twelve important questions to answer before you offer a web based curriculum. [Electronic Version] *Online Journal of Distance Learning Administration, IV*. Retrieved November 20, 2002, from <http://www.westga.edu/~distance/ojdla/summer42/mcalister42.html>

- Macdonald, J. (2004, April). Developing competent e-learners: the role of assessment. *Assessment & Evaluation in Higher Education*, 2, 215-226. Retrieved October 20, 2004, from the Academic Search Premier database.
- Michelfelder, D. P. (2001). The moral value of informational privacy in cyberspace. *Ethics and Information Technology*, 3, 129-135. Retrieved October 27, 2004, ABI/Inform Global, ProQuest Psychology Journals database.
- National Capital Language Resource Center (2004). *The essentials of language teaching: Assessing learning: Alternative assessment*. Retrieved March 7, 2005, from <http://www.nclrc.org/essentials/assessing/alternative.htm>
- Ricketts, C., & Wilks, S. J. (2002, September). Improving student performance through computer-based assessment: insights from recent research. *Assessment & Evaluation in Higher Education*, 27, 574-479. Retrieved October 20, 2004, from the Academic Search Premier database.
- Rogerson, S. & Bynum, T. W. (1995). *Cyberspace: The ethical frontier*. Retrieved December 15, 2002, from <http://www.ccsr.cse.dmu.ac.uk/resources/professionalism/develop/theart.html>
- Russell, C. (2001). *Libraries in today's digital age: The copyright controversy*. Syracuse, NY: ERIC Clearinghouse on Information and Technology (ERIC Document: ED456862).
- Simonson, M., Smaldino, S., Albright, M. & Zvacek, S. (2000). *Teaching and learning at a distance: Foundations of distance education*. Upper Saddle River, NJ: Prentice-Hall.
- Smith, P., & Ragan, T. (1999). *Instructional design* (2nd ed.). New York: John Wiley & Sons.
- Spinello, R. A. (2000). *Cyberethics: Morality and law in cyberspace*. London: Jones and Bartlett Publishers.
- Tavani, H. T. (2000, Spring). PETs, e-commerce, and ethics. [Electronic Version] *The CPSR Journal*, 18. Retrieved December 13, 2002, from <http://www.cpsr.org/publications/newletters/issues/2000/Spring2000/tavani.html>
- United States Copyright Office (2005, Revised). Retrieved February 20, 2005 from <http://www.copyright.gov>
- Wall, J.E. (2000). *Technology-delivered assessment: Diamonds or rocks?* Greensboro, NC: Clearinghouse on Counseling and Student Services (ERIC Document: ED446325).

Worthen, B. R., White, K. R., Fan, X., & Sudweeks, R. R. (1999). *Measurement and assessment in schools* (2nd ed.). New York: Addison Wesley Longman, Inc.

QUESTION 5

Discuss the phases of the instructional design process that are most relevant for learning transfer and retention and recommend ways to overcome the barriers to successful learning transfer and retention. Develop a reference guide that specifies which phase(s) of the Instructional Design process are most relevant to learning transfer and retention.

The Importance of Learning Transfer and Retention

Globalization and the fast pace of the world have created a need for all organizations to become lean, responsive, and innovative. No longer is it enough to have information. That information must be acted upon and used in order for it to do any good. Once that happens, it is no longer just information, it is knowledge. "Information is about meaning, and it forms the basis for knowledge. Yet knowledge goes one step further: It encompasses the beliefs of groups or individuals, and it is intimately tied to action" (Von Krogh, Ichijo, & Nonaka, 2000, p. 27). Knowledge is the real power and putting it to work in the organization is the final objective. Now organizations must go beyond Senge's (1990) learning organization, but they have to use what they learn. "...knowledge is not just having information, it is using information—to solve problems, to create solutions and strategies, to learn from experiences" (Wonacott, 2002, para. 7). The learning has to be transferred to the job in order to leverage the knowledge and make the organization competitive in the global market.

Thompson, Brooks, and Lizarraga (2003) show one way that knowledge is being put to work: by making sure that the learning is transferred from training to be put to use on the job. A large amount of money is spent each year on training and performance interventions (p. 540). Companies want a return on their training investment. "An important trend of increased accountability for training results made the measurement of return on investment (ROI) a routine part of evaluation processes in many organizations" (Phillips, 1991, p. 162). Training and

performance improvement specialists are being held accountable; so their emphasis is no longer on the amount of training programs they run, but rather the direct impact of the programs on the organization's strategic goals. "Training and development is closely linked to the strategic direction of the organization" (Phillips, 1999, p. 12).

Clark (1999, pp. 1-2) cites Drucker as he emphasizes the need to recognize that knowledge is an asset. "How well...an organization...does in acquiring and applying knowledge will become the key competitive factor. The knowledge society will inevitably become far more competitive than any society we have yet known."

Learning transfer involves the "application, generalizability, and maintenance of new knowledge and skills" (Ford and Weissbein as cited by Bates, Holton, Seyler, & Carvalho, 2000, p. 20). Without learning transfer, training is ineffective. Designing training to facilitate transfer and retention requires knowing how people learn and how memory works. Once instructional designers know how information moves through a learner's memory, they can develop effective instructional strategies that support learning and transfer of that learning back to the job.

How Memory Works

People have three types of memory systems in which information is processed: sensory, working, and long-term. Each of them operates differently and fills a different purpose. Clark (1999, p. 13) characterizes sensory memory with the following features: Visual and phonetic data are stored in literal format (they are untransformed), last only briefly (they are volatile), and the capacity for storage is quite large. The working memory (WM) is where information is processed. The data is volatile unless it is rehearsed, and the capacity of the working memory is limited. The long-term memory (LTM) is where information is stored in a form called schema.

The information takes two forms: declarative – information about things and procedural – information how to do things. The capacity of the LTM is large, and storage is relatively permanent, although retrieving the information is a challenge. The flow of information begins with the sensory memory where a portion of the untransformed data is selected to go to the working memory for encoding. If the encoded data is not rehearsed, it is lost. If it is rehearsed effectively, it is encoded into schemata into long-term memory. If the data is to be used, it must be retrieved from the LTM and brought back into the working memory. LTM is only for storage, not processing. The WM is where it has to be processed. If retrieval does not occur back on the job or away from the training, the result is transfer failure (Clark, pp. 13-14)

Building Expertise

The real point behind having and using all this knowledge on an individual and organizational basis is to assemble a pool of expertise in the organization. Clark (p.17) relates the importance of building expertise. "Supporting expert-like behavior in the organization is critical to the competitive edge of the knowledge economy." Naturally, training, instructional design, and performance improvement are logical places to look as the organization attempts to begin building the expertise of its employees. Some issues that should be addressed when working toward building expertise: (Clark, 1999, p. 2)

1. How do people get to be experts?
2. How do experts and novices differ in the way they process information?
3. Why do experts have built-in barriers when they serve as trainers?
4. How can the process of building expertise in the worker be accelerated?

To answer these questions, instructional designers (and/or trainers/performance improvement specialists) must learn how people learn so the learner can transfer it back to the job. "Training will do little to increase performance or meet organizational goals unless what is learned is transferred into on-the-job performance" (Bates, Holton, Seyler, & Carvalho, 2000, p. 19).

It is probably human nature to want one best method to design instruction to facilitate transfer. No universal instructional method will work, however, because instruction has different purposes and goals. Instructional designers should take into account the "...type of final performance desired: Near or far transfer; the background of the learner: novice or experienced; and the instructional architecture to use: receptive, directive, guided discovery, or exploratory" (Clark, 1999, pp. 2-3).

Near or far transfer.

Near or far transfer requires different instructional strategies. Near transfer tasks are consistent, routine, and follow a step-by-step procedure that rarely vary. A typical near transfer task might be a telemarketer giving their scripted sales pitch each time they reach a customer. Far transfer tasks require the learner/employee to use judgment. There are usually no step-by-step procedures. "The worker must tailor general guidelines to each unique situation. Sales is a good example. Depending on the product, the customer, and the prior history, the effective sales person uses a different approach each time" (Clark, 1999, p. 3). Near transfer tasks are learned and transferred on the basis of surface features, that is, based on characteristics of the task that are evident to the senses (Clark, p. 89). Far transfer tasks, on the other hand, require schema based on deep structures.

Experts vs. novices.

The learner's prior experience should play a big part in helping the designer decide on an instructional strategy. Often, what works for novices may be detrimental to experts or those with more experience. There are some principles of experts' knowledge that have implications for learning and instruction: (National Research Council, 2000, p. 31)

1. Experts notice features and meaningful patterns of information that are not noticed by novices.
2. Experts have acquired a great deal of content knowledge that is organized in ways that reflect a deep understanding of their subject matter.
3. Experts' knowledge cannot be reduced to sets of isolated facts or propositions, but instead, reflects contexts of applicability: that is, the knowledge is "conditionalized" on a set of circumstances.
4. Experts are able to flexibly retrieve important aspects of their knowledge with little additional effort.
5. Though experts know their disciplines thoroughly, this does not guarantee that they are able to teach others.
6. Experts have varying levels of flexibility in their approach to new situations.

The meaningful patterns and the way experts organize their knowledge is what Clark calls 'chunking.' It makes retrieval easier and allows an expert to apply the chunks of knowledge to different circumstances at different times. Some experts are unable to teach because although they know the material, they cannot approach the subject as a novice and so tend to overload and frustrate novice learners.

Novice learners can be overloaded by too much information, but so can experts. Sometimes, the same strategies that are most effective for novice learners are the ones that overload the experts. Kalyuga and Sweller (2003) demonstrate this principle during their study of measuring learner knowledge level and cognitive load factors. They contend that "textual material initially essential for understanding diagrams may, with increasing levels of knowledge, become redundant" (Kalyuga & Sweller, p. 558). Though the additional textual information is of use by novices in order for them to understand the diagrams, if an expert has to process it, their working memory may become overloaded. To an expert, the textual information is redundant, and provides no new information, but actually becomes an interference because it takes up valuable space in their working memory.

Another difference between novices and experts is the way they categorize or sort items of skills. Novices tend to emphasize surface features where experts sort based on deep structure differences. The main reason there is interest in this is because instructors want to know if learners on one task will transfer the knowledge to another task back on the job. A novice will depend on surface features to have successful transfer. If the tasks appear similar on the surface, the novice will transfer the learning (Clark, 1999, p. 90). If there are no similarities, the novice will likely not attempt transfer. This does not always work though. The tasks may appear similar on the surface, but have deep structure differences that will impede transfer. Transfer will only be successful if the deep structures are similar as well as the surface features.

Instructional architectures.

According to Clark (1999, p. 4) instructional architectures "embody different assumptions about how learning happens, the role of the instructor or instruction, and the final

goal of the instruction." One such architecture, receptive, can be seen in many traditional lecture-based courses or linear computer based training. The learner receives the instruction and has little control over the information's content, sequence, rate of delivery, or level of detail (Clark, p. 4). As a manager in charge of training new technicians in a coal lab, this author used the receptive architecture to train all new employees. The technicians received a procedures manual and had to initial each step as they completed them. There was no deviation in the order of the tasks trained, nor in the amount of information they were given. It was only after they had become more proficient that they were allowed to learn more of the theoretical background of the analysis they performed daily. The receptive architecture is used to inform, is low cost, the design is not complex, and it is appropriate for novices or experts.

The directive architecture is where "the learner responds to instructional stimuli, the goal of which is to build associations that form the basis of skills to be applied on the job" (Clark, 1999, p. 5). This approach is rooted in behaviorism, where the learner responds to stimuli and is rewarded (allowed to continue) or punished (must do that section over, or answer differently). Much of the early computer-based training was directive. Again, the learner has very little control over the information and how it is presented. This approach works best with novices and for near transfer performance. It is of moderate cost and complexity.

Guided discovery applies cognitive theories and scaffolding as a learning architecture. The learner has more control as the instructor becomes more of a coach and facilitator. "The focus is on providing experiences in the form of problems that build expertise that will transfer readily to the job" (Clark, 1999, p. 6). This architecture is high cost and the complexity is appropriate for learners with some experience, and is used for far transfer performance.

The exploratory architecture employs constructivist theories, which means that it is assumed that the learner builds or constructs their own knowledge. "Learners are provided a rich, networked database of information, examples, demonstrations, and exercises. From this database they can select whatever is appropriate to their current needs and mental models" (Clark, 1999, p. 7). This is best used for near or far transfer performance or reference, is of moderate cost and complexity, and is appropriate for those with some experience and good self-regulating (metacognitive) skills (Clark, p. 8). Though it might seem a bit wasteful to use this architecture for near transfer, it works because although the task itself is repetitive, the way the workers learn it can be through constructing their own knowledge of how to do the task.

Factors of learning transfer.

Learning transfer, which is imperative to building expertise, is a function of three sets of factors: "trainee characteristics, training design, and the work environment." (Baldwin & Ford as cited by Bates, Holton, Seyler, & Carvalho, 2000, p. 20). Trainee, or learner characteristics that affect outcomes include ability, motivation, personality, and level of experience. Training design factors that influence learner outcomes include application of learning principles and the job relevance of the learning content. The work environment properties that influence learner outcomes are peer and supervisor support, and barriers or opportunities to perform the newly trained skills (Thompson, Brooks, & Lizarraga, 2003, p. 540). In other words, the effectiveness of instruction depends on "...the type of performance desired, the state of expertise of the learner, and the selection of instructional architectures and methods" (Clark, 1999, p. 17).

Why Learning Transfer Fails

Successful learning is more than passing the after-training exam. Successful learning and performance is "...represented by improved performance of job-related tasks....In fact, some instructional methods that yield good immediate training outcomes do not promote later transfer" (Clark, 1999, p. 83). Although there is no universal prescription for designing instruction so it promotes learning transfer, there are some general reasons that skills fail to transfer (Clark, p. 83):

1. A failure to match job-skill requirements with employee skill needs and to train accordingly.
2. A failure to give employees job assignments and goals relevant to the new skills learned.
3. Feedback and incentives in the workplace unrelated (or even counter) to application of new knowledge and skills.
4. A lack of resources needed to implement new skills.

All too often, training and on the job tasks are compartmentalized, kept separate by employees, their supervisors, and designers and trainers. This type of relationship hinders the transfer of learning significantly. Line managers, supervisors, and peers can be a catalyst for encouraging learning transfer, or a barrier guaranteeing its failure, depending on the feedback they give, or the environment and culture that the employees work in. If the supervisor does not see the need for the new training/skills, they may sabotage the employee's efforts to use the knowledge they just gained. "Evidence...increasingly points to the crucial role that supervisors, managers, peers...and trainers can play in the success or failure of learning transfer. The implication is that

these key players must have a set of transfer related competencies...to maximize learning transfer.." (Bates, Horton III, Seyler, & Carvalho, 2000, p. 36). This means that supervisors and managers need to be taught how to support the transfer of learning from instruction back to the job. They have to be involved not only in being responsible for implementing new training, but it is a good idea to also involve them in deciding what the new training will actually contain. They will need to see the value and relevance in the training as much, or maybe more, than their employees.

Another reason transfer failure occurs is when a learner performs well on a test after receiving instruction, but does not apply that knowledge. This is because the skills and knowledge lie dormant in the long-term memory (LTM). This type of knowledge is called inert knowledge (Clark, 1999, p. 86). Inert knowledge and skills are often part of transfer failure. Classroom instruction often emphasizes declarative knowledge (knowledge about things) as opposed to procedural knowledge (knowledge about how to do things). This can lead to the learner performing well on paper and pencil assessments over the facts, while they fail to transfer the knowledge to the job or activity. An instructional designer can possibly eliminate or reduce transfer failure by incorporating some design treatments and tools into the instruction.

Instructional Design and Effective Learning Transfer and Retention

Nearly every step of the instructional design process can contribute to successful learning transfer. Analysis of the learners could (and should) include an assessment of their level of expertise as either novice, expert, or in between. The needs assessment phase is where the designer considers how much of the information needs to be stored in LTM, and if some of that information should be supplied externally if it is not necessary to store it. The needs assessment

should include the supervisors and managers, to make sure the training is relevant to the people who have to use and implement it. The design phase naturally has a major impact on transfer and retention. In addition to deciding on the delivery method, this is where the designer can include techniques to avoid working memory overload, cognitive support for encoding data into LTM, and procedures to minimize the chances of transfer failure. Then the evaluation phase should not only include reaction level evaluation, but also assessment of the learners to see if they have learned the information and changed their behaviors. This will mean assessing the learners at some point in time after the training, to see if they really are using the training on the job. The instructional designer will have to evaluate at least the first three of Kirkpatrick's levels: reaction, learning, and performance (Kirkpatrick, 1998, pp. 23-61) It may even be advantageous to evaluate at level four (results) or level five (return on investment – ROI) in order to show that the training and instruction is aligned with organizational goals and mission (Phillips, 1997, p. 2).

During the needs assessment and design phase, the instructional designer needs to keep in mind that the success of the learning and eventual transfer will depend on the employees and their own agendas, so the training has to be relevant to them. If they can see the benefits for learning and then using the training, they will be more motivated. Motivation plays a part in how much time people are willing to spend learning. Many of them like a challenge, but it has to be at the proper level of difficulty to be effective. If it is too hard, they give up in frustration; if it is too easy, the task and learning become boring.

In addition, learners' tendencies to persist in the face of difficulty are strongly affected by whether they are 'performance oriented' or 'learning oriented.' (Dweck, 1989) Students

who are learning oriented like new challenges; those who are performance oriented are more worried about making errors than about learning (National Research Council, 2000, p. 61)

It is to the designer's advantage to make sure the instruction is relevant to the learners. If it is, they are likely to be more motivated to learn and use the learning later on. This is especially true if the learners can see that the information has an impact on others or can be used in a way that they feel they are contributing something to their organizational community (National Research Council, p. 61).

Avoiding Working Memory Overload

Designers need to be aware of the limits of the working memory since that is where the information is processed. "To be effective, instructional methods and support tools must facilitate human cognitive processes" (Clark, 1999, p. 17). If there is not adequate rehearsal of the data, it is never stored in the long-term memory for retrieval. If the learners are denied the chance for rehearsal of the information, it pours through "...WM like a sieve" (Clark, p. 20). An example of this might be getting a new acquaintance's email address. If the email address is not written down or on a business card, and a person does not rehearse it before trying to add it to their address book, by the time you are ready to add do so, it no longer resides in the memory.

Presenting the material in chunks, and allowing rehearsal time is one way to make the encoding process into LTM more effective. Chunks are specific patterns of information, and an expert generally has larger chunks than a novice, which is why they seem smarter about some things. They are not more intelligent; they essentially can retrieve more information because their chunks are larger. Learners can only process five to nine (seven plus or minus two) chunks

at a time. Obviously, if the chunks are bigger, then the learner seems to 'know' more. They do not have more WM capacity, they just use it to greater advantage. It is especially important to keep the limited capacity of the working memory in mind so it does not get overloaded. Once that happens, the learner becomes frustrated and essentially shuts down, and fails to learn (Clark, 1999, p. 24).

The design and layout of the lesson can help reduce the cognitive load on the working memory as well. Sequencing, arranging the data into chunks, and even making the interface simple and easy to navigate all help reduce the load on the learner. Another tip to make things easier on the learner is to provide a consistent interface, that is, have the buttons and/or menus in the same place, and have the organization of the material consistent. If clicking on a picture in one page will take the learner to a text discussion, make sure that it works the same way all the time. Too much information dilutes the focus which should be on the skills needed to perform the task. The designer should embed memory support in the learning materials (like tables or graphs), and do the nonessential work for the learner by providing complete learner handouts and worked examples (Clark, 1999, pp. 39-49).

Clearing WM with frequent rehearsal.

One way to avoid overload is to rehearse frequently or to make the process automatic. This is advantageous in that then the process bypasses the WM altogether, coming directly from LTM, therefore saving the limited capacity of the working memory for other tasks. Automating a task has some dangerous side effects though. If the task has to be shifted from the LTM to the WM, and this change is not made in time, the results can be deadly. For example, Clark (p. 25) uses driving as an automatic task. People often drive and do other things at the same time. This

is fine as long as the automatic task does not demand attention. If the switch is not made quickly enough from long-term memory to working memory, the results could be disastrous.

During the training itself, the instructor can use several procedures to avoid overload of the WM. Most of them can be designed into the instruction with little trouble. The idea behind these techniques is to clear the WM after the presentation of the five to nine chunks of information. This is done by periodically rehearsing the data so it is encoded into the long-term memory for storage which then frees up more working memory for further data processing. Methods used to clear the WM include asking questions, doing short exercises after presenting each block of information, and providing case studies or short projects (Clark, 1999, p. 28). One interesting question-asking technique will provide the entire class with a moment to rehearse the information. Instead of directing the question to one specific learner, Clark (1999, p.31) suggests asking the question, pausing, then directing it to one person. The pause will allow the whole class to rehearse the information in case they are called on to answer.

The amount and frequency of rehearsal and practice also affects how well the data is encoded into LTM when clearing WM. Studies have generally shown that spacing out the practices is more effective than using one massed practice (or cramming). "...practice is not a simple concept....for practice to obtain optimum skill acquisition, generalization, and maintenance may require a variety of strategies...and depend on a number of factors...task type, the level of learning required for effectiveness, and transfer objectives" (May & Kahnweiler, 2000, p. 354). Both Clark (1999, p. 29) and May and Kahnweiler (p. 369) indicate that spaced, but frequent, practice sessions support higher levels of transfer and retention.

Bypassing WM.

Some information does not need to be stored in long-term memory. In those cases, the designer can supply external job aids to the worker, who only has to remember to use the aid, instead of all the information on it. However, some jobs require immediate response, so the worker does not have time to use a job aid, the reaction should be automatic. This means that the information has to bypass WM and come directly from LTM. For situations where the response does not need to be immediate, job aids, such as printed tables or steps to a procedure, are ways to bypass WM. Sometimes, job aids can even replace training. As a lab manager, it was this author's responsibility to teach the technicians to use the calculators to calculate results of the analysis. Because the calculators were scientific ones used by engineers, it was easier to write out a step-by-step procedure on how to make the calculations. Most of the technicians did not even realize what functions they were performing, they just knew what buttons to push in what order. In order to make job aids successful (meaning they will be used on the job), it may be necessary to bring the worker into the process of designing the job aid. They should help determine the best way to package and present the job aid. The job aid should also be used during the training, and the worker should be proficient in its use in order to increase the probability of it being used on the job (Clark, p.36).

The other bypass technique is to automate the task. This is done through drill and practice. Often, it is enough to allow the worker to practice on the job until they become proficient and the task is automatic. If the worker's response must be rapid and accurate the first time, it will be necessary to provide drill and practice before the employee actually starts the job. A simple form of drill and practice is the use of flash cards for multiplication tables or to learn

letters. More complex drill and practice could be on the computer, which can measure response time and accuracy. In order to make the practice interesting, some of the exercises can be embedded in a gaming atmosphere. When personal computers first started using the mouse as an input device, many users played card games to enhance their abilities in using it (Clark, 1999, p. 38).

Instructional design models to manage cognitive load on WM.

"Cognitive load refers to the total amount of mental activity imposed on working memory at an instance in time" (Cooper, 1998, para. 92). Too much information at one time causes overload, so it is important that the instructional designer keeps that in mind when developing instruction. Cognitive load theory focuses on the role of working memory in the learning process and the fundamental principles of it are: (Cooper, paras. 129-134)

1. Working memory is extremely limited.
2. Long-term memory is essentially unlimited.
3. The process of learning requires working memory to be actively engaged in the comprehension (and processing) of instructional material to encode to-be-learned information into long-term memory.
4. If the resources of working memory are exceeded, then learning will be ineffective.

Instructional design can directly impact cognitive load in the following ways: (Cooper, paras. 135-138)

1. Excessively high levels of cognitive load may result directly from the instructional materials presented to students.

2. Redesigning instructional materials to reduce the levels of extraneous cognitive load may enhance learning.
3. Content areas that are most likely to demonstrate beneficial results from improved instructional design are those that deal with "complex" information where the elements of to-be-learned information interact with one another (therefore imposing a high level of intrinsic cognitive load).

Instructional design solutions to cognitive load include: (Sweller, 1999, as cited by Miller, paras. 4-7)

1. Change problem solving methods to avoid means-ends approaches that impose a heavy working memory load by using goal-free problems or worked examples.
2. Physically integrate multiple sources of information whenever possible to eliminate the need for learners to have to mentally integrate that information which increases the load on working memory.
3. Reduce redundancy and repetitive information whenever possible so that the load on working memory is lessened.
4. Use auditory and visual information under conditions where both sources of information are essential (i.e. non-redundant) to understanding. This helps increase the capacity of working memory.

Essentially, almost every factor contributing to the overload of WM can be treated through instructional design. These treatments include creating job aids, developing drill and practice programs, embedding memory support and doing nonessential work for the learner. All of these

solutions will reduce the cognitive load on the working memory and aid in the acquisition of schema in long-term memory.

Strategies to Support Attention

"The human cognitive system is susceptible to distraction and overload—this is often ignored in design of learning and application environments, especially in those environments designed by experts" (Clark, 1999, p. 57). What generally happens is that learners can pay attention to a limited number of things and once that limit is reached, they cannot process any more information. The most usual example of this would be the cockpit of a plane. The pilot has his attention on one thing, say a malfunction, so another warning gauge might be ignored causing the plane to crash. That is an extreme example, but it does show the cost of attention failure.

When designing instruction, there are several steps that can be taken in order to minimize overload and distraction. First, instructional designers need to be aware of some of the research on attention. Three factors influence the attention that a learner can pay to a subject if his or her attention is divided between two things. First, if the mode of delivery is the same (one message into the left ear, a different one into the right), the potential to get both messages is worse than if the messages are delivered to different senses (one message is audio, one is visual). Second is the difficulty of the two tasks. If one task is more difficult and one is easier, then the learner can better pay attention to both than if the tasks are both difficult. And finally, the experience level of the learner has some bearing on how much attention they can devote to a task. The more practice they have at performing the two tasks simultaneously, the better they perform both (Clark, pp. 59-60).

Instructional design factors to optimize attentional capacity.

The learning environment and the learner's state of mind and physical well-being play a large part in keeping the learner's attention. Although the instructional designer cannot control the learners, they might have some control over the environment. If they do not, they can still control the design and include breaks or devices to combat fatigue. For instance, if the training session breaks for lunch, it is advisable to put something active after lunch, so the learners are not just sitting there getting drowsy. Jensen (2000, pp. 121-134) offers instructors several tips on getting and keeping attention during instruction. Getting the learners' attention is the first step. Introducing stimuli, which is new or novel, or gets an intense emotional response, will accomplish that. Once their attention is caught the instructor needs to engage the learners. Engaging the learners means that they must be involved, perhaps through interactive exercises, or contributing to the class in some way. Jensen does make note of the fact that even if a learner seems to have stopped paying attention, they may be doing something just as important—reflecting. Instructional designers should be aware that every minute of every course does not have to be filled with activity. Figure in some 'down time' that the learners can use to absorb and reflect. That is one more method of rehearsal and clearing out the working memory.

When it comes to using some other methods of drawing and keeping attention, Clark (1999, pp. 63-68) suggests aggressively pacing the class, involving the participants, offering variety in the instruction, and stimulating the learner's motivation by making the job relevance of the instruction obvious. Using cues and preparing the learners also helps direct their attention. Preparation means to tell the learners what they will be learning and informing them of the goals of the instruction. These techniques work best with novice learners since experts are more able

to focus on the relevant parts of the instruction and give it the attention it needs without extra cuing or preparation. If the instructor has control over the environment, care should be taken to provide natural light, and to make sure the room is not too warm. It is also a good idea to encourage the learners to remain hydrated, and perhaps stand and stretch occasionally. If the class is online, the instruction can contain charts or other graphics, perhaps even some music in order to add variety.

Strategies to Support Encoding into LTM

The focus, up until now, has been on not overloading the working memory, while still getting the data into it. However, just because information makes it to the WM, it does not mean that it has been learned. In order to be learned, and of use, or transferred to the job, the information has to be encoded into the long-term memory where it can later be retrieved and used. Rehearsing the data in the working memory facilitates its movement into the long-term memory. There are two types of rehearsal that learners use: maintenance and elaborative (Clark, 1999, p.72). Maintenance rehearsal is rote repetition and takes place in the working memory, where the data remains for a short time. The information is not encoded into the long-term memory, so maintenance rehearsal is useless from a learning standpoint. Elaborative rehearsal "encourages the association of new data with existing knowledge and skills in LTM" (Clark, p. 73).

Instructional design methods to stimulate elaborative rehearsal.

Since real learning does not take place until the data is encoded into the long-term memory, and available for retrieval. Elaborative rehearsal is the technique that fulfills this requirement. Instructional designers can develop methods of stimulating learners to practice

elaborative rehearsal, and facilitate learning, which should then increase the effectiveness of the training as the knowledge is then transferred to the job. Designers should incorporate frequent elaborative rehearsal exercises into instruction. The following exercises stimulate elaborative rehearsal: (Clark, 1999, p. 76)

1. Apply instructional information and skills to create a job-related project or to solve job problems.
2. Complete short exercises relating course information to realistic job scenarios.
3. Synthesize information into job aids or templates.
4. Complete projects working together as a cooperative learning team.

Capella University encourages all four of these steps in its courses. Learners are enthusiastically encouraged to create their final class projects for their jobs, or to use job projects or problems in the class. The learners are also asked to relate job and life experiences when answering discussion questions. Finally, when it is time for the learners to complete degree requirements, they are encouraged to base final projects or dissertations and comprehensive papers on their classes as well as their work experiences. This author personally knows at least three PhD candidates who are completing their dissertations in order to be able to use the results in their jobs.

At Sheridan College-Gillette Campus in Gillette, Wyoming, some of the instructors and staff attempt to give the students at the community college a broad base of knowledge that will transfer to their jobs. Some instructors do things the way they always have, but others want to make sure they serve the students and the community businesses by assigning more practical applications. One set of instructors who teach software classes have the students purchase

workbooks which are used in the class. The workbooks have exercises and projects that the students are required to complete. There is no effort to make the exercises applicable to the students' work lives. On the other side of the spectrum, some of the instructors prepare basic handouts of the program's controls and menus, then have the students complete a project of their choice. Because the students create projects in which they have a personal stake, they tend to learn the software programs more thoroughly and apply them to their current or future jobs more effectively than the students who learned from the step-by-step workbooks.

Avoiding inert knowledge.

Inert knowledge contributes to transfer failure because even though it is knowledge that is encoded into LTM, it is not retrieved properly, and therefore, basically useless. There are some strategies that can be employed by learners and instructional designers to increase the probability of learning transfer and decrease the creation of inert knowledge. "Identical elements" is one theory that suggests transfer can be enhanced by having two tasks share common elements (Clark, 1999, p. 88). The main problem with this theory is that it is not obvious which elements need to be identical. Encoding specificity is a mechanism that supports retrieval from LTM. "The principle of encoding specificity states that the retrieval of information from LTM depends on the degree of overlap between the features encoded in the memory trace at the time of learning and those features present in the retrieval environment" (Clark, p. 88). What this means is that retrieval cues are based on how the student learned the information. Mnemonic devices use the specificity principle (Clark, p. 89). This author can still retrieve the definition of rhetoric that was learned twenty plus years ago due to a mnemonic. (Rhetoric is the faculty of observing, in any given situation, the available means of persuasion. The mnemonic is

fogsamp, the first letter in each word of the definition). Obviously, the point is to design instruction that will use these principles of identical elements and encoding specificity to help learners encode retrieval cues that will be triggered back on the job.

Instructional Design Strategies to Support Retention and Transfer of Expertise

Of course, one overriding principle to aid in transfer and retention is to base the training on the job analysis. By knowing the relevant job tasks, the instructional designer can increase the probability that the learner will transfer the learning back to the job. Other strategies that should be employed include the incorporation of case studies that "reflect best practices of proficient practitioners,...assign projects to be completed during or after the class that require the learners to apply the new knowledge or skill to real job work, and provide skill-based training...when learners are ready to use it on the job" (Clark, 1999, p. 96). This reiterates the need for relevant and timely training, as well as the need for using it as soon as possible in a job situation. Lastly, the organization needs to abandon the general training over such topics as 'conflict management' or 'supervisory skills.' These types of courses are too abstract and theory-based and are practically useless to the majority of the employees because they do not deal with the day-to-day problems and issues most of them face.

For near transfer tasks, whose surface features are similar, it is not so much a matter of transfer as retention. The training must be remembered to be used. For tasks that are performed regularly, the continual practice will soon make those tasks automatic. However, there may be tasks that are important, but performed infrequently. Instructional methods that optimize retention of procedural tasks include: procedure over-learning using spaced practice, simulation practice, teaching 'how-it-works' models along with the procedure, and teaching conditional

(how or when to apply the training) knowledge (Clark, 1999, pp. 100-102). Methods to enhance transfer of far transfer tasks differ from those for retention of near transfer ones. Since far transfer tasks require the use of schema, one way to facilitate transfer is to help the learner build schema and deep structure knowledge. Another way to enhance transfer of far transfer tasks is to use varied context example problems.

The Instructional Design Process: Phases That Affect Transfer And Retention

Learning transfer and retention should be a priority in the analysis, design, development, implementation, and evaluation phases of the instructional design process. Analysis of the job and learners; development, design, and implementation of the training; and evaluation after the training should all include strategies to enhance learning transfer and retention.

Job analysis is essential so the designer identifies the relevant job tasks. When the training is designed for highly relevant tasks, the probability of transfer back to the job increases. The designer must incorporate different strategies for near or far transfer tasks as well since near transfer tasks are really a matter of retention, while far transfer tasks are a function of learning transfer. Of course, learner analysis can be used to determine if the learners are experts or novices. Each type of learner requires different presentation methods so they can process the information more efficiently because the strategy that works for a novice may actually hinder an expert. During the design, development, and implementation stages, the designer needs to be cognizant of how memory works, so the training includes the appropriate strategies for rehearsing, clearing working memory, bypassing working memory, supporting attention, and encoding into long-term memory. The designer must do all this in order to avoid overloading working memory. The designer should also consider which tasks need job aids. If the task is one

that does not require an immediate or automatic response, a job aid may be utilized so it is not necessary to encode the entire task into long-term memory. The people who will be working with the job aid should assist in its design and it should be used during the training. Learning transfer and retention should be determined during the evaluation phase. A thorough evaluation of the training will not only measure the success of the training itself, but it will also provide evidence of how efficiently and effectively the training department performs. The higher the rate of learning transfer and retention, the more effectively the designers' and trainers' duties are being executed.

Reference Guide for ID Strategies that Support Learning Transfer/Retention

The methods described in the previous sections have been summarized by the author into a series of mind maps, MS Word documents, and MS Excel files. The mind maps and other files provide this author with a visual presentation of the information presented, and can be accessed quickly from anywhere on the Internet. The base of the reference guide may be accessed here: <http://www.kkhubb.com/BuildingExpertise.htm> Although that particular web page represents only the work done by Clark at this time, other sections of the web site contain principles of brain based learning, instructional design models, assessment, and other topics of interest to the author and pertaining to adult online education. The reference guide, as with most web pages, is a continual work in progress, and will likely never be technically 'complete.' The reference guide itself is mainly made up of links to other parts of the web page, but can be found here: <http://www.kkhubb.com/IDStrategiesForBuildingExpertise.htm> The guide can also be found in the appendix of this paper.

Instructional Design and Building Expertise

The overriding theme in building expertise is to make training relevant and applicable to on the job tasks. Employees will be more motivated to learn and transfer the learning back to the job if they believe the training has merit for them. There are many instructional strategies that can facilitate learning transfer and retention. Traditional lectures and text reading usually are not effective; so designers need to try alternate methods. The instruction needs to be designed while keeping the more technical aspects of how memory works in mind because the training needs to take care not to overload the learner, as well as support the eventual transfer back to the job. "Learning with understanding is more likely to promote transfer than simply memorizing information from a test or a lecture" (National Research Council, 2000, p. 236). A thorough job and needs analysis will show the instructional designer the necessary tasks to be covered in the training, but the actual supervisors and line managers should be asked to participate in much of the process as well so the right training is offered and the probability of transfer increases. Transfer will continue to be a critical issue for organizations as they struggle to succeed in an increasingly competitive world. Ideally, instructional designers should make successful transfer a forgone conclusion in their designs. It should not have to be a separate goal or an extra thought on the part of the designer. In other words, incorporating strategies to support successful learning transfer into instruction should become automatic for designers.

References

- Bates, R. A., Holton III, E. F., Seyler, D. L. & Carvalho, M. A. (2000, March). The role of interpersonal factors in the application of computer-based training in an industrial setting. *Human Resource International*, 3. Retrieved October 22, 2004, from Business Source Premier database.
- Clark, R. (1999). *Building expertise: Cognitive methods for training and performance improvement*. Washington, DC: International Society for Performance Improvement.
- Cooper, G. (1998). *Cognitive load theory and instructional design at USNW*. [Electronic Version] Accessed February 25, 2005 from: http://education.arts.unsw.edu.au/CLT_NET_Aug_97.HTML
- Jensen, E. (2000). *Brain-based learning: The new science of teaching and training* (Revised ed.). San Diego, CA: The Brain Store.
- Kirkpatrick, D. (1998). *Evaluating training programs* (2nd ed.). San Francisco: Berrett-Koehler Publishers, Inc.
- May, G. L., & Kahnweiler, W. M. (2000, Summer). The effect of a mastery practice design on learning and transfer in behavior modeling training. *Personnel Psychology*, 53, 353-373. Retrieved October 22, 2004, from Business Source Premier database.
- National Research Council (2000). *How people learn: Brain, mind, experience, school* (Expanded ed.). Washington, DC: National Academy Press.
- Phillips, J. (1999). *HRD trends worldwide*. Houston, TX: Gulf Publishing Company.
- Phillips, J. (1997). *Return on Investment in training and performance improvement programs*. Houston, TX: Gulf Publishing Company.
- Senge, P. M (1990). *The fifth discipline: The art and practice of the learning organization*. New York: Currency Doubleday.
- Sweller, J. (1999). Instructional Design in Technical Areas. *Australian Educational Review No. 43*, ACER Press, Camberwell, Australia, cited by Miller, M (1999). *Cognitive Load Theory*. [Electronic Version] Accessed February 25, 2005, from <http://coe.sdsu.edu/eet/articles/cogloadtheory/index.htm>
- Thompson, D. E., Brooks, K., & Lizarraga, L. S. (2003, Oct). Perceived transfer of learning: from the distance education classroom to the workplace. *Assessment & Evaluation in*

Higher Education, 28, 539-547. Retrieved February 24, 2005, from Academic Premier database.

Von Krogh, G., Ichijo, K., & Nonaka, I. (2000). *Enabling knowledge creation: How to unlock the mystery of tacit knowledge and release the power of innovation*. London: Oxford University Press.

Wonacott, M. E. (2002). *Gold collar workers*. Columbus, OH: ERIC Clearinghouse on Adult Career and Vocational Education (ERIC Document: ED467237)

Appendix

Brief Overview: ID Strategies for Building Expertise

Learning transfer is mandatory. Globalization requires that organizations become responsive, and use their knowledge in a way that will make the organization more competitive. Training also has to be more accountable to the organization and prove that it is aligned with goals and mission.

First, we need to know some of the [terminology](#) that goes along with building expertise.

Then, a brief discussion of how memory works can be found here: [Working Memory](#)

The factors of learning transfer include characteristics of the learners, design of the training, and the work environment.

Even if those factors are considered, learning transfer fails sometimes. [Why?](#)

Instructional design begins with the learners: are they expert, or novice? Do a needs assessment and speak to the department managers/supervisors to make sure that the training is what is needed and relevant to the employees, managers and organization. Through the needs analysis, the designer can decide how much of the knowledge can be supplied externally in the form of job aids or references, or if it needs to be encoded into long-term memory.

While designing the instruction, there are a few things to keep in mind: [avoid overloading the working memory](#) by managing the cognitive load, [attention](#) should be supported, and strategies for [encoding into long-term memory](#) need to be developed.

Perhaps the most important thing in designing instruction is to [support retention and transfer](#). Strategies for that start with how relevant the training is, so that (again) is the first step to instructional design and building expertise.

QUESTION 6

Analyze several leadership theories. Recommend possible additions based on these theories to ED7504-Leadership for Instructional Design course at Capella and provide rationale and justification for their inclusion into the course.

Description and Analysis of the Leadership Models

There is a school of thought that leadership is something that a person is born with, that it cannot be taught. This is contradicted by the presence of many books and articles on leadership and the characteristics of leaders. Kouzes and Posner (2002) reinforce the point that leadership is a teachable skill.

Leadership is not a place, it's not a gene, and it's not a secret code that cannot be deciphered by ordinary people. The truth is that leadership is an observable set of skills and abilities that are useful where one is in the executive suite or on the front line, on Wall Street or Main Street, in any campus, community, or corporation (p. 386).

Their argument for teaching leadership and leadership skills stems from society's assumption that management and management skills can be taught. It is only the perception that leaders are born, not made, that holds most people back from developing themselves as leaders (Kouzes & Posner, 2002). Stephen Covey (1991) maintains that leadership development in a specific manner is actually an extension of personal development.

Principle-Centered Leadership

The modern world offers people and organizations many dilemmas to confront and solve. Covey (1991) offers principle-centered leadership as a new paradigm—a new way of thinking in order to solve some of these dilemmas (p. 30). Following are some of the issues that people must deal with on a personal as well as on an organizational level: Maintaining a balance between

work and family while dealing with constant pressures and crises, finding simplicity in a complex world, navigating without maps (strategies and plans) that are useless in the face of a rapidly changing world, achieving real compassion and understanding in the face of human weaknesses, replacing prejudging and manipulating with discovering and promoting learning, creating teams built on mutual respect and valuing diversity, maintaining security and stability in a culture of continuous change, aligning people, strategy, and culture in an organization so they are all working toward the same goals, releasing peoples' creativity, talent, and energy, turning a mission statement into a guiding force of the institution, creating a culture where management treats employees as customers, and overcoming a past full of political games and hidden agendas to build team spirit and harmony within an organization (Covey, p. 30 and p. 154). Practicing principle-centered leadership on a personal and organizational level is one way to meet these challenges.

Characteristics of a principle-centered leader.

Principle-centered leaders are always learning. They learn both formally from books and classes and also informally, through experience. They realize that the more they know, the wider their circle of knowledge grows, but so does the outside edge of their ignorance (Covey, 1991). Eales-White (2003) takes this characteristic one step further by suggesting that instead of using the labels of boss or leader, the acronym COGAL be applied. COGAL stands for Creator of Growth and Learning. In other words, not only do leaders need to learn all the time, but they need to give others that they work with (or over) the same willingness to do the same (p. 204). Principle-centered leaders are also service oriented. They have a sense of responsibility and contribution. The servant-leader asks if those served grow as persons. "Do they, while being

served, become healthier, wiser, freer, more autonomous, more likely themselves to become servants? And, what is the effect on the least privileged in society, will they benefit, or, at least, not be further deprived?" (Greenleaf, 1991, pp. 13-14).

Principle-centered leaders "radiate positive energy" (Covey, 1991, p. 34). They try to be enthusiastic, hopeful, and encouraging. They are peacemakers and either sidestep negative energy or neutralize it while attracting other spheres of positive energy (Covey, p. 35).

Principle-centered leaders believe in others. "They don't feel built up when they discover the weaknesses of others. They are not naïve; they are aware of weakness. But they realize that behavior and potential are two different things" (Covey, p. 35) Covey then goes on to say that leaders, in order to believe in others, do not use labels. Labels often limit people in their own perceptions of themselves. They see life as an adventure because they are interested and get involved. Principle-centered leaders are synergistic. They are more than the sum of their parts. They are change-agents and know how to leverage their strengths by recruiting other team members that complement their weaknesses (Covey, 1991, p. 37).

Principle-centered leaders lead balanced lives. With principles serving as the fulcrum of their lives, they are able to devote as much time to their family and social lives as they do their work. They plan for the future, but they do not live for it, nor do they dwell on the past. They have the ability to adapt as situations and circumstances unfold (Covey, 2004, p. 36). Finally, principle-centered leaders exercise for self-renewal. They participate in physical, mental, and spiritual exercises regularly.

Levels and dimensions of principle-centered leadership.

Covey outlines four master principles that align with four levels of principle-centered leadership. In order to have true leadership guided by principles, all four of these levels must be attended to. "...we have to work at all levels on the basis of certain master principles" (Covey, 1991, p. 31). First is the personal level, with the master principle here being trustworthiness. "Trustworthiness is based on character, what you are as a person, and competence, what you can do" (Covey, p. 31). In the professional arena, this means that character and competence must be maintained, and improved. One cannot become obsolete within their organization or profession, and must guard their integrity and character, in order to be trustworthy. The next level is interpersonal where the master principle is trust. "Trustworthiness is the foundation of trust. Trust is the emotional bank account between two people that enables them to have a win-win performance agreement" (Covey, p. 31). When people trust each other, they can communicate more clearly which overall facilitates synergy and productivity.

The next level is management. The master principle to operate on at this level is empowerment. If trust is present, then managing people does not mean controlling them, because they can supervise themselves. If the people trust their leaders, they know their needs will overlap with the needs of the organization (Covey, 1991, p. 155). People are empowered to do better quality work because they have a stake in the health of the organization beyond a mere paycheck. "Leadership empowers and develops people through direction, coaching, networking and teamwork" (Fabian, 2004, p. 55). The final level is organizational and its principle of alignment. In a high trust organization, the span of control is large and the structure is flat rather than hierarchal. Instead of trying to control the people, leaders can trust that the people are

empowered and share the vision and goals of the company because to do so meets their needs as well.

The four levels and four principles are the center of a compass with four directions or dimensions. These dimensions are security, guidance, wisdom, and power (Covey, 1991, p. 21). Security is based on self-esteem and sense of worth. Guidance is essentially the conscience or inspiration of a more spiritual nature. Wisdom comprises judgment and comprehension. Power is the capacity to act or accomplish something (Covey, p. 23). These dimensions help the principle-centered leader know where and how to focus and if they are becoming unbalanced by spending too much time on one.

Chronic organizational problems.

Often, when leaders or managers attempt to solve problems within their organizations, they attack the symptoms, not the problem itself. As a result, the problem resurfaces again and again, and the organization gets sicker and sicker. However, if leaders are more principle centered and can steer their organizations to be the same, some of these problems can be solved. The first chronic problem is "no shared vision and values; either the organization has no mission statement or there is no deep understanding of and commitment to the mission at all levels of the organization" (Covey, 1991, p. 165). Without a tangible mission or one that is not communicated well throughout the organization, people will create their own, even if it is a contradiction to the organizational one.

This author has had the opportunity to see the impact when an organization does not focus on its mission. The United States Jaycees call themselves a leadership training organization. Their organizational mission is to train leaders through community service. At

some point, they lost sight of that mission and got too involved in running community service projects instead of using the projects as a tool to train leaders. As a result the organization steadily lost members for two decades, and is now struggling to survive. Sometimes, even if an organization has a mission, it is not deeply embedded, or it is incomplete. A thorough mission statement should address four basic human needs: "economic or money need; social or relationship need; psychological or growth need; and spiritual or contribution need" (Covey, p. 166).

Covey (1991) identifies chronic problem number two as the lack of a strategic path... "either the strategy is not well developed or it ineffectively expresses the mission statement and/or fails to meet the wants and needs and realities of the stream" (Covey, p. 166). Some organizations have not adapted to the fast-changing environment. They make strategic plans but base them on older models that designate the ends as well as the ways and means. Even though these plans were called strategic, they were more often reactive because they took trends and extrapolated them into the future (Covey, p. 167). This method did not take the organization's mission into account, so while they might have had a plan, it was not on track with the core goals. Good strategic planning requires both vision and the environment into account, and that means that the plans must be anchored in the vision and mission, but not necessarily in the ways to get there.

Next is poor alignment. This occurs when every system, program, and even the organization structure and people are not subject to the mission. This leads to executives and leaders saying one thing but often doing the opposite—saying they believe in openness and

empowerment, and yet, pushing their own hidden agendas and hoarding needed information or knowledge.

Chronic problem number four is "Wrong style: the management philosophy is either incongruent with shared vision and values or the style inconsistently embodies the vision and values of the mission statement" (Covey, 1991, p. 168). This is likely to be one of the most difficult problems to resolve since asking or requiring someone to change their inherent style is usually very intimidating, though not impossible. It is generally best to match the style and the organization. The next chronic problem is poor skills..."style does not match skills, or managers lack skills they need to use an appropriate style" (Covey, p. 170). Leaders and managers could be making mistakes because they lack the information needed to correct them, not the desire. The final chronic problems are low trust and no integrity. Low trust results in "closed communication, little problem-solving, and poor cooperation and teamwork" (Covey, 1991, p. 170). Covey maintains that these problems are curable, once leaders and organizations begin to adhere to principles and to value people as much as they do profits.

The principle-centered leadership (PCL) paradigm.

Covey (1991) offers the principle-centered leadership (PCL) paradigm as a model for organizations to implement. It gives them a starting point in converting from other management paradigms to a more principle-centered one. The PCL paradigm starts with people. "It recognizes that people are the highest value...it is based upon the effectiveness of people" (Covey, p. 182). People represent the interpersonal level and the key principle is trust. Next is the self. This is the personal level, with the key principle being trustworthiness. Style, especially an empowerment style, is the next part of the paradigm that an organization needs to analyze. Close behind are

skills such as team-building, delegation, and negotiation. Next, the organization needs to look at shared vision and principles. Does the organization have a good mission statement? Is it the one binding factor throughout the whole organization? Are the systems (information, recruiting, training, and compensation) aligned? This is the fourth level, the organizational level. Strategy and streams (operational environments) are the last two areas covered in the principle-centered paradigm (Covey, pp. 184-188). The basic idea behind this paradigm is that "shared values or governing principles of the organization ought to be primary considerations...that everything else—the strategy, structure, systems, skills, and styles—are derivatives, that is, they ought to flow with, not against, core values and stream realities" (Covey, p. 314).

The Leadership Challenge – A Leadership Model by Kouzes and Posner

Kouzes and Posner (2002), offer a leadership model that has several similarities to Covey's principle-centered leadership. While Covey appeals to the more spiritual side, Kouzes and Posner offer their model as practical and attainable by everyone. Many of the basic concepts and characteristics of the two models are the same, though Kouzes and Posner's presentation is more compact and relies heavily on real life illustrative examples.

Throughout current history, when the subject of leadership comes up, most of those asked will say that the content of leadership has remained somewhat constant, though recently, the context in which leaders are needed has changed, sometimes significantly (Kouzes & Posner, 2002, p. xviii). The content of leadership is what a leader is made of, and also what they do. The context is the environment in which they operate. This new context changes some of the basic dilemmas that leaders must face. Part of this new context is a heightened sense of uncertainty. People no longer have the security of lifetime jobs and a stable economy. After September 11,

2001, the world became less safe and secure. Leaders must deal with this increasing disorder. Another context change is that profits became secondary to people. Leaders need to recognize that people are first, rather than an afterthought. Leaders must also work in the global community now. This added connectivity makes it possible for people to work together more efficiently. This results in an increase in social capital. Social capital is "the collective value of people who know each other and what they'll do for each other. It's human networks that make things happen, not computer networks" (Kouzes & Posner, p. xx).

As a result of all the connections and social networks, not only have people become more connected, but other systems have become global as well. Instead of isolated national economies, organizations must realize that they are part of a global economy. This has implications past basic economics. "The implications are cultural as well. With global economics comes a global workforce, a fact of life for which many executives are ill-prepared" (Kouzes & Posner, 2002, pp. xx-xxi). Even though the world is connected, it is still diverse and fragmented from a cultural standpoint. A leader must be prepared to seek unity amongst the diverse segments of the organization's employees and customers no matter where they are.

Karim (2003, para. 3) agrees:

The recent leadership failures and governance crises in corporate, communal, national, and international arenas serve as examples of ethically compromised leadership....we have entered a 'dark age' in which local and global organizations are driven solely by growth and profit...leaders must aspire to a higher calling than mere economic growth.

As the physical and tangible boundaries of our world shrink, the psychological

boundaries of people deeply divided by race, ethnicity, ideology, politics, region, inequality, and marginality seem to be headed toward greater impermeability.

Speed is another consequence of the worldwide connectivity. Speed has its advantages in helping to lower the cost of doing business, but has made it more difficult to build "quality human relationships" (Kouzes & Posner, 2002, p. xxi). The changing workforce is another facet of how diverse the world is today. No longer is the workforce homogeneous, and leaders must learn how to lead people from different backgrounds and cultures. Another context change is that there is a more intense search for meaning. "Younger workers are not giving in to the idea that they don't make a difference...more and more of us are on a quest for greater meaning in our lives" (Kouzes & Posner, 2002, p. xxii). Today's leaders must prepare to balance the spiritual with the need for profit and productivity.

The dilemmas that Covey (1991) specifies in his model of principle-centered leadership are also mentioned by Kouzes and Posner (2002). The difference between them is that while Covey presents specific dilemmas and problems, Kouzes and Posner categorize the challenges that leaders face. For instance, Covey (1991, p. 154) asks, "How can we have a culture characterized by change, flexibility, and continuous improvement and still maintain a sense of stability and security?" Kouzes and Posner (2002, p. xviii) mention the problems associated with the heightened sense of uncertainty, and the need for diversity in a global economy and within the changing workforce.

The five practices of exemplary leadership.

The five practices of exemplary leadership, as developed by Kouzes and Posner, are based on similar patterns in which leaders engage (2002, p. 13). These practices are only a part

of the total picture though. Leaders must also have credibility with their followers. In other words, their followers need to be able to trust them. Covey (1991) also states that trust is the bottom line master principle that all leaders need to embrace. Building that trust, or credibility, involves making actions consistent with words, following through on promises, and doing what they say they will do (Kouzes & Posner, p. 37). Based on credibility, a person can become an exemplary leader by practicing these five activities: "model the way, inspire a shared vision, challenge the process, enable others to act, and encourage the heart" (Kouzes & Posner, p. 13).

In order to model the way, leaders must model the behavior they expect of others, but to do that, they must know what their own guiding principles are first. "...leaders are supposed to stand up for their beliefs, so they'd better have some beliefs to stand up for" (Kouzes & Posner, 2002, p. 14). This is obviously a contradiction to the old 'do as I say, not as I do' adage. This practice overlaps two of Peter Senge's five disciplines: mental models and personal mastery (Senge, 1990, pp. 7-8) Another reason for the leader to figure out their own values and beliefs is that "the leadership style of the CEO thus serves to communicate and exhibit the values that lead to an ethical orientation in the organization." (Hood, 2003, para. 7).

The next practice is to inspire a shared vision. It is not enough to merely create a vision, it should be based on core values (Collins & Porras, 1996) and contain aspects of the four basic needs: economic, social, psychological, and spiritual (Covey, 1991, p. 166).

Exemplary leaders challenge the process. "Leaders are pioneers—people who are willing to step out into the unknown...the leader's primary contribution is in the recognition of good ideas, the support of those ideas, and the willingness to challenge the system to get new products, processes, services, and systems adopted" (Kouzes & Posner, 2002, p. 17). This does not mean

they leap blindly just for the sake of taking a risk, or facing a challenge. They also do not force their team/organization members to take risks with them unless they are ready. "You cannot exhort people to take risks if they don't also feel safe" (Kouzes & Posner, p. 17).

Practice number four is to enable others to act. This includes collaborating, delegating, and empowering team members to contribute to the goals and vision. And, like Covey (1991) suggests in his third and fourth levels of principle-centered leadership, this shows that the leader and organization are based on trustworthiness, trust in people, and empowerment at the managerial level.

Finally, exemplary leaders encourage the heart. They do that with "genuine acts of caring" (Kouzes & Posner, p. 19). Leaders also reward contributions and celebrate victories.

Kouzes and Posner (2002, pp. 21-22) attach behaviors to each of the five practices. The ten commitments of leadership serve as a basis for learning to lead. The five practices and their corresponding commitments are as follows (Kouzes & Posner, p. 22)

1. Model the Way
 - a. Find your voice by clarifying your personal values.
 - b. Set the example by aligning actions with shared values.
2. Inspire a Shared Vision
 - a. Envision the future by imagining exciting and ennobling possibilities.
 - b. Enlist others in a common vision by appealing to shared aspirations.
3. Challenge the Process
 - a. Search for opportunities by seeking innovative ways to change, grow, and improve.

- b. Experiment and take risks by constantly generating small wins and learning from mistakes.
4. Enable Others to Act
 - a. Foster collaboration by promoting cooperative goals and building trust.
 - b. Strengthen others by sharing power and discretion.
 5. Encourage the Heart
 - a. Recognize contributions by showing appreciation for individual excellence.
 - b. Celebrate the values and victories by creating a spirit of community.

Kouzes and Posner maintain that leadership development is not just for executives, it is for everyone. "Beyond the practices, beyond the action steps, there's another fundamental truth about leadership: leadership is everyone's business" (Kouzes & Posner, p. 383). They expand on this by stating that not only is it everyone's business, but leadership can be learned, just like any other skill. People assume management can be taught; so leadership should be no different. "The aura with which we tend to surround the words leader and leadership makes it hard to think clearly. Good sense calls for demystification" (Gardner, 1990, p. 3).

Leadership In Education

Educational leadership, like leadership in other organizations, is having to operate in an increasingly complex environment. The old leadership models and techniques will not work anymore. Educational leaders must respond to increasing diversity in students' cultural backgrounds, income levels, and learning capacities as well as curriculum standards, achievement benchmarks, and policy directives (Leithwood & Riehl, 2003, para. 4). It is even

more important to develop effective leaders in this highly complex environment, in order to obtain and keep high quality education.

Successful school leadership results in several benefits, among them: (Leithwood & Riehl, 2003, paras. 11-22)

1. Leadership has significant effects on student learning, second only to the effects of quality curriculum and teacher instruction.
2. Currently, administrators and teacher leaders provide most of the leadership in schools, but other potential sources of leadership exist.
3. A core set of leadership practices form the 'basics' of successful leadership and are valuable in almost all educational contexts.
4. Successful school leaders respond productively to challenges and opportunities created by the accountability-oriented policy context in which they work.
5. Successful school leaders respond productively to the opportunities and challenges of educating diverse groups of students.

The core set of basic practices mentioned in number three above include many of the same ones that Kouzes and Posner (2003) identified in their model of leadership development. Among these core practices are: identifying and articulation a vision, creating shared meanings, developing people by providing an appropriate model, and building collaborative processes (Leithwood & Riehl, paras 16-22).

Sustainable Leadership

Fink and Hargreaves call for sustainable leadership with their model. "Education leaders want to accomplish goals that matter, inspire others to join them in working toward those goals,

and leave a lasting legacy" (Fink & Hargreaves, 2004, p. 8). They postulate that most school leadership practices "create temporary, localized flurries of change but little lasting or widespread improvement" (Fink & Hargreaves, p. 8). Perhaps even more than businesses, in education, sustainable leadership matters. The learning has to last past the next achievement test. In order for that to happen, the students have to be engaged on several levels, and that will only happen with a committed leadership who is willing to put aside short run gains in order to meet long range goals. Sustainable leadership lasts and spreads. In an educational setting, it seems almost a given that a successful leader will be promoted and moved out of the scene of their success instead of being allowed to stay and cement the improvements that were made. One way to enhance and make the improvements lasting ones is to gain the support of the surrounding members of the school and community. If those people share the vision of the leader, then, if or when the leader is promoted out of that situation, the system will not collapse or revert because there is a group of people to carry on (Fink & Hargreaves, 2004, pp. 9-10).

Sustainable leadership is also socially just, promotes diversity, and is activist. "Sustainable leadership benefits all students and schools—not just a few at the expense of the rest" (Fink & Hargreaves, 2004, p. 11). Leaders that support sustainability "enable people to adapt to and prosper in their increasingly complex environments by learning from one another's diverse practices (Fink & Hargreaves, p. 12). Instead of promoting the status quo and reacting, sustainable leadership requires activism. However, sustainable leadership does more than simply manage change. "Leaders develop sustainability by committing to and protecting deep learning...by trying to ensure that improvements last over time" (Fink & Hargreaves, p. 13).

One key precept of sustainable leadership is that it takes more than an individual to succeed. The system itself has to make "sustainability a priority" (Fink & Hargreaves, p. 13).

Effective educational leadership requires many of the same things as other organizations. In order for exemplary leaders to be developed and sustained, a paradigm shift is required which moves the current administrative and managerial techniques to be less controlling and more collaborative. "Schools will be able to dramatically improve teaching and learning, not because the principal set others to do the work; but instead, because the principal had a new form of educational leadership that provided substantive and cultural leadership..." (Marsh, 1999, p. 143).

Leadership or Management?

Capella University requires learners in the Instructional Design for Online Learning program to take a class called 'ED7504 - Leadership for Instructional Design.' The description for this class, as it appears on the course listing, is as follows:

This course provides opportunities for instructional designers to examine the leadership and management skills necessary for effective design and delivery of Web-based instruction. Through the development of a professional portfolio, instructional designers participate in assessments that evaluate collaborative team planning, decision making, problem-solving and change management. (Capella University, 2005)

The course curriculum does examine management skills in some depth, but as it is now, it does not offer leadership skills. Kouzes and Posner (2003) state that leadership is about "mobilizing others to want to get extraordinary things done in organizations" (p. xvii) Stephen Covey (1991) expands on this thought.

Real empowerment comes from having both the principles and the practices understood and applied at all levels of the organization. Practices are the *what to do's*, specific applications that fit specific circumstances. Principles are the *why to do's*, the elements upon which applications or practices are built (p. 25).

Problem solving and designing effective web-based instruction is managing, not leading. They fall under the heading of Covey's practices, the what to do's. Gardner (1990, p. 3) states that: "Leadership is the process of persuasion or example by which an individual (or leadership team) induces a group to pursue objectives held by the leader or shared by the leader and his or her followers." In other words, leadership is not something that can be taught in specific steps. It includes managerial skills, but goes beyond those. A course offering instruction in leadership should also go beyond specific training and application of managerial skills. What then should a class on leadership contain?

Leadership Versus Management

While there are some differences between leading and managing, the two are not mutually exclusive. Leaders must also manage, and to some extent, managers must lead. They are so closely related that leading could even be considered at the highest component of management (Covey, 1991, p. 246). Though the two are parts of each other, there are some key differences between them.

Leaders emphasize values, motivation, and vision (Gardner, 1990, p. 246). Managers emphasize procedures. Leaders focus on keeping the mission in sight as well as effectiveness and results. Managers focus on the structures and systems needed to achieve those results (Covey, 1991, p. 246). Leaders look at the whole picture, the entire system, and how their organization

operates overall, and how it fits into the larger world. Managers concentrate on their own profit and loss reports, their own productivity quotas. They do not look beyond the borders of their responsibilities to see connections or their place within the entire organization. Leaders tend to think more long-term, while managers must focus on the quarterly report or the current crises. Managers are closely linked to the organization and its bottom line (Gardner, p. 6). A leader may not have any organization at all. "Florence Nightingale, ...exercised extraordinary leadership in health care for decades with no organization under her command" (Gardner, p. 6).

ED7504 Current Course Syllabus

Currently, the course syllabus for ED7504 starts with the learners discussing competencies for instructional design, then moves on to creating a rubric for "measuring performance levels required of each competency" (Capella University Course Registration, 2005). Thus far, leadership is not even mentioned outright. There are certain competencies that an instructional designer should have that leaders also need, but for the most part, the first two units of the course concentrate heavily on task oriented competencies. Task oriented competencies include conducting needs assessments, analyzing learners and environments, designing instruction, and evaluating programs. The competency lists can be found at the following Internet sites: International Board of Standards for Training and Performance Instruction (IBSTPI) (<http://www.ibstpi.org/competencies.htm>) American Society for Training and Development (ASTD) (http://www.astd.org/astd/Research/competency_study/competency_study.htm), and Analysis & Technology (http://www.coedu.usf.edu/inst_tech/resources/competen.html). All three of the

sites mention similar competencies, though they are organized and formatted differently. The ASTD site even uses a pictorial representation for learners who prefer pictures to words.

Units three and four of the course, titled 'Characteristics of Leadership' and 'Making Leadership Work,' invite the learners to identify the "most common leadership competencies," then "define leadership and provide examples from their daily lives," and then, as part of an essay, reflect on "how they apply the principles of leadership in their work environment." (Capella University, 2005). The last seven units have the learners investigating "the role of e-learning and its place in training and education," considering "the organizational requirements of a courseware development organization," compare using vendors versus doing the work in-house, and finally, proposing a training solution and preparing a project proposal (Capella University, 2005).

Leadership for Instructional Design

Although ED7504 does touch on some aspects of leadership, the units that cover leadership directly do not actually discuss leadership theories or models. Those are the units where the learners do use the competency lists and discuss leadership examples in their own lives, but there is no opportunity to explore leadership models. During the last two-thirds of the course, the focus is more on tasks like solving problems or designing an e-learning solution. These tasks are important, but they are only two facets of leadership and Capella University offers other classes that cover these subjects (especially the design of e-learning) in more depth. In addition to technical knowledge (instructional design) and problem-solving capabilities, a leader, as shown in the models discussed, needs many more skills to be effective.

In fact, Altier states that his text on problem solving is best for analytic, not systems thinking. Systems thinking, as defined by Altier (1999, p. 7), "Solves problems through expansion, it tries to determine the components that interact with each other and how they affect the bigger picture." Analytic thinking, on the other hand, "Solves problems through reduction, it dissects problems into their discrete components" (Altier, p. 8). So while leaders need to see the big picture, and encompass the whole mission and vision, Altier has provided a tool to solve problems that are not system-wide. There is no denying that problem-solving is necessary, but a course titled leadership should explore more than just one or two aspects.

The students spend several units exploring e-learning by preparing a proposal and designing an e-learning solution. Again, although the decision to implement e-learning in an organization comes from looking at the whole system, actually using a step-by-step procedure to design and implement it is more skill development, helping the students become better instructional designers rather than leaders overall. "The question is no longer whether organizations will implement online learning, but whether they will do it well" (Rosenberg, 2001, p. xvi). Learning to do something well falls under the heading of technical or professional development, and usually means undertaking some very specific activities to become proficient. As a result, the students spend several units on this one facet of their professional/technical education, instead of a more overall view of leadership.

It is no surprise that a leadership course is full of practical applications such as problem-solving. In fact, "...education today emphasizes facts, skills, data, and a teacher-centered classroom, whereas most students would prefer an emphasis on emotional intelligence, the sharing of information, and student-centered learning" (Heames & Service, 2003, para.2). This

paradox occurs for a few reasons, including the perception that there is a need for a scientific answer for everything, the "desire for a pill to cure all ills, the need for instant gratification...and a preference for the measurable versus the significant" (Heames & Service, para.3). A competency based program, like Capella's, needs to emphasize measurable results and practical application activities. However, there is room for the inclusion of some less quantifiable units in a course that are still competency-based, since the competencies call for effective personnel and communication skills, which are definitely a part of the leadership models.

It should be noted, however that there are many types of leadership models available, just as there are many types of leaders and styles. It would probably not be prudent to base a leadership course on only one model, since that would be very limiting. Instead, more than one model should be presented and the learners can judge which model/style suits them best (Gardner, 1990, p. 7). If the e-learning portion of ED7504 can be absorbed into other courses, it would make sense to replace those units with some leadership theories or models so the learners get a good overview of what a leader is and/or what a leader does.

Equivalent Required Capella Courses

In unit six of ED7504 the learners will "investigate the role of e-learning and its place in training and education. The use of multimedia is evaluated in terms of effectiveness, cost, and practical application in an e-learning environment" (Capella University, 2005). Units seven through ten of ED7504 necessitate the learners developing e-learning solutions, investigating the organizational requirements for e-learning and comparing the cost of developing e-learning in-house or using third parties to provide it. These units are almost a duplication of several required and elective classes offered by the University. Designing Online Instruction (ED7211) requires

the learners to focus on the development of a course (or series of courses) taking certain factors into consideration. These factors include design, project management, and instructional methodologies (Capella University, 2005)

Interface Design (ED722) and Instructional Media Tools (ED7503) are focused on designing effective online instruction and evaluating and previewing instructional software. Instructional Design for Distance Learning (ED846), Project Management for Multimedia Development (ED724), and Strategies for Building Online Learning Communities (ED7692) allow the students another chance to design online learning, as well as apply project management techniques and facilitate the interaction of online learners in a virtual setting. Each of these classes is more than a complement to the last units of ED7504, they actually cover the same subjects in more depth and breadth, since they each offer an entire quarter for the subject matter instead of a few units of a course.

Why Covey, Kouzes, and Posner?

With so many leadership models available, why should ED7504 offer only Covey and/or Kouzes and Posner? Some of the appeal of both models is in the ability of the learner to apply the models both personally and professionally. Both models provide the learner with easily understood skills that they can use immediately. Each of the models has stood the test of time, and are also popular. Although popularity does not necessarily make them right, the models do have a little added credibility due to the fact that they have been popular for a long time. Covey also has brand recognition, which only adds to his model's believability for users.

Where the Models Overlap And Differ

Almost every leadership model cites sharing or inspiring a vision as a key characteristic of a leader. It is nearly impossible to lead people for long without a purpose. The organization's existence is at risk if the focus is on the leader, and not on the purpose. As a long-time member of the Jaycees, this author saw the national leadership rely more and more heavily on their personalities and personal agendas. The members had no overriding vision to motivate them. If they did not like the personal mission of the president that year, they only had to wait, and maybe the next year it would be something in which they could become involved. A consistent vision from year to year would have given the organization some stability instead of an annually changing purpose.

Another basic element that stands out in all of the models is trust. Leaders have to trust, and be trusted. When trust is present, the people in the organization can move confidently, even into areas that are unfamiliar. Trust and credibility may make everyone more willing to experiences changes. It is likely that the organization will face changes anyway, but if the people trust the leader, they can approach them with confidence, instead of balking at them.

Something else that is common within these models is the realization that leaders can be made. Kouzes and Posner say it out right, and Covey and others imply it just by presenting their models, their characteristics of leaders, and by showing people how to become leaders.

The last similarity between these models that this author found noteworthy is the fact that not only did the models encourage people to become great leaders, but the underlying goal was to try to enhance their personal lives, and give them goals to aspire to. Covey discusses his "7

Habits" and Kouzes and Posner supply case studies that show good people who become good leaders.

The differences between the models are mainly cosmetic, on the surface. Kouzes and Posner present their model in a concise, straight forward manner that would appeal to people of action, and tasks. They even have a workbook for their readers to use in a practical manner to gain leadership skills. Covey is bit more 'theory-based.' His attention on principles and his slightly spiritual take on leadership gives his readers more things to think about, but less to actually do.

Including Leadership Models into ED7504-Leadership for Instructional Design

The discussion of competencies in units one and two of the course is an appropriate starting point because it gives the learners the chance to assess their own skills and areas of need. Even the units that cover problem-solving through use of Altier's text have merit as problem solving is likely to be a skill that the learners can use at nearly every stage of their professional (and perhaps personal) lives. The last several units are the ones that contain information that can be obtained in other courses. Creating an e-learning solution and crafting a proposal to implement that solution duplicate tasks from the list of equivalent courses discussed previously.

Naturally, if those units are removed from the course, replacement material will have to be included. Since the title of the class is "Leadership for Instructional Design," it seems natural to look at leadership models. Introducing Covey's and/or Kouzes and Posner's models would augment the information offered in ED7504:

1. In keeping with Capella's commitment of providing practical, real world applications, Covey approaches leadership from a personal level, and makes it clear that the learner

- has to start with himself/herself as an individual while Kouzes and Posner give case studies and examples for learners to follow, as well as practical exercises to do on their own.
2. Both models give the learners the chance to reflect on personal values and ethics.
 3. Both models give the learners the chance to make observations about the ethics, values, and missions of the organizations they work in.
 4. Both models introduce new concepts and new perceptions. For example, Covey and Kouzes and Posner declare that leadership is attainable by everyone, and it can be taught, it is not some intangible thing that eludes them.
 5. These models would serve as a base for the learners. They could seek other theories and models and hone some higher level thinking skills by evaluating other theories or synthesizing all of the theories into their own personal model of leadership.

The Future of Leadership

Leaders belong to the future and their "...unique legacy is the creation of valued institutions that survive over time. The most significant contribution leaders make is not simply to today's bottom line; it is to the long-term development of people and institutions..." (Kouzes & Posner, 2003, p. xxviii). Although there is no such thing as an ideal leader, including leadership models in a course dedicated to leadership in instructional design should help the learners begin to develop some of their own potential to lead. If nothing else, they may remember the definition of a leader and use it to change for the better. Maccoby (2004, para. 14) quotes Lao Tzu's description of a leader:

The best of all leaders is the one who helps people so eventually they don't need him...

People don't trust a leader who does not trust them.

The best leader says little, but when he speaks people listen

and when he is finished with his work, the people say we did it ourselves.

References

- Altier, W. J. (1999). *The thinking manager's toolbox*. New York: Oxford University Press.
- American Society for Training and Development Competency Study (2004). Retrieved October 27, 2004, from ASTD site:
http://www.astd.org/astd/Research/competency_study/competency_study.htm
- Analysis & Technology, Inc. (1995). *Competencies and skills for instructional designers*. Retrieved from University of South Florida Instructional Technology Resources site:
http://www.coedu.usf.edu/inst_tech/resources/competen.html
- Collins, J. C., & Porras, J. I. (1996,). Building your company's vision. *Harvard Business Review*, 65-77.
- Capella University (2005). *ED7504 – Leadership for instructional design*. Retrieved February 7, 2005, from Capella University School of Education Extended Description for ED7504:
<https://courses.capella.edu/capella/webdata.nsf/all+docs/ED7504?opendocument>
- Covey, S. R. (1991). *Principle-centered leadership*. New York: Free Press.
- Eales-White, R. (2003, July). The COGAL concept of leadership. *Industrial and Commercial Training*, 35, 203-206. Retrieved October 27, 2004, ABI/Inform Global, ProQuest Psychology Journals database.
- Fabian, N. (2004, October). Leadership—What is it and are you headed for. *Journal of Environmental Health*, 67, 54-55. Retrieved October 27, 2004, from MasterFILEPremier database.
- Fink, D., & Hargreaves, A. (2004, April). The seven principles of sustainable leadership. *Educational Leadership*, 61, 8-13. Retrieved September 7, 2004, from
http://www.ascd.org/publications/ed_lead/200404/hargreaves.html
- Gardner, J. W. (1990). The nature of leadership. In *The Jossey-Bass reader on educational leadership* (pp. 3-12). San Francisco: Jossey-Bass.
- Greenleaf, R. K (1991). *Servant leadership: A journey into the nature of legitimate power and greatness*. New York: Paulist Press.
- Hood, J. N. (2003, April). The relationship of leadership style and CEO values to ethical practices in organizations. *Journal of Business Ethics*, 43. Retrieved October 27, 2004, ABI/Inform Global, ProQuest Psychology Journals database.

- International Board of Standards for Training and Performance Instruction Competencies (2003). Retrieved October 27, 2004, from the IBSTPI site:
<http://www.ibstpi.org/competencies.htm>
- Karim, A. U. (2003, September/October). A development progression model for intercultural consciousness: A leadership imperative. *Journal of Education for Business*, 79. Retrieved on October 27, 2004, from ABI/Inform Global, ProQuest Psychology Journals database.
- Kouzes, J. M., & Posner, B. Z. (2002). *The leadership challenge* (3rd ed.). San Francisco: Jossey-Bass.
- Leithwood, K. A., & Riehl, C. (2003, January). What we know about successful school leadership. Brief prepared for Task Force on Developing Research in Educational Leadership. Retrieved October 27, 2004, from
<http://www.cepa.gse.rutgers.edu/whatweknow.pdf>
- Maccoby, M. (2004, March 1). Finding the right leader. *Research Technology Management*, 47. Retrieved October 27, 2004, from ABI/Inform Global, ProQuest Psychology Journals database.
- Marsh, D. D. (1999). Educational leadership for the twenty-first century: Integrating three essential perspectives. In *The Jossey-Bass reader on educational leadership* (pp. 126-145). San Francisco: Jossey-Bass.
- Rosenberg, M. J. (2001). *E-Learning: Strategies for delivering knowledge in the digital age*. New York: McGraw-Hill.
- Senge, P. M. (1990). *The fifth discipline: The art and practice of the learning organization*. New York: Currency Doubleday.