2014

Worked Examples in Video Lessons to Reduce Cognitive Load

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MS, Walden University, 2009

BM, San Francisco Conservatory of Music, 1993

Doctoral Study Submitted in Partial Fulfillment

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Doctor of Education

Walden University

December 2014

Abstract

Informed parent advocates are essential to planning the educational outcomes of their children with special needs in the K through 12 public school system. However, inappropriate instructional techniques used in advocacy training may reduce trainees' learning outcomes by adding complexity and increasing cognitive load. This study examined whether using worked examples to break down complex problems into component parts to build long term schema could lower cognitive load and thus improve learning outcomes for parent advocacy trainees. Based on cognitive load theory, this 2 x 3 factorial design study examined the efficacy of noninteractive video lessons for parent trainees using worked examples to reduce extraneous cognitive load. Research questions explored the relationships between the independent variables of using worked examples and parents' perceived class relevance on the dependent variable, change in cognitive load of parent trainees, as well as the interaction between training type and perceived class relevance. Two groups of 65 adults in advocacy training (N = 130) participated in a video lesson in either the worked examples or nonworked examples format as part of their advocacy training. The NASA Task Load Index and the Perceived Class Relevance Survey instruments were used to measure cognitive load of trainees and perceptions of training relevance. Key findings included a significant main effect between the use of worked examples and change in cognitive load and significant interaction effects with the perception of class relevance. Training was developed for advocacy trainers in the use of worked examples for learners new to a domain. Implications for social change include improved learning outcomes for parents who must learn IEP terminology in beginning classes to effectively advocate for their children.

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Dedication

This study is dedicated to my husband. His selfless dedication to the happiness of our family even as I pursued my dream of obtaining a doctorate seems proof of the deity. Taylor and Geneva, you can do anything.

Acknowledgments

This research was made possible through the contributions of many people. Many thanks to Dr. Kendra Jiles and Dr. Nicolae Nistor for the guidance and feedback during my doctoral journey.

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Section 1: The Problem

Introduction

Informed parent advocates are essential to planning the educational outcomes of their children with special needs in the K through 12 public school system (Christle & Yell, 2010; Ginsburg & Rapp, 2010; Jones & Gansle, 2010; Lo, 2012). Advocacy training for parents of disabled learners is offered in a region of the United States by nonprofit agencies that operate outside the school district in that region. Inappropriate instructional techniques used in advocacy training may reduce learning outcomes by adding complexity and increasing cognitive load, the work load that can be processed at one time by the working memory (de Jong, 2010; Sweller & Chandler, 1994; van Merriënboer & Sweller, 2010).

The local problem addressed in this study was the local parent advocacy trainers utilized Microsoft PowerPoint presentations simultaneously with many pages of handouts in their beginning advocacy courses, a commonly used instructional technique used in educational settings that is inappropriate for inexperienced learners (de Jong, 2010; WAPAVE, 2011). For beginning learners, the use of worked examples has been shown to be effective in creating a foundation of understanding to support future learning in a subject. Therefore, this study I set out to examine the use of worked examples in a noninteractive video format to determine change in cognitive load and any interaction effect between worked examples and the perception of class relevance on change in cognitive load.

Parents are under considerable stress from a variety of factors connected to their role as caregivers, including severe time constraints, financial worries, social isolation, and emotional and physical strain (Uskun & Gundogar, 2010). To make the best use of parents' time during advocacy training as well as in broader educational settings, instructional materials used should be designed to minimize the cognitive load imposed by the method of instruction (Robinson & Rollings, 2011).

This section includes a definition of the problem and how it is manifested in the local setting. Evidence of the problem at the local and national level found in the professional literature is detailed and definitions relevant to the discussion are provided. A review of the literature including a theoretical framework followed by a summary completes this section.

Definition of the Problem

Inappropriate instructional techniques are being used to educate the parents of special needs children in the Pacific School District (a pseudonym), resulting in unnecessary complexity and reduced learning outcomes (de Jong, 2010; Sweller & Chandler, 1994; van Merriënboer & Sweller, 2010). The Pacific School District has an average of 12.8% of students enrolled in special education. The parents or guardians of children with disabilities in the public K through 12 school system (hereafter referred to as *parents*) are expected to participate as members of their child's educational team in the process of crafting their child's Individual Education Plan (IEP), the document that defines access to a fair and appropriate public education (Christle & Yell, 2010; Office of the Superintendent of Public Instruction [OSPI], 2012a). Parents must learn the skills

needed to advocate effectively for their children regarding IEPs in a timely and effective manner (Christle & Yell, 2010; Jones & Gansle, 2010; Lo, 2012). The Pacific School District refers parents to a local advocacy agency to learn these skills.

Local parent advocacy trainers currently utilize Microsoft PowerPoint presentations accompanied by handouts to teach inexperienced parents the fundamental concepts of an IEP, a technique commonly used in adult education settings. The use of PowerPoints accompanied by handouts used simultaneously is ubiquitous in education. Unfortunately, parents receiving education in beginning level classes using this technique experience slower processing of ideas and may experience decreased persistence in the learning task (de Jong, 2010; Jarrold, Tam, Baddeley & Harvey, 2011; Zheng, McAlack, Wilmes, Kohler-Evans, & Williamson, 2009).

According to Sweller and Chandler's (1994) cognitive load theory, learners can process only a limited amount of information at a given time; exceeding the capacity of working memory causes processing of information to slow and reduces learning capacity (van Merriënboer & Sweller, 2010). Once the working memory has a full load the learner cannot absorb more information until the load has been processed. The use of teaching methods that require learners to attend to two or more sources of information, particularly when the sources are physically separated as with a PowerPoint projected on a screen and a handout directly in front of the learner, has been shown to result in increased complexity resulting in extraneous cognitive load, the portion of cognitive load imposed by the method of instruction (de Jong, 2010; Jarrold et al., 2011; Spanjers, van Gog, & van Merriënboer, 2010; Zheng et al., 2009).

The amount of material the working memory can process at a given time can be optimized by adjusting the amount of information introduced by the method of instruction, or extraneous cognitive load, through effective instructional design based on the level of learner expertise (Sweller, 2010; van Merriënboer & Sweller, 2010). Worked examples break down complex problems into component parts and demonstrate how each subsection works in order to prepare the learner to be able to use the integrated pieces together. Instructional design that uses worked examples is effective in supporting learners new to a domain by helping them to quickly build schema in the subject matter as well as to easily integrate new information into frameworks of understanding presented and developed during instruction (Salden, Koedinger, Renkl, Aleven, & McLaren, 2010; van Merriënboer & Sluijsmans, 2009).

Rationale

Evidence of the Problem at the Local Level

The Pacific School District is located in an ethnically and socioeconomically diverse region of the United States. Pacific School District demographic statistics indicate a racially diverse group of residents: 65.7% White; 12.8% Hispanic; 10.7% Biracial; 4.7% Asian; 3.8% Black; 1.0% Native American; and 1.3% Pacific Islander (OSPI, 2012b). More than 36% of the students in the Pacific School District qualify for free or reduced meals and 12.8 % of students are enrolled in special education programs (OSPI, 2012b; U.S. Census Bureau [USCB], 2011).

The Pacific School District provides special education services to qualified students; however, no officially sponsored support system is available to parents of those

children as they learn how to advocate effectively for their loved ones. The Pacific School District routinely refers parents requesting assistance and support not provided through the district to a federally funded nonprofit agency that offers advocacy training to parents and others involved with special needs children throughout the region The research was conducted through the cooperation of the parent advocacy agency, Empowered Parents (EP), a pseudonym, that serves parents in the state where Pacific School District is located.

Parents with lower educational levels and families with low socioeconomic status are overrepresented in special education (Jones & Gansle, 2010). Parents of special needs children have a 13% high school dropout rate, compared to the national average of 11.6%, although the rate of high school completion for both groups is the same at 22%. Parents of disabled learners remain slightly behind noncaregivers in secondary education with 32% of parents attending some college or technical college and 32% of parents graduating from college versus the national average of 34.8 and 34.2%, respectively (National Alliance for Caregiving [NAC], 2009; U.S. Census Bureau American Factfinder [USCBAF], 2011). The laws and policies in the region and across the United States regulating education of students with special needs are confusing and often conflict with each other (Shaw, Keenan, Madaus, & Banerjee, 2010). Due to a lack of a nationally standardized method of diagnosing learning disabilities, local authorities must interpret diagnostic and service guidelines for special needs students (Hammill Institute on Disabilities, 2011). Only 57% to 63% of residents in the region with disabilities receive services they are entitled to by law, due to the complicated processes required to gain

access to services (Washington State Department of Social and Health Services [WSDSHS], 2011). Effective and appropriate advocacy training on the topic of IEPs is essential for parents of special needs children to gain access to limited special education resources. Instructional materials used in training of learners with little experience in a subject such should be designed to minimize extraneous cognitive load in order to maximize learning (Brehaut et al., 2011; Raver, Michalek, & Gillespie, 2011; Robinson & Rollings, 2011). Worked examples are the most appropriate instructional design for learners with no previous experience in a learning domain (Sweller, Ayres, & Kalyuga, 2011).

Evidence of the Problem From the Professional Literature

Research reveals the complexity of the documents used to inform parents is inappropriate for beginning learners in the field of special education (Mandic, Rudd, Hehir, & Acevedo-Garica, 2012). Mandic et al. found 36.5% of Americans aged 25 to 49 years of age have minimal literacy skills and experience difficulties integrating complex information from reading a text; parents of children in special education had lower literacy scores than the general sample (Mandic et al., 2012). In a study of how literacy issues create barriers for parent advocates of children in special education, Mandic et al. assessed the readability of the 2006 procedural safeguard documents including parent consent, due process, and discipline procedures, provided to parents of children in special education across 50 states and the district of Columbia. Mandic et al. found "a substantial mismatch between the readability of these procedural safeguard documents and the presumed reading ability of the intended audience" and as a result "access to information,

services, and rights is compromised" (p. 200). Analysis revealed 6% of the documents were written at high school grade 10-12 reading level; 55% were written at college level, grades 13-16; and 39% were written at the graduate school level. In light of the complexity of the information, Mandic et al. (2012) asserted "it may be necessary to train . . . service providers to translate written, documented rights to parents" (p. 202). Advocacy training using worked examples breaks down complex concepts into individual elements and facilitates schema building in order to support beginning learners at the initial stages of vocabulary acquisition and, later, concept integration as they gain expertise.

Parents' perceptions of their ability to contribute to the IEP team may be negatively influenced by lack of information and confusing jargon associated with the IEP process (Flynn, Brown, Johnson & Rodger, 2011; Jones & Gansle, 2010). Professionals accustomed to special education terminology may overestimate parents' knowledge of the basic vocabulary used in IEPs, thus compounding feelings of confusion and isolation experienced by parents of children with disabilities (Lo, 2011; Oksa, Kalyuga, & Chandler, 2010). Low socioeconomic status parents attend IEP meetings at a lower rate than high socioeconomic status families and participate less when they attend (Jones & Gansle, 2010). In a quasi-experimental survey of parent participation in IEP meetings, Jones and Gansle (2010) assigned the parents of 41 special education students into two roughly equal groups; the treatment group attended a short pre IEP conference, while the control group did not. Analysis of variance revealed that teachers and administrators observed parents of low socioeconomic status participated less and were

significantly less communicative in IEP meetings than parents with more education and higher socioeconomic status. Jones and Gansle concluded the lower participation levels of these parents may have been due to confusion about the terminology or a feeling of intimidation in a discussion with college educated specialists. By educating parents about the vocabulary, goals, and procedures encountered in an IEP meeting using instructional materials and techniques appropriate for inexperienced learners in the domain, advocacy trainers empower them to participate fully in the IEP process.

Educating parents about what to expect in and from IEP meetings is an important step to empower all parents to communicate effectively in the IEP meeting (Jones & Gansle, 2010; Lo, 2012). The use of videos to integrate audio and visual information may enhance the effectiveness of worked examples to engage inexpert learners in advocacy training (Oksa et al., 2010). Reiman, Beck, Coppola, and Engiles (2010) conducted a review of literature that revealed the majority of parents found the IEP process confusing and felt excluded from the decision making process. Parent recommendations for improvement included removing jargon where possible, creating a more democratic atmosphere, and providing parents with the IEP documents ahead of time in order for them to familiarize themselves with the terminology and the process (Reiman et al., 2010). Impeding the ability of parents to participate in the IEP process “could deprive a student of free appropriate public education" (Christle & Yell, 2010, p. 110). A video using worked examples could be taken home after advocacy training and reviewed prior to attending the IEP meeting, thus empowering the parents to come prepared to participate (Lo, 2012). Determining the effectiveness of the use of worked examples in a

noninteractive video format in reducing cognitive load is important because it will help educators understand how to better craft instruction for parents advocating for their special needs children. By comparing the relative changes in cognitive load between learners watching the worked examples format and the nonworked examples forma of the same video lesson, this study revealed which format might be the most useful for learners. The use of worked examples in a noninteractive video format allows learners to recursively study basic IEP terminology while simultaneously building schema that is the foundation of future learning. The purpose of the research was to investigate the use of worked examples in a noninteractive video format to reduce extraneous cognitive load.

Definitions

Cognitive load: The amount of interactive data that may be processed by the limited capacity working memory at any given moment in time. Cognitive load, distributed additively, is composed of a combination of intrinsic load resulting from appropriate instruction, extraneous load imposed by inappropriate instruction, and germane load essential to problem solving in the subject or domain (de Jong, 2010; van Gog et al., 2010).

Long term memory: A virtually limitless store of information organized as schema, which is retrieved by the central executive and used to integrate new information (van Merriënboer & Sweller, 2010).

Schema: A framework for understanding information. "A cognitive construct that organizes the elements of information in order to store them in long term memory" (Rey & Buchwald, 2011. p. 34).

Worked example: A step by step, worked-out solution to a given problem presented to a learner in order to reveal the schemas necessary to store the processes in the long term memory. “By studying a worked example, students are able to learn key aspects about the problem and use those aspects to solve other problems” (Sweller et al., 2011. p. 99).

Working memory: The section of memory that processes information “composed of two subsystems; one for holding visuospatial information (e.g. written text, diagrams) and one for phonological information (e.g. narration), coordinated by the central executive” (de Jong, 2010, p. 105).

Significance

Stress and anxiety have been found to impede the ability of the learner to direct attention to learning tasks, consuming finite intellectual processes that would otherwise be available for acquiring new information (Matthews & Campbell, 2010; Schoofs, Wolf, & Smeets, 2009). Parents of children in special education experience numerous economic and socioemotional stressors, including a decline in socioeconomic status, social isolation, and deterioration in cognitive function (Brehaut et al., 2009; Dehnavi, Malekpour, Faramarzi, & Talebi, 2011; Santiago, Wadsworth, & Stump, 2011; Thompson & Emira, 2011). Financial stress imposed by caregiving responsibilities often creates both financial and emotional strain (Brehaut et al., 2011; Raver et al., 2011). Parents of children with disabilities often experience social exclusion and the distancing of friends and extended family members (Dehnavi et al., 2011; Thompson & Emira, 2011). The stress produced by financial hardship and social isolation is both chronic and

cumulative and can result in feelings of anxiety and demoralization (Santiago et al., 2011). Reducing extraneous cognitive load in advocacy training through the use of worked examples in a noninteractive video format addresses the learning needs of parents by freeing up cognitive resources to direct attention to learning tasks.

Some disabilities are thought to be hereditary. The likelihood of a child with attention deficit hyperactivity disorder (ADHD), reading, or math deficits having one biological parent with the same learning challenge varies from 28% to 40% (Boomsma et al., 2010; Newbury et al., 2011; Nikolas & Burt, 2010; Willcut et al., 2010). Parents of children in special education have educational attainment and literacy levels slightly lower than the national average (Mandic et al., 2012; NAC, 2009). Initially presenting complex material as a set of isolated elements of information that can be processed in a series may reduce cognitive overload when several elements, or discreet pieces of information that interact during problem solving, must be processed simultaneously in working memory (Blayney, Kayluga, & Sweller, 2010). Blayney et al. found that students learning to problem solve in a high element interactivity domain benefitted from supportive instruction that presented a worked example followed by elements of knowledge carefully presented in order to create schema and minimize extraneous cognitive load. Therefore, instruction using worked examples in a beginning IEP course should assist parents to effectively learn complex concepts and terminology used in the IEP process.

For parents of special needs children, time is a limited and valuable commodity. Learning in advocacy training must be structured as to make the best use of parents' time.

Time and money needed for medical procedures and specialized therapy creates long term financial hardships for families (Raver et al., 2011; Uskun & Gundogar, 2010). In a two-parent home, one parent of a special needs child often needs to reduce his or her hours or quit working in order to gaining access to needed services and provide care, resulting in decreased income, increased stress, and loss of personal time (NAC, 2009; Uskun & Gundogar, 2010). In a qualitative study using semistructured interviews of 10 Canadian adults receiving public assistance who were enrolled in adult literacy classes, Flynn, Brown, and Johnson (2011) found family responsibilities, living situation, and poverty were important barriers to adult educational pursuits among adult caregivers. Participants reported that childcare responsibilities and the need for making money for the household was a higher priority than education, which was fitted in between more immediate demands on their time (Flynn et al., 2011). Frequent moves that resulted in the need for parents to take time to enroll their children in different schools due to financial problems were common and disrupted transportation patterns led to interruptions in their learning (Flynn et al., 2011). The use of a noninteractive video can help these inexperienced learners create schema, or frameworks of understanding, making optimum use of parents' limited study time.

The emotional state of the learner has an effect on cognitive load (van Merriënboer & Sweller, 2010). It is well established that parents of children with special needs experience a host of stressors that negatively impact their ability to learn the systems they must work within to advocate for their children by inhibiting the function of working memory (Brehaut et al., 2009; Dehnavi et al., 2011; Raver et al., 2011). Schoofs

et al. (2009) measured the effects of stress on working memory in a study of 72 male college students. Researchers directed half of the participants to submerge their arms in very cold water for up to 3 minutes to induce transient stress, which was confirmed through increased cortisol levels in the saliva of participants. Researchers administered two tests: the first required participants to perform mathematical operations while remembering a set of unrelated words and a second test consisted of repeating a series of digits backward and forward (Schoofs et al., 2009). The task least affected by stress was counting forward, or simply repeating digits, indicating the participants' working memory was not exceeding cognitive load capacity because it was not as fully engaged. Worked examples in a noninteractive video format are designed to optimize learning opportunities by reducing the negative effects of extraneous cognitive load on executive function, thereby freeing up working memory.

Retnowati, Ayres, and Sweller (2010) found learners with little experience in a complex domain preferred to learn using worked examples. In a study comparing the effect of worked examples to problem solving without worked examples, a cohort of 101 Indonesian seventh graders were taught an algebra lesson using a lecture followed by problem solving and a second lesson via a brief presentation with a worked example, followed by one independent practice (Retnowati et al., 2010). Learning through worked examples was preferred by 84.4% of students and a posttest confirmed learners had higher accuracy on reasoning problems after using worked examples (Retnowati et al., 2010).

The local problem addressed in this study was that instructional techniques not appropriate for inexperienced learners were being utilized in beginning advocacy training, resulting in diminished learning outcomes as well as inadvertently creating complexity during instruction. Learners with no previous experience in a learning domain have no existing frame of reference with which to categorize and combine new information. Instructional design using worked examples which reveal, explain, and intentionally group the steps needed to work through a problem is the appropriate technique to assist learners new to a subject or domain by presenting material in a way that facilitates the creation of frameworks of understanding called schema (Salden et al., 2010; van Merriënboer & Sluijsmans, 2009).

Much research has been done on the use of worked examples to assist learners new to a domain (Scheiter, Gerjets, & Schuh, 2010; van Gog, Paas, Marcus, Ayres, & Sweller, 2009; Vural & Zellner, 2010). In the field of game theory, worked examples in interactive simulations are widely studied and the relatively new field of the use of instructional animations and avatars is another area where the use of worked examples is well represented in current literature. While the use of worked examples pedagogy in online courses is widely discussed in the professional literature, a gap in the research exists in the area of the use of worked examples in a noninteractive video format to reduce extraneous cognitive load (Rebetez, Bétrancourt, Sangin, & Dillenbourg, 2010; Scheiter et al., 2010; Spanjers et al., 2010). This study examining the efficacy of noninteractive video lessons that utilize worked examples to reduce extraneous cognitive load will help the educational community better assist learners to process more of the

information they will need when acting as advocates for their children in special education (Kalyuga, Renkl, & Paas, 2010; Zheng et al., 2009).

Research Questions

In their cognitive load theory, Sweller and Chandler (1994) stated learners are limited by the capacity of working memory, a capacity which can be reduced by stress (van Merriënboer & Sweller, 2010). Instruction using worked examples supports learners with no existing schema in the subject being studied and may help ameliorate the effects of stress by reducing extraneous cognitive load imposed by the instructional methods (van Merriënboer & Sluijsmans, 2009). The use of worked examples in a noninteractive video format to reduce extraneous cognitive load has the potential to be beneficial in this respect to the parents of children with special needs as they go through advocacy training.

A null hypothesis is stated in experimental research to describe an outcome where there is no difference in the mean resulting from the experimental treatment (Lodico et al., 2010). The goal of the research was to discover an effect which confirms the research hypothesis and leads to rejection of the null hypothesis (Lodico, Spaulding, & Voegtle, 2010). In order to explore this avenue of inquiry the following research questions and related null hypotheses were examined:

Q1. What is the relationship between the use of worked examples in a noninteractive video format and change in cognitive load during advocacy training?

H_{01}: There is no relationship between the use of worked examples in a noninteractive video format and change in cognitive load during advocacy training, as measured by the NASA Task Load Index.

Q2. What is the relationship between perceived personal class relevance and change in cognitive load during advocacy training?

H_{02}: There is no relationship between perceived personal class relevance and change in cognitive load during advocacy training as measured by the Perceived Class Relevance Index.

Q3. What is the effect of perceived personal class relevance on the use of worked examples in a noninteractive video format to change cognitive load during advocacy training?

H_{03}: There is no effect of perceived personal class relevance on the use of worked examples in a noninteractive video format to change cognitive load during advocacy training.

Review of the Literature

Theoretical Framework

The theoretical base of the research was Sweller and Chandler's (1994) cognitive load theory (Chen & Chang, 2009; Savundranayagam & Brintnall-Peterson, 2010). Cognitive load theory is based on a computational model of memory that consists of the working memory, a short term area in which incoming information is sorted and distributed into long term memory (Allen, Hitch, & Baddeley, 2009; Laine et al., 2009*)*. Sweller and Chandler's cognitive load theory built on earlier findings that human memory can only treat five to nine novel information elements concurrently (Miller, 1956) and incorporated a model of working memory developed by Baddeley and Hitch (1994).

Miller's (1956) seminal work on the capacity of working memory was founded on the mechanical explorations of Shannon (1948) and modified for use in the field of psychology to address the capacity of the human brain to process information. Research conducted by Shannon at Bell Labs resulted in a logarithmic base for understanding and optimizing signal to noise ratio when communicating the binary integers 0 and 1, a fundamental concept in the telecommunications industry. Miller (1956) reviewed contemporary understandings of *variance*, a term from information theory referring to the percentage of information successfully transmitted from electronic sender to receiver (Shannon, 1948). Transforming the term variance into the phrase *amount of information*, Miller used Shannon's term *bit* as the means of measuring individual units or elements of information, explaining "a bit of information is the amount of information that we need to make a decision between two likely alternatives…every time the number of alternatives is increased by a factor of two, one bit of information is added" and the complexity level is geometrically increased (p. 83). Thus, Miller moved what had formerly been a purely scientific construct into the realm of social sciences, using the term *element* instead of datum to reflect the added complexity of the interaction of data in human cognition.

A fundamental difference between Shannon's early work in telecommunications theory and Miller's research into the psychology of learning is that the elements of information communicated by human beings are not binary, but interact with each other, often requiring an understanding of a previously communicated element to interpret a new element or set of elements. In a review of literature, Miller (1956) discussed the findings of four experiments using unidimensional stimuli in tone, loudness, and taste to

measure the capacity of recipients to immediately interpret information. Experiments using increasingly complex stimuli with interactive elements such as sweet and salty taste within a solution, loudness and pitch levels of sound, and the identification and depth level of colors revealed a memory capacity that leveled out at an average of seven data pieces able to be clearly discerned by the brain (Miller, 1956).

Expanding on Miller's findings, Baddeley and Hitch (1974) conducted a series of experiments in an attempt to discern if learning, reasoning and comprehension occur within a shared system of working memory. In their first experiment, 24 undergraduate participants were divided into equal groups and asked to identify if a letter in the English alphabet was preceded by another letter while holding one, two or three items in memory, a technique referred to as memory loading. Researchers directed items to be held in memory to the visuospatial sketchpad (visual) or the phonological loop (audio) separately; the first group of participants received the memory item as an auditory preload, the second group had memory items visually preloaded (Baddeley & Hitch, 1974). Results showed the manner of preloading had no effect on memory and two items were easily remembered by both groups (Baddeley & Hitch, 1974). A follow up experiment was conducted to determine whether the number of preloaded items used was too low to impact the working memory or if the subsystem used to receive the preload memory input was not important (Baddeley & Hitch, 1974). Twelve undergraduate participants repetitively performed 32 reasoning tasks, the first time with a silent control and followed by three more repetitions during concurrent memory loading comprised of phrases to be rapidly uttered by participants , "the-the-the…, one-two-three…," and six

random digits (Baddeley & Hitch, 1974. p. 54). Analysis of variance revealed a loss of recall when six memory items were loaded and had to be remembered during the cognitive task due to the limited storage load of working memory, thus confirming Miller's findings of a limited capacity working memory (Baddeley & Hitch, 1974).

Baddeley and Hitch continued their research into working memory systems and eventually developed a model of working memory. In 1994, Baddeley and Hitch proposed a limited capacity, four part model of working memory model consisting of two distinct and coordinated areas of input, the visuospatial sketchpad and the phonological loop, which are managed by an overarching central executive (Allen et al., 2009; Gerjets, Scheiter, & Cierniak, 2009; Laine et al., 2009). According to the model, once an individual has filled the working memory with new information, they have a full cognitive load and are incapable and of considering further input until the cognitive load has been distributed (Allen et al., 2009; Laine et al., 2009). Processed and sorted information is either rejected or passed into a virtually limitless long term memory (Allen et al., 2009; Laine et al., 2009). Baddeley and Hitch (1974) speculated the bottleneck of information which sometimes occurs in working memory was due to the creating of new frameworks and the time needed to retrieve prior knowledge in order to provide a context of understanding for new elements of information.

Sweller and Chandler's (1994) cognitive load theory addressed the bottleneck between working memory and long term memory. Cognitive load theory expanded on Baddeley and Hitch's (1994) working memory model by clarifying and delineating the distribution of information across a limited capacity working memory, a process that

occurs in approximately two seconds. Sweller and Chandler focused on the interaction between the two subsystems; the phonological loop and visuospatial sketchpad (Gerjets et al., 2009; Kalyuga et al., 2010).

According to cognitive load theory, the phonological loop is the chamber responsible for processing audio input and labeling visual information (Sweller & Chandler, 1994). Memory processed in the phonological loop fades after about two seconds unless it is refreshed by a recoding mechanism to categorize learning in to chunks via labeling, an idea also suggested by Miller (Baddeley & Hitch 1994). The visuospatial sketchpad is a bicameral chamber that integrates visual and or spatial input; purely spatial information can be retrieved from this chamber to interact with the phonological loop to process information, but visual information must be integrated with spatial understanding in order to be retrieved (van Merriënboer & Sweller, 2010). Both must function together to recall visual information. Baddeley and Hitch speculated that the time and cognitive resources used to retrieve and recode information were the cause of a bottleneck of information processing in working memory. Sweller and Chandler's cognitive load theory addresses this bottleneck.

Working Memory

The capacity of working memory can be exceeded through an excess of cognitive load, causing the working memory to be unable to accurately process information and leading to decreased cognitive function. Cognitive load theory includes three categories of cognitive load that are distributed throughout available working memory (de Jong, 2010; van Merriënboer & Sluijsmans, 2009). Intrinsic cognitive load is related to the

complexity of the material to be learned, germane cognitive load is created by the learning processes utilized by the student, and extraneous cognitive load is imposed by instructional design (de Jong, 2010; van Merriënboer & Sluijsmans, 2009). The three types of cognitive load are additively distributed through the working memory (van Merriënboer & Sweller, 2010). For example, if extraneous cognitive load utilizes 30% of working memory, the remaining 70% must be divided between intrinsic and germane load. Once an individual has filled the working memory with new information further input is likely to be inefficiently processed until the existing cognitive load has been distributed (Allen et al., 2009; Laine et al., 2009). Instructional design techniques based on cognitive load theory seek to minimize extraneous cognitive load, freeing up more working memory for learning tasks (Kalyuga et al., 2010; Zheng et al., 2009).

Schema are comprehensive frameworks which function as one unit of novel information to be processed by working memory that are created in working memory by combining elements (van Merriënboer & Sweller, 2010). While long term memory has a virtually limitless capacity to store schema of various complexities, it relies on the working memory to organize and categorize information before it can be stored and retrieved (van Merriënboer & Sweller, 2010). Worked examples break down complex problems into their components parts, revealing how these parts function separately and presenting the information to inexperienced learners in chunks that facilitate the building of schema (Sweller et al., 2011).

Existing cognitive schema retrieved from long term memory are useful for integrating learning into existing frameworks because they allow complex data to be

processed as one piece of information, thus reducing cognitive load (Gerjets et al., 2009; van Merriënboer & Sweller, 2010). As expertise is developed through intensive practice, schema become automated and can be immediately acted upon without analysis through the working memory (van Merriënboer & Sweller, 2010). In a classic experiment de Groot (1965) asked himself why chess grand masters could reliably defeat competent week end players. De Groot used configurations from actual chess games to test the recall of chess player of various skill levels, showing them a board configuration for five seconds before removing it, then asking the players to reconstruct the layout. Chess masters and grand masters had a high degree of accuracy reproducing configurations, while less skilled players did poorly on the task (Sweller et al., 2011). Chase and Simon (1973) repeated de Groot's research, confirming his results. They then duplicated the experiment but substituted computer generated configurations of chess pieces rather than game generated configurations, resulting in an equally poor performance by both grand masters and less skilled players (Sweller et al., 2011). Chase and Simon's results implied that grand masters' deliberate practice over several years memorizing board configurations and the most effective responses resulted in a large store of patterns that actually occur in chess games played by human beings, rather than those generated by computer. The schema the experienced players had accumulated was available for immediate recall resulting in a level of expertise (Sweller et al., 2011).

Working memory is limited both in processing capacity and speed, with an average of seven items that can be processed at once and decay speed of approximately 20 seconds, unless the information is actively rehearsed (Sweller et al., 2011). For

inexperienced learners, providing a framework by chunking the actions or operations needed to solve a complex problem is helpful in building schema (Sweller et al., 2011). Miller illustrated this principal by describing a telegraph operator who first learns to recognize each pattern of clicks of the telegraph as a separate sound. As he gains experience, the telegraph operator mentally organizes, or *chunks*, these clicks into letters, then words, and ultimately phrases that are stored in long term memory (Miller, 1956). The method of instruction must take into account not only the level of expertise of the learner, but the speed and quantity in which elements of new information are introduced.

Van Gog et al. (2009) cautioned that instructional video can, by transmitting a rapid succession of changing ideas, create an excess of extraneous cognitive load in the working memory resulting in loss of some the information. They suggested the use of segmentation, or strategic pauses, might provide a solution to this potential bottleneck of information (van Gog et al., 2009). Chunking of sections in video lessons within a module to highlight learning objectives can be achieved by dividing segments with a one or two second pause between main idea groupings to provide learners with a needed moment to process what they have learned and group associated information (Rebetez, et al., 2010; Spanjers et al., 2010). Video clips are widely used in education (Rebetez et al., 2010; Scheiter et al., 2010; van Gog et al., 2009). By designing instructional videos using chunking and segmentation appropriate for the experience level of the intended audience, video clips can be created or edited to minimize extraneous cognitive load.

Worked Examples

Worked examples are an effective means to assist learners exposed to material for which they have inadequate schema (van Merriënboer & Sluijsmans, 2009; Sweller et al., 2011). The use of worked examples as schema building devices for learners with minimal schema results in decreases in extraneous cognitive load and instructional time necessary to achieve learning tasks (Salden et al., 2010; van Gog & Rummel, 2010; van Merriënboer & Sluijsmans, 2009). Worked examples are effective in concrete or well-structured domains that require the use of algorithms or formulas to solve problems such as the sciences, as well as abstract or ill-defined domains such as the arts or humanities, that do not use formulas to find solutions and often have more than one correct answer to a query (Sweller et al., 2011). Learners who are new to a subject benefit from worked examples in two ways: First, as they are able to see how solutions are organized and applied, and secondly, as they acquire schema for use as a foundation on which to build further understanding.

Worked examples provide schematic support to learners as they acquire skills necessary to solve increasingly complex problems (Kopp, Stark, Kühne-Eversmann, & Fischer, 2009; van Merriënboer & Sluijsmans, 2009). The introduction of erroneous information when teaching foundational frameworks to inexperienced learners in a learning domain can result in extraneous cognitive load. Kopp et al. conducted research on the effectiveness of worked examples that compared levels of feedback through feedback using either examination of errors and or analysis of correct student assertions. In a 2 x 2 factorial design, 124 German medical students divided into two groups

participated in an online simulation under the guidance of a virtual doctor in a virtual typical clinic (Kopp et al., 2009). Using the study-solve strategy all learners began with worked examples that provided correct information on which the respondent made a preliminary diagnosis and received accurate feedback from the virtual doctor. The participants were then presented a medical problem for diagnosis and participated in five to seven cycles of communication in which one half of the participants received elaborated feedback based on correct information and the other half received feedback in the form of analysis of incorrect diagnoses (Kopp et al., 2009). Analysis of variance revealed the accurate feedback group made more correct diagnoses than the analysis of errors feedback group, who also reported an increased perception of cognitive load (Kopp et al., 2009). These findings confirm that worked examples supplying accurate information in a study-solve sequence are an effective method of supporting inexperienced leaners to acquire schema (van Merriënboer & Sluijsmans, 2009).

For learners with no experience in the subject matter, building schema requires effort and consumes cognitive resources. The introduction of unstructured data for which an inexperienced learner has no existing schema creates extraneous cognitive load (van Merriënboer & Sluijsmans, 2009). Vural and Zellner (2010) examined the effect software with interactive concept maps on student learning to determine the efficacy of graphic organizers in the form of concepts maps to assist inexperienced learners in building frameworks of understanding (Vural & Zellner, 2010). American graduate students (N = 115) were divided into two groups to receive instruction online and the treatment group was asked to complete an interactive concept map as they progressed (Vural & Zellner,

2010). Students completing the concept map spent more time online, however regression analysis revealed no direct relationship between total time online interacting with the software and student achievement (Vural & Zellner, 2010). In the discussion of their findings, the researchers proposed that the time students spent creating a concept map created an increase in cognitive load and hindered overall learning (Vural & Zellner, 2010). These findings show that the unstructured introduction of elements that must be then sorted into schema without the support of chunked worked examples creates an increase in extraneous cognitive load (van Merriënboer & Sluijsmans, 2009).

Worked examples follow a study-solve strategy, providing a completed problem followed by partially worked problems. By revealing the steps necessary to complete the problem, worked examples using this strategy provide the inexperienced learner with chunked information to create supports for assembling schema (Scheiter et al., 2010; Sweller et al., 2011; van Merriënboer & Sluijsmans, 2009). Two research teams conducted investigations into the use of worked examples in a study-solve sequence using Cognitive Tutor, a web based intelligent tutoring application. In Cognitive Tutor, the worked examples show each step necessary to complete a problem and learners can refer back to previous steps to examine the progression of ideas. By contrast, traditional completion type problems utilized by Cognitive Tutor do not offer guidance in the unfinished segments of the incomplete examples. (McLaren, Lim, Gagnon, Yaron, & Koedinger, 2006; Schwonke et al., 2009). The first team, McLaren et al. used a 2 x 2 factorial study to determine the relationship between personalization and worked examples and learning outcomes. Participants ($N = 69$) were recruited from two

introductory chemistry courses in British Columbia and researchers assumed a high school level of expertise in chemistry and algebra (McLaren et al., 2006). Participants were divided into the four conditions (personal/impersonal feedback, instruction and hints, and supported problem solving/supported problem solving with worked examples) and completed 15 basic chemistry problems using the Cognitive Tutor software. Repeated measures ANOVA revealed no significant interaction between personalization, worked examples, and learning outcomes until researchers divided participants into levels of expertise based on their pretest scores to examine possible prior knowledge effects and included this in the analysis. McLaren et al. found the group with the least expertise had a 29% increase in mean scores using worked examples, while the expert group gained only 3% in mean scores (McLaren et al., 2006). These findings are in line with the worked example principle, which states learners lacking schema benefit the most from worked examples (Sweller, 2011). A cognitive load based interpretation of the findings of McLaren et al. suggest that the learners used a means ends analysis as a result of being shown the end and left to find the means to achieve it without guidance, creating excessive extraneous cognitive load as the learners review schema and elements that may or may not apply to the problem (Sweller et al., 2011).

The use of a means ends approach results in increased confusion for minimally experienced learners, who will test out a variety inapplicable schema in a search for an approach to solve the problem and experiencing an increase in extraneous cognitive load, reducing their capacity available for learning (Sweller et al., 2011). By providing a completed example problem and then intentionally building a schematic framework, the

use of worked examples helps inexperienced and minimally experienced learners to avoid increasing extraneous cognitive load by seeking a means ends solution. However, McLaren et al. (2006) explained the difference in results between novices and more experienced learners by asserting that the study-solve method using worked examples supplied by the Cognitive Tutor software was not effective, implying that the study-solve strategy used in Cognitive Tutor added little value to tutored problem solving in a learning environment (McLaren et al., 2006).

In a related experiment using the Cognitive Tutor interface, researchers Schwonke et al. (2009) found the use of a series of worked examples is superior to traditional completion type problems in web based applications, thus refuting the assertions of McLaren et al. (2006). Schwonke et al. investigated the efficacy of using worked examples using a study-solve method versus traditional tutored problem solving with no worked examples in a web based environment. The researchers recruited 30 German high school students with minimal expertise in the subject who were then randomly assigned to one of two equal groups. Students in the worked examples group received instruction using the study-solve approach while the control group received traditional completion-type problems (Schwonke et al., 2009). Analysis of variance revealed worked examples using the study-solve approach led to decreased instructional time for equivalent learning outcomes (Schwonke et al., 2009).

Worked examples presented in a video format can use pauses at strategic points to create chunks or boundaries on the material to assisted learners new to a domain in building schema (Spanjers et al., 2010). Segmented video instructional materials assist

learners new to a subject by providing concrete examples of abstract concepts presented within schematic frameworks (Scheiter et al., 2010). Scheiter et al. studied the use of video animations to extend the efficacy of worked examples in abstract domains. Two groups of German 9th grade students ($N = 32$) were divided in half and used a computer based algebra program to view nine textbook based lessons that used worked examples. The experimental group additionally viewed a video animation that broke down the abstract problem into steps (Scheiter et al., 2010). MANOVA analysis indicated the use of worked examples through video animation enhanced problem solving performance.

One method of delivering instruction for beginning learners is the use of short video which presents worked examples that provide chunked information to facilitate the creation of schema. In a review of the effects of video segmentation on learning outcomes, Spanjers et al. (2010) discussed an experiment in which a group of students in a teacher education program viewed an instructional video containing a series of chunked segments, while another group viewed the video without pauses (Spanjers et al., 2010). Learners using the segmented video reported less cognitive effort in learning the materials (Spanjers et al., 2010). In a similarly structured experiment two groups of students were shown an animation on the formation of lightning; the group viewing the segmented version had higher scores on a test of the subject than those viewing the unsegmented video (Spanjers et al., 2010). Chunking of worked examples in a noninteractive video format should help learners with minimal experience in a subject to build schema through structuring of material and the insertion of pauses that allow learners to cement their new understandings into schematic frameworks.

Perceived Class Relevance

Learner motivation is enhanced by the perception that the material being studied is personally relevant, meaningful, valuable, and applicable in the life of the student (Ling-Yee, 2011; Park & Choi, 2009). Indeed, the perception of personal class relevance is one of the most critical factors in a learner's decision to persist in a course of study (Park & Choi, 2009). To better understand how teacher behaviors meant to increase student feelings of class relevance influenced student attitudes and motivation. Mottett et al. (2008) conducted a survey of 497 ninth grade students in Texas. Students were surveyed during one class period regarding a variety of teacher behaviors that supported content relevance including teacher explanations of how the learning related to student career goals and making clear connections to student interests during instruction (Mottett et al., 2008). Two-way ANOVA analysis showed teachers' content relevance behaviors were strongly related to affective learning outcomes. The researchers concluded that behaviors supporting content relevance increased learner motivation and increased engagement (Mottett et al., 2008).

Practices supporting student perception of content relevance can be incorporated into curriculum. Ling-Yee (2011) asserted that educators had a professional responsibility to increase the perceived value of each lesson as a means of increasing overall student engagement. Ling-Yee examined the relationship between perceived task value and learning outcomes using a survey 155 first year business students in Hong Kong University. A path analysis of survey responses revealed that an increased in perceived value of the task resulted in a higher degree of academic self-efficacy and critical

thinking in both individual online projects and group work settings (Ling-Yee, 2011). Ling-Yee asserted measurement of perceived task value must be measured with reference to specific coursework or tasks. Ling-Yee's findings suggested that by building the perception of task value into lessons, educators can increase overall perception of class relevance.

Learner perception that a task is personally valuable increases motivation, leading to enhanced effort. Nasiriyan, Azar, Noruzy, and Dalvand (2011) used survey research to examine the effects of task value on achievement goals in a study of 280 Iranian high school mathematics students with an average age of 17 years. Results from a path analysis showed that task value had a strong positive correlation with effort, and a moderately strong correlation with achievement. Nasiriyan et al. noted when learners found a lesson to be both meaningful and relevant to their personal goals it resulted in increased effort and persistence in the learning task. These findings showed that student success can be greatly enhanced through appropriate instructional techniques.

Relevance and satisfaction are both important aspects in motivation (Park & Choi, 2009). Park and Choi found that learners are less likely to dropout when they can see a connection between the coursework, their personal experiences, and their career goals. In a study to identify factors contributing to adult learners' decision to persist or drop out of online courses, researchers surveyed 147 learners who either completed or dropped out of an online course at a Midwestern University (Park & Choi, 2009). MANOVA and factorial analyses revealed a positive correlation between students' persistence, satisfaction, and perceptions of personal relevance of coursework (Park & Choi, 2009).

The researchers postulated that learners arrive in the course setting with a preexisting amount of motivation based on their perception of the course relevance and suggested educators can enhance this perception by using instructional design incorporating students' interests, experiences, and professional goals (Park & Choi, 2009).

By engaging learners during the educational process, teachers may naturally create perceived relevance. Muddiman and Frymier proposed that teachers do not create relevance that is not already present and that the perception of relevance might be the result of engagement as an outcome of effective teaching (Muddiman & Frymier, 2009). In a study exploring the efficacy of teacher-created relevance, 184 Midwestern university students taking lower level communications courses were surveyed via email regarding techniques their instructors employed to create content relevance. When results were coded, the largest self-reported relevance category to emerge was "outside course relevance" (47%) which contains such subsets as "current life and interests" and "future lives and interests" (Muddiman & Frymier, 2009. p. 136). Muddiman and Frymier (2009) noted that perception of relevance may lead to student elaboration on the coursework, resulting in increased retention of information. The researchers concluded found that instructors' relation of coursework to students' lives, interests, and career plans is an effective means of enhancing perceived class relevance (Muddiman & Frymier, 2009). These conclusions were in line with cognitive load theory, in that the learner who spends more time considering information will be able to create and connect with existing schema, resulting in deeper learning.

Students arrive in a class with different levels of motivation, affects (emotional states) and perceptions of content relevance (Webster, Mindrila, & Weaver, 2011). Webster, Mindrila, and Weaver examined the effect of perceived relevance on motivation and student affect related to the specific course on learning outcomes. Researchers surveyed 636 South Carolina high school students to determine their levels of perceived class relevance, attitudes about the class, and level of effort they are putting forth in the class. Factor analysis revealed that perceived class relevance, including the belief the coursework was useful to the student immediately and potentially valuable for future courses, had a positive correlation with student affect (emotional state) and motivation. Webster, Mindrila and Weaver (2011) suggested learners beginning the course with a high perception of perceived class relevance were more likely to apply their learning in the future and proposed that student motivation toward a particular class may influence learning behaviors, engagement levels, and efficacy of teacher efforts to increase class relevance. Teachers must endeavor to support existing personal relevance and increase it where possible to sustain motivation and persistence needed to build schema.

Search Terms and Booleans

This research began with an overview of current theories on the topics of memory and learning. Investigation into how the memory functions during learning under stress led to the selection of cognitive load theory and worked examples as an instructional model for beginning learners in advocacy training. An article by de Jong (2010) provided a detailed critical overview of cognitive load theory, and including opposing and divergent perspectives. Investigation into learner engagement and persistence was refined

and the research becamemore tightly focused on of the perception of relevance on learning outcomes. Miller's (1956) early work on the limited amount of discrete inputs the average person can process led to an increased interest in the use of worked examples, and there appeared to be a shortage of research on the use of noninteractive videos in favor of the study of interactive learning in gaming or hybrid educational environments.

Booleans used in this search were: *Advocates, attention, caregivers, central executive, cognitive load, cognitive load theory, expertise reversal, IEP, learning, learning disabilities, parents, relevance, socioeconomic status (SES), stigma, stress, worked examples, working memory.* I combined some of the Boolean search terms, and often had to set the filter to exclude the term *gaming.* While conducting athereview of the literature the related themes of low-SES, reduced access to assistance, stigma, and lack of persistence appeared frequently.

The Walden University library was used to access current literature. Search parameters were established by setting limiters within the database to find only peer-reviewed research published within the last five years, and the option to view all periodicals within that database was selected in order to gain the broadest access to appropriate literature. Articles that met the limitations criteria described above but were available only in abstract through Walden were purchased directly from publishers such as SAGE and Elsevier.

To find related statistical research, several governmental public data sources that provide current information about people with disabilities were utilized. The Department of Health and Human Services and the Washington State Office of the Superintendent of

Public Education provided online information regarding the rights and responsibilities of caregivers as well as a searchable statistical database (OSPI, 2012a; WSDSHS, 2011). A customizable database of national statistics, the U.S. Census Bureau American FactFinder, was also utilized to find detailed demographic information relevant to this research (USCBAF, 2011). The National Center for Special Education Research provided further statistical information and scholarly research about children with disabilities and the experiences of their families (NCSER, 2012).

Implications

The research investigated the efficacy of worked examples in a video format. Worked examples have proven effective in concrete domains, and there is a growing body of evidence indicating that worked examples are effective for beginning learners in abstract domains and in a variety of instructional genres including online and group learning (Kopp et al., 2009; Schwonke et al., 2009). Based on the review of literature, one future project incorporating the outcomes of the research was a professional development unit teaching how to create brief introductory lessons using worked examples methodology. Another possible project was collaborating with the parent advocacy team to develop curriculum specific to their needs using a service-learning model. Because perceived class relevance had a statistical impact on the outcomes, creation of a unit of instruction in PowerPoint to teach practices that support the perception of class relevance was another avenue to explore.

Summary

The theoretical framework of cognitive load theory, worked examples, and perceived class relevance were discussed in this section of the study. The theoretical base of the research was Sweller and Chandler's (1994) cognitive load theory (Chen & Chang, 2009; Savundranayagam & Brintnall-Peterson, 2010). Cognitive load theory is based on a model of memory that consists of the working memory, a short term area in which incoming information directed at the visuospatial sketchpad that is associated with visual or spatial input, or the phonological loop that is associated with audio processing, or both and is subsequently sorted by the central executive and distributed to long term memory (Allen, Hitch, & Baddeley, 2009; Laine et al., 2009).

Cognitive load theory addresses three factors affecting the amount of information a learner can integrate in the working memory: Schema, instructional design, and the emotional state of the learner (van Merriënboer & Sweller, 2010). Existing cognitive schema retrieved from long term memory are useful for integrating learning into existing frameworks because they allow complex data to be processed as one piece of information, thus reducing cognitive load (Gerjets, Scheiter, & Cierniak, 2009; van Merriënboer & Sweller, 2010). The amount of material the working memory can process at a given time can be optimized by adjusting the amount of extraneous cognitive load through effective instructional design (Sweller, 2010; van Merriënboer & Sweller, 2010). Worked examples break down complex problems into their component parts, and then reveal how these parts interact. Creating an understanding of the actions or operations needed to solve a complex problem is helpful in building schema (Sweller et al., 2011).

Segmented videos are designed to use intentional pauses in the presentation to facilitate understanding through the building of schema in a way shown beneficial for learners approaching a subject for the first time (van Merriënboer & Sweller, 2010).

Key points of the study included an examinations of the effectiveness of worked examples in a noninteractive video as compared to the same lesson in a nonworked examples format to reduce extraneous cognitive load and the effect of perceived class relevance as a mediating factor. Section 2 provides an explanation of the methodology including setting and sample, instrumentation and material, and data collection procedures. The method of analysis is described as well as assumptions, limitations, scope and delimitations. To end the section, measures taken for the protection of human subjects are discussed.

Section 3 of this doctoral study will describe a PowerPoint project developed from the results of the study detailed in Sections 1 and 2 that supports relevance using a measurable and established model of motivation. Goals of the project will be detailed and best practices examined. A detailed description of implementation details, and the evaluation instrument will be followed by discussion of the PowerPoint project's possible implications for social change. Section 4 will contain an analysis of the project's strengths and limitations, and different avenues of examining the problem will be considered. Scholarly reflection including growth as a scholar, practitioner, and project developer will be explored and the significance of the work will be summarized. Finally, implications, applications, and suggestions for future research will complete the section.

Section 2: The Methodology

Introduction

A 2 x 3 quasi-experimental pretest and posttest factorial design using two leveled factors and one dependent variable (DV) was the appropriate design (Creswell, 2012). The research examined the relationship between the two independent variables (IVs) of worked examples in a video format and perceived class relevance on the dependent variable, change in cognitive load. Factorial design revealed the relationship between each of two or more leveled factors, IVs containing two or more levels each, and a dependent variable, making factorial design the best fit for the research (Creswell 2012). Walden University's approval number for this study was 09-04-13-0076447.

Independent variables are those that influence the dependent variable (Creswell, 2011). The first IV was a factor with two levels: The first level was the video treatment using of worked examples in a noninteractive video format. The second level was the nonworked examples video. The second independent variable (IV) was perceived personal relevance of coursework (Creswell, 2009). Because the perception of personal relevance has been shown to impact learning outcomes it was measured as a second factor with three levels: High, Medium, and Low. The dependent variable (DV), influenced by the independent variables, was the change in cognitive load (Creswell, 2012). The influence of each variable on the dependent variable is known as a main effect and the relationship between the independent variables is known as the interaction effect (Edmonds & Kennedy, 2013). The existence and strength of the various relationships was

determined through analysis of variance (ANOVA) statistical analysis (Green & Salkind, 2011).

Setting and Sample

Advocacy training is designed for parent advocates to gain information required to participate in an informed manner as members of an educational team. Parents, guardians, or service providers may attend parent advocacy training. Advocacy trainers travel across the region to deliver one or two days of training to ad hoc groups, which disperse after completing the training. The director of the parent advocacy training agency stated that the agency provided over 18,000 adults 18 years or older with information on assisting disabled learners in the K through 12 public school system the fiscal year 2010-2011; of this population, 1,656 participated in 57 advocacy training workshops, resulting in an available sampling frame averaging 29 participants per advocacy training event (V. McKinney, personal communication, January 15, 2012). Creswell (2012) stated that when existing groups are being compared researchers may use a statistical power analysis to determine the appropriate number of participants for each group. Based on a sampling frame of 1,656 participants in advocacy workshops, a power analysis was conducted to determine the appropriate sample size for the worked examples and nonworked examples groups (Creswell, 2012).

A power analysis using Lipsey's Sample Size table was an appropriate means of determining a robust sample size because the number of participants available was limited by practical constraints such as a limited population of adults taking advocacy training and who choose to participate (Creswell, 2012). In order to use Lipsey’s Sample

Size table, three factors were determined: The statistical level of significance was set at p = .05; the power needed to reject the null hypothesis was .80, and; the effect size was set at .05, a common setting in educational research (Creswell, 2012). According to Lipsey's Sample Size table, then, both the worked examples and nonworked examples groups included 65 participants each for a robust sample (N = 130; Creswell, 2012). Robust response rates are desirable because enhance the generalizability of findings to a larger population (Creswell, 2012). With a modest response rate of 75% and an average advocacy training group size of 29, the total sample size of 130 was expected to be reached for both the worked example and nonworked example groups in three trainings with an estimated total of 174 participants.

Selection of Participants

Participant randomization was achieved using cluster random selection and assignment of intact advocacy training groups, a common necessity in educational research that often does not lend itself to true random sampling (Creswell, 2012). Lodico et al. (2010) recommended cluster random selection for situations where groups may be randomly sampled yet individual sampling is not practical. Advocacy trainers travel throughout the region (WAPAVE, 2011). Advocacy trainings are typically held in one large room in a publicly available space, such as a library or community center, making individualized use of worked examples in a noninteractive video format impractical. Each of the 39 counties scheduled for an advocacy training workshop within the upcoming three month period was numbered and a random number generator was used to assign three (participant) counties in which the treatment of worked examples in a

noninteractive video format would be used during advocacy training, and three counties which would use the nonworked examples version of the video (Lodico et al., 2009; USCB, 2011). The advocacy group agreed to fully sponsor the survey research and the survey instruments were administered within the standard delivery of their beginning advocacy classes.

As there were not a total of 130 fully informed and consenting adult participants after initial data collection, two more counties scheduled to hold advocacy training workshops were assigned as described above using cluster random selection. The procedure was repeated until the sample size of 130 was obtained. The collection of a robust sample spanning several counties was useful in assessing the needs of the EP trainers, and was used in development of instruction for these teachers (Appendix A).

Treatment

Two groups receiving differing training within the standard delivery of their beginning advocacy class were compared in this study. The advocacy course used in the study was a beginning class explaining how the IEP works. The course was designed to be the first exposure to the information for parents new to the subject. Core understandings to be gained in this training were the meanings of Individual Education Plan and Free and Appropriate Public Education in the context of public education. Both groups viewed a six minute video used by the advocacy group to teach these core understandings: One half of the classes used the video that follows a worked examples format including intentional ordering of material and chunking, and the other half of the classes watched the same video in a nonworked examples format. Surveys described in

the next section were administered by myself in my role as researcher to compare the differing training of the two groups of learners.

Instrumentation and Materials

The NASA Task Load Index was administered to all participants using the unaltered paper and pencil form both before and after the video portion of advocacy training to measure the difference in cognitive load (Appendix B). The NASA Task Load Index is a validated and long established instrument originally designed by the National Aeronautics and Space Administration (NASA) in 1988 to measure workload and commonly used measure cognitive load (Hart, 2006; Sweller et al., 2011). Self-report measures have been found effective in cognitive load measurement (de Jong, 2010; Hart, 2006; Sweller et al., 2011). The NASA Task Load Index is composed of six questions with a 1-7 Likert scale response format assessing self-reported physical, mental, and time demands, together with participant perceptions of success, effort, and frustration, to form an overall workload score (Hart, 2006; Sweller et al., 2011). Scores on the six items were statistically regressed against the overall construct resulting in a correlation coefficient of $R^2 = 0.78 – 0.90$ (Green & Salkind, 2011; Hart & Staveland, 1988). The correlation between the test-retest rating was .83 (Hart & Staveland, 1988). Permission from the author in writing to administer the NASA Task Load Index in the paper and pencil format available for download was acquired (Appendix B). The NASA website offered two validated paper and pencil versions of the instrument for download and the version of the instrument with a more appropriate vocabulary level was selected for use (NASA, 2013). Two modifications to the NASA Task Load Index instrument were made for ease of use.

First, the word temporal was replaced by the term time-related, and second, the following sentence was added to define the task, "This survey asks you to tell about your feelings about the task of learning in this class" (Appendix B).

The Perceived Class Relevance Scale instrument (Webster et al., 2011) was used to measure the amount of personal relevance of coursework (Appendix B). The Perceived Class Relevance Scale is a paper and pencil instrument that uses a 4-point Likert scale with eight questions (Webster et al., 2011). During validity tests, items in the Perceived Class Relevance Scale analyzed using factor analysis produced a Cronbach's alpha coefficient $\alpha = .85$ (Webster et al., 2011). Written permission from the author was acquired to modify the instrument. Removal of the word "PE" from the phrase "in this PE class" was the only modification (Appendix B).

A modified questionnaire should be reviewed by an expert panel (Creswell, 2012; Lodico et al., 2010). The modified Perceived Class Relevance Scale questionnaire and the modified version of the NASA Task Load Index were each reviewed by an expert panel of educational professionals in the advocacy field who were asked to comment on the clarity and ease of use of the instruments for the intended audience (Creswell, 2012). Changes were made based on feedback from the expert panel members who expressed concern about an inappropriately high reading level.

To address the expert panelists' concerns about the reading level of the NASA Task Load Index, two measures of readability were used. The Flesch Kincaid Grade level was selected to calculate the United States equivalent grade level of the documents based

on a calculation of syllable counts and sentence length (Mladen, 2009; Pati et al., 2012). The Flesch Kincaid Grade level of the NASA Task Load Index used in this study is 6.0, a score 3.56 grade levels lower than the version initially considered. The Flesch Kincaid Grade level of the Perceived Class Relevance instrument was 5.72. A second measure of ease of use was the Flesch Reading Ease score. The NASA Task Load Index and the Perceived Class Relevance instruments were rated at 73.4 and 78.6 respectively, where a score above 60 was considered highly accessible. Thus, both assessments were rated highly accessible and at an appropriate reading level (Mladen, 2009; Pati et al., 2012).

Data Collection and Analysis

Materials used in the study were two copies of the NASA Task Load Index and one copy of the Perceived Class Relevance Scale. All materials and activities related to the study were directly carried out and supervised by myself in my role as researcher. Each learner attending the training received a manila envelope containing one double sided page with the NASA Task Load Index and the Perceived Class Relevance Scale pretest (Appendix B) and one page containing a second copy of NASA Task Load Index posttest (Appendix C) along with two pencils.

At the beginning of the advocacy training session at the same time as other course materials were distributed, I passed out a manila envelope to each learner containing two handouts: A double sided paper clearly labeled for use before the video containing the NASA Task Load Index and the Perceived Class Relevance Scale surveys and a single sided NASA Task Load Index survey instrument labeled for use after the video. The

envelope also contained a Letter of Informed Consent (Appendix D). Learners 18 years of age and older were invited to participate in a study comparing two groups receiving differing training. The voluntary and confidential nature of participation in the study as well as implied consent were explained.

All learners were then instructed to take out the surveys from the manila envelopes. Those who wished to participate were directed to complete the double sided paper labeled "before video" containing the NASA Task Load Index and the Perceived Class Relevance Scale surveys and to subsequently return the double sided survey to the manila envelope. The NASA Task Load Index was used to measure cognitive load and the Perceived Class Relevance Scale was utilized to assess learner perception of personal content relevance (Hart & Staveland, 1988; Webster et al., 2011).

All students in the advocacy training sessions watched a video teaching the terms Individual Education Program and Free and Appropriate Public Education as part of the normal course of advocacy training. Three classes watched the worked examples format video to learn IEP terms, and the other three classes viewed the nonworked examples video. Participants in both groups of learners those watching the video using worked examples and those watching the nonworked examples format video, took the NASA Task Load Index (Appendix C) labeled "after video" as a posttest to measure any change in cognitive load (Hart & Staveland, 1988).

Following administration of the surveys participants were instructed to return all tests to the manila envelopes. The advocacy training continued as usual. At the end of the

training all advocacy students were notified the video was the component under evaluation, and all were invited to request a video tape or DVD with the worked examples for home use to be mailed to them at no charge when the research was completed. In this way equal access to the material for all learners attending the advocacy trainings was provided (Creswell, 2012).

Regional advocacy trainings were attended until 130 surveys were completed. After each training all data were entered into my personal computer and password protected. Surveys entered into the database were verbally confirmed by a professional colleague. Following the final data entry, the director of the advocacy group verified the accuracy of the data set by checking the database numbers against the originals. Statistical analysis was confirmed by an EdD familiar with the statistical program. A notebook with paper copies of data was then stored in a locked cabinet in my home.

Two-way analysis of variance (ANOVA) was the appropriate method for analysis of the 2 x 3 factorial design (Creswell, 2012; Green & Salkind, 2011). Green and Salkind (2011) recommended two-way ANOVA in cases where each respondent has leveled scores on two factors and one score on the dependent variable, making it a good fit for this study. The significance level reflecting the maximum probability that results were due to chance was set at alpha = .05% and the probability level was set at $p = .05$, both commonly used levels in educational research (Lodico et al., 2010). Inferential statistics were used to measure the relationship between two or more independent variables and the dependent variable (Creswell, 2012). ANOVA revealed the main effects directly between

independent variables and dependent variable and the correlations (interaction effects) between multiple independent variables (Creswell, 2012; Green & Salkind, 2011). Following data collection ANOVA was used to test inferential statistics and produce a variety of statistical analyses, including a *p* value that, if less than .05, indicated the null hypothesis should be rejected (Green & Salkind, 2011; Lodico et al., 2010). Findings were shown in graphs and tables with accompanying figures to aid interpretation of findings and discussion within the paper (Creswell, 2012).

In ANOVA an *F*-statistic with accompanying degrees of freedom values is used to reveal meaningful the differences of the means between two groups which should be further analyzed (Green & Salkind, 2011). Follow-up tests were appropriate as main effects or interactions were statistically significant (Green & Salkind, 2011). Surveys with missing data were excluded from analysis (Creswell, 2012). SPSS software was used to perform all statistical analysis. The focus of this research was to examine whether worked examples in a video format decreased cognitive load, if perceived class relevance impacted cognitive load, and if perceived class relevance had a significant interaction with the efficacy of worked examples in a video format. Some level of change in cognitive load was expected as a result of the use of worked examples; therefore, the null hypotheses were formulated to state there would be no change in cognitive load and are expected to be rejected (Creswell, 2012). Findings were evaluated in relationship to the research questions.

Research Question 1: What is the relationship between the use of worked examples in a noninteractive video format and change in cognitive load during advocacy training? Findings revealed a statistically significant main effect between the use of worked examples and change in cognitive load ($p = .000$; $\eta^2 = .163$). Table One shows those learners who received instruction using worked examples experienced a greater than nine-fold decrease in cognitive load on average.

Table 1

Descriptive Statistics: Change in Cognitive Load

Nonworked examples and worked examples	*M*	*SD*	*N*
1 Nonworked Examples	-.1262	1.05657	65
2 Worked Examples	-1.2169	.98751	65
Total	-.6715	1.15646	130

Research Question Two: What is the relationship between the use of worked examples in a noninteractive video format and change in cognitive load during advocacy training? Findings regarding research question two showed the relationship between perceived personal class relevance and change in cognitive load during advocacy training was not statistically significant ($p = .964$). Therefore the null hypothesis was not rejected. No significant relationship was found between perceived personal class relevance and change in cognitive load during advocacy training.

Table 2

Tests of Between-Subjects Effects

Source	Type III Sum of Squares	*df*	Mean²	*F*	Sig. (*p*)	Partial Eta Squared (η^2)
Corrected Model	42.359[a]	5	8.472	8.071	.000	.246
Intercept	45.476	1	45.476	43.322	.000	.259
InstrMethod	25.428	1	25.428	24.224	.000	.163
PRlevel	.076	2	.038	.036	.964	.001
InstrMethod * PRlevel	3.618	2	1.809	1.723	.183	.027
Error	130.165	124	1.050			
Total	231.150	130				
Corrected Total	172.525	129				

a. *R* Squared = .246 (Adjusted *R* Squared = .215) ($p = .05$)

Research Question Three: What is the effect of perceived personal class relevance on the use of worked examples in a noninteractive video format to change cognitive load during advocacy training? Findings were mixed regarding question three on the effect of perceived personal class relevance on the use of worked examples in a noninteractive video format to change cognitive load. The ANOVA analysis showed change in cognitive load in relation to the perceived level of relevance and instructional method were not

statistically significant (p = .183; Table 2). However, follow-up pairwise comparisons separating the three levels of perceived course value revealed statistically significant interaction effects in the low (p = .03) and medium (p = .000) personal class relevance groups.

Discussion

The findings of this study revealed that worked examples within a video lesson were an efficacious instructional design for students with little experience in the topic of instruction (Sweller, Ayres, & Kalyuga, 2011). Sweller and Chandler asserted learners have limited amount of working memory which can be optimized through instruction based on the learner's level of experience and existing schema (Sweller, 2010; van Merriënboer & Sweller, 2010). Cognitive load theory posits learners with existing frameworks of understanding are likely to experience the addition of extraneous cognitive load when provided instruction intended for beginning learners (de Jong, 2010; Sweller & Chandler, 1994; van Merriënboer & Sweller, 2010). The large gap between those who benefitted from the use of worked examples and those who did not may be due to the application of a less appropriate instructional technique for those learners with existing schema, resulting in increased extraneous cognitive load.

The strength of the interaction between levels of perceived relevance and the efficacy of the use examples was a second unexpected finding of interest. The use of cluster random selection resulted in uneven groups across the three levels of perceived class relevance: Low (n = 43), Medium (n= 67), and High (n = 20). The group with the high level of perceived relevance was expected to have a similar outcome as the other

levels, but did not reach statistical significance (p = .051). One possible explanation may be that those with the high level of perceived relevance had already been exposed to the subject matter and vocabulary, and therefore were not beginning learners.

The findings of the current study highlighted the importance of supporting the learner's perception of course relevance during instruction. Stress has been shown to impede the function of working memory, decreasing the efficacy of instruction (van Merriënboer & Sweller, 2010). Learner perception that a task is personally relevant valuable increases overall motivation, leading to enhanced effort and persistence (Nasiriyan et al., 2011; Park & Choi, 2009). Parents experience a great amount of stress as a result of their caregiving responsibilities and their time is at a premium. Park & Choi (2009) asserted the perception of personal class relevance is a critical factor in a learner's decision to persist in a course of study. By creating curriculum which supports the perception of task value educators can increase overall perception of class relevance Ling-Yee (2011). Parents must be informed on the topic of IEPs in order to fully participate as member of the IEP team that creates their special needs students' educational plan. (Christle & Yell, 2010; Ginsburg & Rapp, 2010; Jones & Gansle, 2010; Lo, 2012). An instructional PowerPoint to teach practices that support the perception of class relevance would be beneficial to advocacy trainers as they provide instruction to adult learners experiencing various levels of stress as they learn to navigate the IEP process and effectively advocate for their learners in K through 12 education.

Assumptions, Limitations, Scope, and Delimitations

Assumptions in the design of the study included the belief that people attending advocacy training had at least a minimal perception of course relevance to their personal or professional lives. Another assumption was that participants wanted to improve educational outcomes of students in special education as evidenced by their attendance at an all-day workshop that does not result in continuing education credits or any sort of certification.

One limitation of the study resulted from the use of intact advocacy training groups rather than a true random sample, which limits the generalizability of the findings (Lodico et al., 2010). A second limitation was that participants were not confined to parents and guardians of student with special needs experiencing stress that can negatively affect learning outcomes (Santiago et al., 2011). The scope of this study was limited to participants in advocacy training on the topic of IEPs received from one agency in the United States. A delimitation of this research was that advocacy training was open to any adults and was offered in public locations such as libraries in a urban, suburban, and rural settings across the state.

Protection from Harm

Measures for human participants' protection were taken in the study in order to maintain confidentiality, provide informed consent, and protect participants from harm. To maintain confidentiality, I requested and ensured learners were seated far enough apart for their participation status and survey responses to be private. The learners had several handouts for use during the training which non-participants could use to cover

their answers or read during the minutes made available for survey responses to ensure privacy. Pretest and posttest surveys were prenumbered for anonymity. The numbered sets were entered into a password protected computer database, and paper data sets were stored separately in a locked file located in my home (Creswell, 2012).

Participants and those who declined were protected from harm. To protect potential participants from safety and privacy risks, no demographic information was collected. Pretraining and posttraining surveys were identified only as numbered sets. Thus, participant responses were de-identified to protect privacy. Those less than 18 years of age and others were able to decline to participate discreetly.

To protect learners from pressure to participate, recruitment for participation was designed to allow adults in the sampling frame to decline without attracting attention to themselves. Materials were offered to all learners and learners were seated an adequate distance apart to ensure privacy. The progression of curriculum and training activities in the advocacy training classroom was not changed by participation status, and learners were be able to discreetly withdraw from participation at any time. Non-participants attending the training received the same instruction and all attendees of the advocacy trainings used in the study were provided the opportunity to receive a free video tape or DVD with the worked examples formatted video segment at the conclusion of the study. Equal access to the material for participants and decliners in both groups was provided in this manner (Creswell, 2012).

Conclusion

The findings of this study suggested that worked examples within a video lesson may be an efficacious instructional design for beginning learners. Perceived class value, as a component of student motivation, was shown to be a mediating factor that influenced the efficacy of the use of worked examples in the majority of learners. Section 2 provided an explanation of the methodology including setting and sample, instrumentation and material, and data collection procedures. The method of analysis was described as well as assumptions, limitations, scope and delimitations. Finally, measures taken for the protection of human subjects were discussed, including informed consent, protection from pressure to participate or persist in participating, and measures taken to ensure confidentiality. Findings revealed a significant main effect between the use of worked examples and change in cognitive load.

Section 3 details an instructional PowerPoint developed to teach advocacy trainers to embed motivational techniques, including the perception of personal relevance, in order to enhance persistence in learning the information needed to advocate effectively for student with special needs.

Section 3: The Project

Introduction

Section 3 of this doctoral study provides a description of the project arising from the findings detailed in section 2. A scholarly discussion of how the project genre and content addresses the results of the study in section 2 is followed by a review of the literature and a complete description of the project, including implementation details. The goal of the project and the method of evaluation are discussed. Finally, the project's implications for social change are considered.

Students arrive in the classroom with an existing level of perceived class relevance that should be maintained and enhanced during instruction in order increase overall motivation and maximize learning (Hassan, Hassan, Dahalan, Zakaria, & Nor, 2010; Moura & Carvahlo, 2012). The problem addressed in both section 1 and section 2 of this study was that instructional techniques not appropriate for inexperienced learners were utilized in beginning advocacy training. Misalignment of instructional techniques for parents and professionals involved with at-risk populations leads to increased stress that impeded learning outcomes and can de-motivate learners to persist in a challenging task (Brock, Joglekar, & Cohen, 2011; Wu, Tsai, Yang, Huang, & Lin, 2012). Findings from the study described in section 2 suggest student perception of course relevance has a statistically significant effect on the overall motivation of learners.

The appropriate application of the findings of the study in section 2 was to design and provide instruction of motivational techniques to advocacy trainers in order to empower them to support the parents they teach. In order to support learner motivation

during instruction, the project was a three day instructional PowerPoint providing instruction and modeling of motivational techniques to be embedded in the curriculum. PowerPoint was the appropriate genre of delivery for advocacy trainers who are familiar with the format.

Instructional design that supports learner motivation increases time spent engaged in a learning task, resulting in increased persistence and improved learning outcomes (Eseryl, Law, Ifenthaler, Xun, & Miller, 2014; Moskovsky, Alrabi, Paolini & Ratcheva, 2013; Wu et al., 2012). The Keller ARCS model of motivational supports is an established model of motivation frequently used in educational settings with measurable outcomes, allowing trainers to improve their supports recursively through targeted interventions and techniques (Keller, 2010). The goals of the project were for advocacy trainers to feel confident, prepared, and motivated to apply the ARCS motivational support techniques within their classrooms and for the advocates to learn to apply techniques of the ARCS motivational framework to their instruction.

Description and Goals

Learners' personal expectations regarding learning outcome and their ability to perform the learning task can be positively influenced by supporting the perception of class relevance using instructional design that supports overall motivation (Eseryel et al., 2014; Moskovsky et al., 2013). Wu et al. (2012) described motivation as a combination of internal drive, belief that personal goals and expectations are attainable through persistence in the learning task, and the learner's perception they can achieve their goal.

Derbali and Frasson (2012) defined motivation as "that which explains the direction and magnitude of behavior" (p. 1).

Teachers must support learner motivation in order to maximize student learning (Hassan et al., 2010; Moskovsky et al., 2013; Wu et al., 2012). As discussed in section 1 of this study, parents experience high stress that reduces attendance at trainings and impedes learning outcomes, inhibiting overall motivation and persistence (Means, Jonassen, & Dwyer, 1997; Ocak & Akçaytr, 2013). Trainers in the advocacy group participating in this project study were all parents or caregivers of students with special needs who experience the same increased stress levels as the parents who attend their advocacy trainings (WAPAVE, 2014). Therefore, including motivational supports for adult learners within the curriculum while at the same time explicitly teaching these techniques of motivational support is an essential aspect of planning for these learners (Moskovsky et al., 2013).

Keller (1987) posited a distributive framework for supporting motivation consisting of attention (A), the perception of content relevance (R), confidence in the ability to succeed (C), and satisfaction leading to further learning in the future (S). The ARCS motivational model of supports built into the curriculum as well as explicitly taught to the trainers provide motivational support for all learners in the training (Hassan et al., 2010; Ocak & Akçaytr, 2013).

Instruction using a design framework which incorporates motivational supports is an effective means of achieving a high level of learner engagement lowering attrition rates (Eseryel et al., 2014; Greenberg, Wise, Frijters, Morris, Fredrick, Rodrigo, & Hall,

2013; Hart, et al., 2011; Moura & Carvahlo, 2012; Pittinger & Doering, 2010). An instructional PowerPoint using embedded ARCS motivational supports was an effective means to provide instruction to advocacy trainers on techniques to support relevance in the framework of overall motivation during instruction.

Rationale

PowerPoint presentations are ubiquitous in education and were in use during EP advocacy training in this study (Desimone, 2011; Jarrold, Tam, Baddeley, & Harvey, 2011; Kahraman, Çevik, & Kodan, 2011). Using an instructional format that is already very familiar to the intended audience avoided the necessity of forcing advocacy trainers to learn both the new format as well as the new information, a situation that reduces learning outcomes (Brock et al., 2011; Jarrold et al., 2011). The EP advocacy trainers presented information to parents across the region using PowerPoint presentations developed by the agency. Trainer familiarity with the format avoided the necessity of learning a new framework for instruction in addition to the content, thus avoiding the creation of extraneous cognitive load.

Brock et al. described what an ideal PowerPoint looks like, noting best practices for the PowerPoint curriculum include appropriate visual images on the slides and inclusion of any discussion prompts within the slide in order to refer to them during class discussions (Brock et al., 2011). Uz, Orhan, and Bilgiç (2010) found adult learners preferred instructors to use complete definitions within slides, and full sentences for key points. A complaint frequently voiced by adult learners was instructors who read directly from the slides, a practice that was avoided in favor of using the slides as a form of

organization that can be referred to in the future (Açikalin & Yücel, 2011; Moura & Carvahlo, 2012). The content of the project addressed the problem of inappropriate instructional techniques used in advocacy training by teaching the advocacy trainers how to incorporate motivational support techniques within their own existing classes. Although the advocacy trainers do not write their own curriculum, they are responsible for providing the most effective instruction possible to make the most effective use of limited parent time for training. Keller's (1987) ARCS model of motivational support is a proven, effective interactive and measurable framework that is consistently cited as a highly effective framework for supporting learner perception of relevance within an overall framework of motivation (Derbali & Frasson, 2011; Means et al., 1997; Moura & Carvahlo, 2012; Ocak & Akçaytr, 2013). Keller's four-part model of motivational support is comprised of attention, relevance, confidence and satisfaction (ARCS). Each of the four parts of the model interacts with the others to create an overall, interactive and measurable framework of support. Attention support strategies include capturing interest, engaging curiosity, and using a variety of instructional techniques to keep the learner's attention (Keller, 1987). Strategies that support relevance include relating the learning to learner goals and the use of anecdotes and relevant current events to maintain engagement. Confidence-building strategies that include creating opportunities for learners to control their learning, such as guided practice, and satisfaction building strategies include acknowledgement of learning throughout the training and praise for appropriate accomplishments (Keller, 1987). Application of the ARCS motivational model has been shown to support student persistence by providing a secure, confidence

inspiring learning environment in the classroom and online applications, and can be applied to existing curriculum as well as used to develop new courses (Derbali & Frasson, 2011; Moura & Carvahlo, 2012; Pittenger & Doering, 2010). Therefore, the ARCS model of motivation support was a good choice as a model for motivation enhancing curriculum used to create the instructional PowerPoint.

Review of the Literature

Theoretical Framework

The theoretical framework for the project PowerPoint was expectancy-value theory, a motivational theory in which the learner's expectation of success is positively correlated with learner's perception of the value of the task in terms of personal relevance (Liu, Bridgeman, & Adler, 2012). Lewin's field theory (1936) was one of three important steps in the evolution of motivation theory developed in the first half of the Twentieth Century (Graham & Weiner, 1996). Based on the Gestalt school of psychology, Lewin's field theory posited that a person seeks a state of completion by acquiring that which is necessary to make the person whole (Graham & Weiner, 1996; Keller, 2010). Embracing the idea of personal motivation versus programmed reactions, Lewin created a three-part formula representing the force of human motivation which consists of the magnitude of the need, the properties of the goal object (whether it will meet the need), and the perceived psychological distance of the person from achieving the goal (Graham & Weiner, 1996). Lewin's theory foreshadowed recent findings which suggest the teacher may positively influence student momentum toward achieving the learning goal by

addressing the needs and learning distance to be covered by the student through motivational support (Eseryel, 2014; Pittinger & Doering, 2010; Wu et al., 2012).

Hull's drive theory (1943) was the second major theory of motivation investigating motivation and volition in the first half of the twentieth century (Graham & Weiner, 1996). Hull was a contemporary of Lewin who also sought to find an algorithm to explain human motivation. Representative of the trend to look for mathematical algorithms explaining human behavior, the robotics engineer separated the concepts of drive and habit. Hull replaced the concept of *instinct* with the concept of *drive* which implies volition, proposing the formula Behavior = Drive x Habit (Graham & Weiner, 1996). In his drive theory, Hull posited that an organism has something missing and acts in response to the deficit to fill the need through a given behavior (Graham & Weiner, 1996). Hull's theory revealed motivation as a series of tensions to be resolved by the subject moving closer to the achievement of goals based on personal volition. Prior to Hull's drive theory, stimulus-response behaviors were labeled as instincts or programmed reactions, which excluded volition or prioritization of choices. The introduction of volition by both Lewin (1936) and Hull (1943) signaled a shift away from the mechanistic thinking of earlier eras toward an exploration of the role of human motivation in learning outcomes.

Cognitive theorist Edward Tolman (1955) noted that subjects take action in response to a stimulus based on past occasions of similarly accumulated stimuli leading to future expectations of a similar result. Tolman's (1955) belief-expectancy theory stated each time a stimulus resulted in the expected outcome the expectancy disposition was

reinforced. What became known as expectancy-value theory took into account levels of learner motivation as well as the concept of a wide selection of goals that must be prioritized by the person before they decide on the best course of action (Graham & Weiner, 1996). Liu et al. (2012) stated "expectancy refers to students' beliefs that they can successfully complete a particular task and value refers to the belief that it is important to complete the task" (p. 353). Prioritizing learning needs is a necessary prerequisite for learners, who make continuous decisions as to where to focus attention and how much to persist in a learning task based on the perception of relevance of the learning and their ability to successfully master the subject matter (Liu et al., 2012).

Building on expectancy-value theory, Keller (1987) developed the ARCS model of motivation consisting of attention, relevance, confidence, and satisfaction; each facet of motivation interacting with the others in a measurable way to support overall motivation. Keller's (1987) framework allows the educator to examine the four discreet aspects of motivation in order to target specific supports for motivational deficits and can be applied to existing curriculum. Through examination of the four interacting elements of motivation, the ARCS model provides actionable data for use in improving learning outcome through increased engagement and persistence in a learning task (Hodges & Kim, 2013; Moskovsky et al., 2103).

The ARCS Model of Motivation

Inclusion of motivational supports embedded in existing curriculum using the Keller (1987) ARCS model has been shown to increase learner attention, confidence, satisfaction and perception of course relevance, leading to enhanced persistence in the

learning task and improved learning outcomes (Griffin et al., 2013; Hodges & Kim, 2013; Means et al., 1997; Robb & Sutton, 2014). Derbali and Frasson (2011) found a correlation between the elements of the ARCS motivational model and increased learner engagement. In a small mixed methods study, participants with an average age of 26 years recruited from the University of Montreal ($N = 33$) played a series of educational games designed to simulate real world hunger scenarios faced by governmental agencies. Physiological sensors were used to measure the presence and effectiveness of existing motivational supports within the educational training game (Derbali & Frasson, 2011). Attention getting strategies included the use of novelty and changing scenarios with each lesson, relevance strategies were approached through a brief video in each lesson intended to relate learning to real-world applications, confidence building strategies utilized learner control and informative feedback, and satisfaction strategies included celebration of success by displaying student scores. The Instructional Materials Motivation Survey intended to assess online learning scenarios for their effect on motivation using the ARCS framework was administered at the end of each of five missions, in which the learner participates in an interactive scenario involving fictitious locations experiencing the type of disaster participants are likely to encounter working with relief agencies. Results analyzed using Friedman's ANOVA revealed a significant increase in the learning outcomes of those participants whose curriculum contained embedded motivational supports for attention, confidence, and satisfaction. The author posited the reason motivational supports for relevance was not found to be statistically significant ($\alpha = .05$; $p = .12$) was due to poor construction of the relevance supporting

materials; a series of brief video segments of instruction using a repetitive format perceived to have little direct connection or application to learners professional or personal goals (Derbali & Frasson, 2011). The research team noted the strong interaction among the four ARCS motivational components, concluding that motivational design supports using the ARCS model should be applied when preparing instruction to increase engagement and persistence at a learning task (Derbali & Frasson, 2011; Hassan et al., 2010).

The pretest posttest quantitative study conducted in section 2 of this document examined which of two methods of instruction was more effective for beginning learners, and to measure any interaction between relevance and cognitive load. 130 adult advocates training to deliver PowerPoint lessons to an audience of parents of children with special needs ($N = 65$) were divided into two equal groups using cluster random selection The Cognitive Load Index was administered to both groups before and after viewing the video segment of the lesson, while the Perceived Class Relevance Survey was administered as a pretest only to determine relevance level at the beginning of instruction. ANOVA statistical analysis followed by pairwise comparisons showed the correct instructional model decreased stress associated with the curriculum as evidenced by reduction in cognitive load. Interestingly, the predisposition to believe the learning material was relevant was associated with a nine times greater effectiveness of the appropriate instructional design. Hassan et al. (2011) noted the support of relevance, in particular, increased learner persistence. These findings suggest that supporting learner

perception of relevance is incumbent upon educators who wish to maximize learning (Moura & Carvahlo, 2012; Greenberg et al., 2013).

Means et al. (1997) found the use of embedded relevance supports had a statistically significant effect on attention, relevance, confidence, and satisfaction (ARCS) on all learners. In a study examining the effectiveness of extrinsically embedded relevance, Means et al. (1997) divided a sample of 100 undergraduate students attending a basic anatomy course into two groups of 50; one group for which the instruction on anatomy was not personally relevant (statistics students) and the other with high personal relevancy (physiology students). Researchers randomly assigned half of each group to read instructional material which used a relevance enhanced text, including supports such as personalized, concrete language and the use of meaningful analogies while the remaining half used an un-enhanced text (Means et al., 1997). Participants then completed a posttest to measure achievement, an assessment of overall motivation using the ARCS model, and three survey questions that measured relevance in particular. MANOVA statistical analysis showed a significant main effect for extrinsic relevance in every group of learners ($\alpha = .05$; $p < .001$). Echoing findings in the study found in section 2, Means et al. noted that while learners in the high personal relevancy group had higher overall motivation scores the main effect for embedded motivational strategies was nearly ten times more significant for those with externally embedded motivational text.

In a mixed-methods study, Pittenger and Doering (2010) measured the ARCS components of attention, relevance, confidence and satisfaction in order to determine the relationship between the presence of ARCS model supports and the unusually high

completion rates of the online courses in a Midwestern U.S. town (Keller, 2010; Pittenger & Doering, 2010). In a self-selected online survey of 218 undergraduate students in four online pharmaceutical answered a 36 item questionnaire measuring the four ARCS components, followed by four open-ended questions. Using ANOVA and post hoc statistical analyses, Pittenger and Doering (2010) found a statistically significant relationship between the use of the ARCS model motivational supports and a high level of overall motivation ($\alpha = .05$; $p = .006$). Quantitative results were analyzed using constant-comparison analysis and a correlation between student attention and perceived class relevance was noted (Pittenger & Doering, 2010). This study shows motivational design using the ARCS model is likely to increase persistence in learning and supports the use of the ARCS framework to increase completion rates. (Means et al., 1997; Pittinger & Doering, 2010).

Learners arrive in a class with an existing level of motivation, which can be supported or decreased by the method of instruction (Boretz, 2012; Hart et al., 2011; Kim & Frick, 2011; Ocak & Akçaytr, 2013; Robb & Sutton, 2014). Robb and Sutton (2014) examined the impact of motivational supports on learner motivation and academic outcomes. Using random assignment, students enrolled in 12 spring semester online courses at California community college ($N = 388$). The treatment group received five motivational e-mails constructed using the ARCS motivational strategies intended to "sustain learners' motivation to learn, therefore improving retention and course grade" (p. 3). Keller's (2010) Course Interest Survey, a measure of student motivation based on the ARCS framework created for blended learning situations, was used to measure

motivational outcomes following completion of the coursework and final grades were used to determine academic performance. Findings revealed a significant difference in motivation between control and treatment groups (α =. 05; *p* =. 047). Change in the mean grades and completion rates reached statistical significance for those receiving motivational support, signifying improved academic persistence and performance as a result of using the ARCS motivational supports at regular intervals throughout the course.

The ARCS motivational model can be applied retroactively to curriculum and accurately measured a variety of educational settings (Keller, 2010). In a quantitative study, Ocak and Ackayir (2014) examined whether application of the ARCS framework to a teacher-facilitated computer course increased motivation levels and academic outcomes. First year Turkish college students (*N* = 90) were randomly assigned to treatment and control groups of 45 student each and both groups participated in a three-week blended learning course on basic computing. The treatment group received instruction embedded with the ARCS motivational techniques in a blended learning environment, and both groups participated in a pretest and posttest of academic achievement as well as a posttest of motivation. Analysis of findings revealed a statistically significant increase in overall motivation for those in the treatment group (*p* =. 004) and within each of the four ARCS categories (Ocak & Akçaytr, 2013). Academic outcomes were collected in a posttest and analyzed using ANCOVA, revealing a statistically significant difference in the means between the treatment and control groups. These findings are in line with other studies supporting the use of Keller's ARCS model to increase motivation levels and academic outcomes in a blended learning environment.

Hassan et al. (2010) examined learner perceptions of best practices designing effective and engaging learning experiences in an online learning environment. In a quantitative study, respondents attending a beginning business course and a foundational mathematics course with enhanced motivational supports at a Malaysian University. In order to assure the method of instruction was not confusing, courses were available to preview online before the beginning of the academic school year. At the end of the academic year, students ($N = 110$) were surveyed using a modified version of the Course Interest Survey. Analysis of the questionnaire with 21 Likert-style questions revealed the ARCS motivational strategies achieved statistical significance in all four categories, exceeding the threshold of effectiveness set for the ARCS components of 3. 5 of five in each category.

Motivation underpins learning, accounting for more than 20 percent of a learner's performance and may explain low achievement in disadvantaged students living in poverty as well as those under immediate stress (Boretz, 2012; Kim & Frick, 2011; Sandoval & Harven, 2011). Application of the ARCS motivational framework to existing curriculum is essential to improving learning outcomes for all learners, particularly for learners experiencing an exigent need to acquire skills for immediate application in their life or the life of their loved one (Ocak & Akçaytr, 2013; Pittinger & Doering, 2010; Wu et al., 2012).

Search Terms and Resources

The Walden University library and Google Scholar were two sites used to access the online professional literature. All searches began on the Walden University library

website limiting the results to those which were peer reviewed, and published within the last five years. Boolean searches used the terms *ARCS model, ARCS strategies, best practices, motivation, persistence, PowerPoint, PowerPoint presentations,* and *professional development* in addition to terms previously noted earlier in this study. Some articles that were only available in abstract form were purchased directly from the publishers and other downloaded at no cost. The Rand corporation's current report of the situation of those family members and loved ones caring for wounded soldiers provided insights that were incorporated into the PowerPoint instruction (Ramchand et al., 2014).

Implementation

Resources and Existing Supports

Resources needed for the three day training were the PowerPoint itself, materials directly related to the activity such as prepared handouts, posters, office supplies such as pens, post-its, charts, the projector, and space for the meeting. The advocacy training group provided the venue, projector, and office supplies not directly related to the instruction. Potential barriers were difficulty finding a space and the time in the do the training and equipment issues, such as a member of the agency forgetting the projector or the projector being broken. One potential solution was to bring a backup projector, computer, and flash drive in case of problems. A potential solution to the problem of finding a venue may have been resolved by the advocacy agency, which has a local space available to do trainings.

Implementation and Timetable

In order to implement the training, a timetable was established with the agency. The EP advocacy agency held regular weekly trainings for staff development which they have offered to use for the training. After discussing implementation with the contact person at the advocacy agency, it was decided the PowerPoint would be implemented in a three day training which would occur on a Thursday and Friday of one week, with the third training to be done on the Thursday of the next week (V. McKinney, personal communication, June 9, 2014). Thus, the training occurred over the course of one week, with a six-day break between the second and third instructional PowerPoint. Materials for the third day of training were generated through class discussion and activities on the first day. The six day break provided the learners time to digest initial training while trainer prepared material for the third day of instruction using information gathered from learners on day one.

Roles and Responsibilities of Students and Others

The EP advocacy agency was responsible for arranging the time and venue, and provided office supplies including large blank poster paper and poster pens. My role as the trainer, I brought all materials needed for training and facilitated the training, including a backup set of all instructional materials in case of equipment failure. Because the trainings were scheduled to take three full days, The EP advocacy group agreed to provide lunch for participants and provided the time for their advocates to attend the training.

Project Evaluation

Summative evaluation was the appropriate form of evaluation for the project. The goals of the project were for advocacy trainers to feel confident, prepared, and motivated to apply the ARCS motivational support techniques within their classrooms and for the advocates to learn to apply techniques of the ARCS motivational framework to their instruction. The design of the instructional PowerPoint was based on a framework by Desimone that covered four core features of any program of professional instruction (Desimone, 2011). The Desimone (2011) framework consists of four steps: Instruction is delivered that enhances the trainers' subject knowledge, pedagogical skills, or motivation 3. Trainers apply the new pedagogy in the training and then in practice to improve current curriculum and instruction 4. Trainers return to their classrooms and their students experience enhanced learning outcomes (70). A survey of learners at the end of the PowerPoint provided statistical insight into what was successful and what could be improved upon in future trainings (Desimone, 2011).

The goal of the three day instructional PowerPoint was for advocacy trainers to be confident, prepared, and motivated to apply learning from the instructional PowerPoint in their own classes. In order to measure this outcome the Keller, (2010) Course Interest Survey instrument was used. The CIS instrument is a 34 item Likert-response style survey intended to measure the motivational outcomes of the ARCS model. The Items in the CIS instrument are comprised of questions on the four aspects of motivation in the ARCS model, attention, relevance, confidence, and satisfaction, and are distributed throughout the instrument. Respondents are able to select one of five responses to

questions ranging from 1 (*not true*) to 5 (*very true*), which are then averaged as a whole and by the four ARCS categories in order to reveal what went well and what should be improved on in future instruction. The CIS instrument was validated using a pilot study followed by a large-scale test of reliability using 200 college students in a southwestern university, where statistical analysis of the instrument produced an overall Cronbach's alpha coefficient α = . 95, indicating internal consistency of the instrument (Keller, 2010). Permission was acquired to use the instrument from the author in writing (Appendix E).

Following the third day of training participants in the project (N = 34) completed the Course Interest Survey (Keller, 2010). Analysis of the questionnaire revealed the ARCS motivational strategies achieved statistical significance in all four categories, exceeding the threshold of effectiveness set for the ARCS components of 3. 5 of five in each category. An Excel spreadsheet was used enter the responses, and the numbers were confirmed by the agency contact. Using a simple average calculation, the mean scores were: Attention (4. 13), Relevance (4. 52), Confidence (4. 47), Satisfaction (4. 34), with an overall motivational score of 4. 37. Based on overall scores from participants, the project was successful in achieving the aforementioned goals.

Key stakeholders included parents, advocacy trainers, and students with special needs. By improving instructional techniques of EP advocacy trainers, students and parents alike benefitted from integrated motivational supports. A successful instructional PowerPoint teaching and modeling embedded motivational supports can be circulated easily among nonprofit agencies, the Pacific School District, and other public schools for use by educators who wish to support motivation in their classrooms.

Implications for Social Change

Local Community

The project was important to local stakeholders in the advocacy training community and the Pacific School District. The EP advocacy agency is composed entirely of current and former parent caregivers, many of whom volunteer their time. Ramchand et al., (2014) make a distinction between trained care providers and caregivers, the latter of whom are not trained or hired to provide services. Advocacy trainers are tasked with educating parents, who are paid not professional caregivers, for the most part. Volunteer advocacy trainers must be motivationally supported to persist in their important roles as both trainers and parents of their own students with special needs.

The Pacific School District refers parents of students in special education to the EP parent advocacy training agency to learn how to support their students in the K through 12 public education setting. Indeed, school districts in the United States rely on outside supports to aid parents in their role as members of their student's learning team. In the last ten years, the poverty rate in the state that includes the Pacific School District has experienced a steady percentage of learners enrolled in special education (12. 8%) while the number of learners receiving free and reduced lunch has gone from 36% in 2003 to 46% in 2013. (OSPI, 2014). The negative effects of poverty on learners are well documented in the literature, and include reduced learning outcomes and decreased motivation to persist in a learning task. Increasing poverty levels among the children attending public schools may lead to increasing numbers of parents reaching out to the federally funded agency in the region that can assist them to learn how to participate in

the education of their K through 12 students (Ramchand et al., 2014). One implication for social change is improved learning outcomes for parents and others who must learn IEP terminology in beginning classes to effectively advocate for their loved ones. Empowering the advocacy trainers to embed motivational supports in their instruction benefits parents by supporting their learning in the classroom and well as supporting their motivation to engage in future learning.

Far Reaching

Federally funded nonprofit agencies are available to assist parents of students with special needs in the K through 12 public school system. Increase in the number of students enrolled in the national free and reduced lunch rate has mirrored the local rise over the last ten years, going from 58. 5% free and reduced lunch in 2003 to 70. 5% in 2013, while enrollment in special education rate has remained relatively steady (Hoffman, Sable, Naum, & Gray, 2005; United States Department of Agriculture [USDA], 2014). The increased number of students who may need support outside of special education may result in an increased competition for already inadequate resources, an event that will lead to increased stress for both the students and their parents. Development and distribution of an instructional PowerPoint teaching the ARCS motivational model will benefit learners throughout the region and can be distributed for use by other agencies nationally to support all marginalized learners while also benefitting those who are not facing immediate learning challenges (Hart, Stewart & Jimerson, 2011; Pittenger & Doering, 2010). Implications for positive social change include providing knowledge of a motivational support system that can be applied to

existing curriculum inexpensively, benefitting educators who teach learners with stress due to a variety of factors both within and outside the advocacy community.

Conclusion

Section 3 of this doctoral study provided the description and goals of the project. A scholarly discussion of how the content of the project supported relevance within a measurable framework of overall motivation was followed by examination of the efficacy of the PowerPoint genre to meet learning needs of the target audience. Best practices of the PowerPoint genre were reviewed followed by a thorough description of project barriers, and implementation details. Finally, the project goals and alignment with the method of evaluation were discussed, along with project's possible implications for social change.

Section 4: Reflections

Introduction

Section 4 of this doctoral study contains conclusions and reflections on the doctoral journey. Project strengths and limitations are reviewed and solutions to these challenges are proposed. This section also presents a thorough reflection on professional growth as a teacher-leader and scholar. Aspects of personal growth as an educational professional and the overall importance of the work are examined.

Project's Strengths, Limitations, and Recommendations for Remediation

Findings from the study in the first two of this document indicated the perception of relevance was a key component of motivation and related to persistence (Moskovsky et al., 2013; Ocak & Akçaytr, 2013). Application of the appropriate structure to develop the curriculum in combination with Keller's ARCS motivational supports the instructional PowerPoint project were effective in maximizing motivation and engagement for the advocates learning for the first time how to use the ARCS framework to support motivation for their students (Eseryl, et al., 2014; Greenberg et al., 2013). One of the strengths of the project designed to address the problem of instructional techniques not appropriate for inexperienced learners being used in use during beginning advocacy training was that through application of the ARCS model of motivation, all learners reported strong motivation following the instructional PowerPoint. A limitation associated with the project was the use of a posttest only measurement, limiting understanding of the levels of change in the ARCS categories as a result of instruction.

This limitation could be remediated by using the CIS instrument in pretest, posttest format of evaluation.

A second strength of the instructional PowerPoint was the use of the most appropriate design for the intended audience, beginning advocacy learners who were experiencing stress. Using principals of cognitive load theory and worked examples discussed in section 2 of this study, schema were planned in advance, allowing the instructor more flexibility to capitalize on instructional momentum without sacrificing curricular integrity (Hassan et al., 2010; Keller, 2010). For example, the first lesson in the three days of PowerPoint based instruction was an ice-breaker, to be followed by discussion. Unexpectedly, the host conducted an excellent ice-breaker as a means of introducing me. Because the instructional design included intentional creation of frameworks, I was able to show the slide and conduct a class discussion using both the originally planned ice-breaker and the ice breaker used by the host as a basis for discussion. While explaining and demonstrating the immediate application of data gleaned through the use of ice-breakers I was able to build relevance. On day three the ice-breakers taught on day one were incorporated into the lesson to bring schema to the fore and clarify understanding before adding another layer complexity to the discussion.

A second limitation of the instructional PowerPoint in addressing the original problem was that the PowerPoint presentation format locks the instructor into a given sequence of ideas, as it is difficult to maneuver between slides out of sequence. An example of this limitation occurred on the first day. When delivering the PowerPoint, I felt learners would benefit from a return to an earlier concept to solidify a foundational

framework before moving on with the PowerPoint-based instruction. However, I was unable to quickly scroll back and chose to make a note to review the concept on day two. This limitation of the media will be circumvented in future iterations of the instructional PowerPoint by creating clearly labeled individual themed sections of the instructional PowerPoint composed of five or fewer slides that could be easily opened if a review of prior learning is appropriate.

Alternative Ways to Address the Problem

Based on the findings, alternative definitions of the problem along with other possible solutions were considered. One alternative definition of the problem considered was that the curriculum provided to advocacy trainers was likely to be the cause of increased extraneous cognitive load due to curriculum design shortcomings. Viewed as solely a curriculum design issue, the means of addressing the problem might have been development of a professional development training unit focusing on application of worked examples to existing curriculum for beginning learners. This process which would require a review and revision of the existing curriculum and would require creation of a teacher's guide to make schema explicit.

A second definition of the problem considered was that the vocabulary level of the IEP training was too high for parents, causing them to feel excluded and demotivated At-risk populations experiencing an exigent family crisis are easily demotivated, a situation exacerbated by lower educational levels and socioeconomic status (Brock et al., 2011). A solution to this issue might have been to assess and possibly adjust the reading level of the educational material used by The EP advocacy trainers based on the Flesh

Kincaid Grade level of the curriculum (Mladen, 2009; Patti et al., 2012). Similarly, advocacy trainers could be instructed how to use online resources to assess and modify their existing curriculum.

Advocacy trainers with the skills to review and revise their own curriculum would be a strong asset for The EP advocacy group and the greater disabled community in the region. The Keller ARCS model is designed to be embedded within existing curriculum without changing the content, thus avoiding alignment problems with national curriculum and extensive editing of existing curriculum (Keller, 2010). However, reservations about developing a project along these lines included stakeholder concerns that revision of state or federally supplied curriculum would result in a lack of continuity and that the time required to revise a curriculum that is frequently updated and revised would not be cost-effective. Consultation with stakeholders ultimately resulted in the creation of a motivationally supported instructional PowerPoint detailing how to apply the ARCS model to existing curriculum to advocacy trainers.

Scholarship

The skill set acquired during the doctoral program has application in my practice as an educator. The skill of crafting concise written communications has a professional application in the workplace, where much communication occurs through email, an entirely text-based medium. My skills at planning and evaluating instruction were enhanced through examination of several models, some of which will applied in future lessons. Skills enhancing leadership and change were developed as a result of a more

thorough understanding of how the mind processes information combined with the effects of motivation on the process.

Scholarship at the doctoral level is an exacting process with its own language, syntax, and rules. The process of using the APA structure for ease and clarity of scholarly discourse was not difficult, but it was time consuming. As a scholar-practitioner, I have many years of experience teaching various writing formats such as MLA and APA to ninth graders who perceived the skill as not relevant to their personal goals. Fortunately, APA is different enough from MLA that teaching ninth-grade students MLA while using APA in another project was not difficult.

An intentional approach to learning honed by the rigor of the doctoral program was applied to efficiently learn APA formatting. The use of APA format was initially established through use of APA formatting software and the recursive study of the APA manual. The time-consuming work of recursively studying the manual cover to cover twice, with about a month in-between, resulted in rapid acquisition of the APA format, as well as a deeper understanding of the purpose of APA. Ultimately, the in-depth study of the APA manual led to an increased fluency in vernacular and syntax of scholarly discourse.

Also beneficial was the increased understanding of the effects of motivation on learning, which can be applied to one's own situation when grappling with a challenge. Using professional detachment to move through challenging portions of the program has been effective as my increased understanding allows me to note progress where it may not have been readily apparent without a framework for analysis. This was useful during

the study of the statistics textbook supporting persistence in learning for this challenging subject.

Project Development and Evaluation

Project development and evaluation are inextricably linked when designing curriculum. Project development is enhanced through utilization of statistical analyses to evaluate learning outcomes. Skilled application of data analysis enhances project development. For example, evaluation of the project utilizing the CIS instrument provided quantitative feedback that was used to guide reflection on how best to improve the instructional PowerPoint for a future training. An adjustment made in future presentations as a result of the summative survey data will be to streamline a learning game that did not work as planned. The training game was intended to immediately apply learning but caused confusion. After reflecting on the data, it appears this confusion may explain why the CIS score for attention was .24 lower than the overall motivational score of 4.37. Originally, the design called for five independent groups (one at each table) to read a pair of dialogues, creating five sets of people speaking at the same time. The learning game will be changed in the next motivational training in order to correct this by having two volunteers read the parts for the entire group.

Leadership and Change

A reflective teacher-leader makes frequent observational assessments of those they are teaching or teaming with to check for comprehension and engagement, adjusting techniques as appropriate (Desimone, 2014). An application of leadership guiding change occurred during the instructional PowerPoint project. The participants participated in

guided practice, a common educational technique following a demonstration in which the instructor acts as a coach for the learner. While circulating between groups I made observational assessments of all learning modalities, adjusting instruction as appropriate and noting future changes that would benefit learners (Desimone, 2011). Finally, I reflected on areas of improvement, reviewed notes, and made adjustments for future presentations of the PowerPoint.

Self as Scholar

The doctoral journey is a process which happens over time and is self-directed with guidance from a variety of mentors. During the course of this journey I developed new research skills that are regularly applied to other professional interactions. Organizational skills acquired during the process of making several distinct stages of submissions required throughout the program have applications in many other areas.

Weekly scholarly discussion with colleagues in the doctoral program, sharing our progress and successful study-related techniques has also been beneficial. At the suggestion of a colleague, I kept note of the time needed to complete different tasks such as editing, reading, or first-draft composition. Reviewing these notes with the colleague clarified how to best schedule study tasks, stay focused, and make efficient use of time. Collegial interaction in the doctoral learning community resulted in the realization that active management of time is essential to maintain a balanced life. In addition to the scholarly regimen, time for exercise, family, and personal reflection are now factored into the daily routine.

Self as Practitioner

The practice of scholarship at the doctoral level revealed that data collected is rarely wasted; even observational data in the form of journal notes can lead to avenues of inquiry which may not be apparent at the moment of observation. In practice, I take notes in several layers of depth, using those notes to guide my research for a broad base of understanding of a field before specializing in a focused area of knowledge.

Research in a peer-reviewed professional journal is now a normal part of my professional practice which has enhanced my skills as a member of a community of educators. In a recent staff meeting there were several inquiries by the learning community regarding the application of the new common core standards to existing teacher-created curriculum. I was able to access the Walden library to find primary source data as well as rapidly find the related databases and professional websites, skills acquired through the doctoral program. The findings of this initial search were beneficial in clearing up some up the fundamental questions and provided a detailed list of resources to practitioners in the learning community.

Self as Project Developer

Routine use of evidence found in peer- reviewed, academic journals to make decisions is beneficial to my practice as a project developer. When reading professional journals, the references are now routinely scrutinized and items of interest are investigates through the Walden Library or GoogleScholar.com. One of the strengths of reading scholarly discourse is that alternative explanations for phenomenon are studied and explicated in the professional literature. Project development is streamlined through

examination of alternative solutions posed by other scholars, adding a depth of understanding that lays a foundation for future improvements. For example, a broad understanding of the scholarly debate surrounding implementing the new educational standards allows the project developer to anticipate potential challenges and possible solutions that can be anticipated when planning professional development curriculum on this topic.

The Project's Potential Impact on Social Change

Access to advocacy training in rural areas can be limited, and online-courses are most often used to bridge this gap in access (Robb & Sutton, 2014). The expense of maintaining a physical facility is prohibitive for many federally or state funded agencies, which instead have developed online courses to reach distant students (Robb & Sutton, 2014). Online learning is one cost effective means to provide access to remote learners. For the most part, online or hybrid courses do not include motivational support frameworks.

Motivational supports lead to higher completion rates in both traditional and online learning environments (Pittinger & Doering, 2010). Empowering the advocacy trainers to embed motivational supports in their instruction benefits local parents by supporting their learning in advocacy training classroom as well as supporting their motivation to engage in future learning.

Implications for positive social change include providing access to an effective motivational support system that can be applied to existing curriculum inexpensively to

increase engagement and persistence, learners with stress due to a variety of factors both within and outside the advocacy community.

Overall Reflection

Importance of the Work

The study and resulting project are important to local stakeholders in the advocacy training community and the Pacific School District. Investigation into the literature revealed perception of relevance is a component of overall motivation, which must be supported for maximum learning. The EP advocacy trainer group is composed entirely of current and former parent caregivers, many of whom volunteer their time. These advocates continue to experience the stressors associated with caregiving, and it is important they receive the most appropriate form of instruction available, which includes motivational supports. Results of the study showed worked examples to be an effective means to instruct beginning learners, an effect mediated by the learner's perception of course relevance. Instructional design using the ARCS framework in the project was shown to result in high engagement of adult advocacy students.

Ramchand et al., (2014) make a distinction between trained care providers and caregivers, the latter of whom are not trained or hired to provide services. Advocacy trainers are tasked with educating parents, who are paid not professional caregivers, for the most part. Volunteer advocacy trainers must be motivationally supported to persist in their important roles as both trainers and parents of their own students with special needs.

What was Learned

The learning acquired in my doctoral journey has already been an asset to my professional practice. Both study and organizational skills were honed to maintain progress on several separate projects concurrently. Perhaps most personally important, through this process an understanding of how to access the enormous store of scholarly literature available through databases and journals to inform practice.

The experience of working with EP advocates resulted in an awareness of numerous other local groups who find themselves unexpectedly caring for parents or soldiers returning home in need of care. In the United States, many school districts do not have funding to train parents to be productive members of their student's IEP team and therefore rely of outside agencies. The new learning from information provided by the study was successfully applied to create motivational supports for advocacy trainers and other caregivers as they learn to provide care for their loved ones.

Implications, Applications, and Directions for Future Research

Appropriate instructional design including embedded motivational support has been shown to reduce extraneous cognitive load and increase persistence for all learners during advocacy training in this study (Eseryl, et al., 2014; Moskovsky et al., 2013). One implication of the findings of this study and project is that online curriculum not embedded with motivational supports may lead to exclusion of at-risk learners, including learners experiencing exigent stress. A second implication of what was learned is that supporting the perception of relevance is not an option for educators, but a professional obligation (Wu et al., 2012). Indeed, with a readily available tool and evidence

supporting the ease of use and success of the ARCS model in educational settings, it seems negligent not to include the motivational framework when the literature shows the majority of learners experience increased persistence as a result.

Non-completion of courses is a challenge faced by educators in both traditional and online educational settings (Hart, Stewart, & Jimerson, 2011). In an online or blended learning environment, learner attrition due to a lack of engagement and motivation is a serious issue, with average completion rates for online courses are substantially lower than traditional classes (Hart et al., 2011). One application of the learning gained through this process is to create an instructional unit for the teachers of adults to be studied in either teacher-led professional development setting or alone with the use of a narrated accompaniment within the PowerPoint, and make this available to advocacy trainers or other educators. A second application is to incorporate ARCS supports into targeted curriculum created for the local region by the EP advocacy agency using motivational techniques detailed in the instructional PowerPoint recently used in The EP advocacy training.

One direction for future research is the efficacy of the ARCS model with adolescent learners to reduce attrition in increasingly prevalent hybrid learning environments (Robb & Sutton, 2014). Another area of future research might be to investigate ways to build ARCS motivational supports in public school science instruction, an area of study in which learners with low socioeconomic status, people of color, and women are under-represented. Scholarly investigation of the efficacy of ARCS motivational supports in a public school setting is important to understand how we can

increase engagement among teens, leading to better academic performance and a more informed citizenry.

Summary

Section 4 of this doctoral study contains reflections and conclusions on the practice of doctoral scholarship as well as a personal reflection on new learning. Project strengths and limitations were examined, and possible solutions to those issues were suggested. Alternative ways of approaching the original problem based on the work of the study were described. Scholarly reflection on the process of academic scholarship, project development, leadership, and change were addressed and reflection on personal growth as a scholar, practitioner, and project developer were explored. Finally, the overall importance of the work was discussed, including implications, applications, and suggestions for future research.

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Appendix A: The Project

Executive Summary: Three Day Instructional PowerPoint

Purpose, Audience, and Goal

The purpose of the three day instructional PowerPoint was for learners to be prepared, confident and motivated to apply the ARCS motivational support techniques in their own classes. The audience of the instructional PowerPoint training was advocacy trainers who serve a population of parents and family members of parents of children with special needs currently in the K-12 school system. The goal of the three-day instructional PowerPoint was for advocacy trainers to be confident, prepared, and motivated to apply learning from the instructional PowerPoint in their own classes.

Instructional Goals and Objectives

During the PowerPoint instruction learners will: Identify strategies for resolving common problem situations encountered by trainers; Effectively support the learning of students with beginning and advanced levels of knowledge in the same class; Understand the role of the Attention, Relevance, Confidence and Satisfaction in supporting learner motivation; Be knowledgeable about the population served by PAVE trainers, and; Apply the ARCS Model of Motivational design for learning and performance to their curriculum and teaching/training methods (Keller, 2010).

Learning Outcomes:

Upon completion of the three-day instructional PowerPoint learners will: Understand different types of learner motivation; Understand the role of the Attention, Relevance, Confidence and Satisfaction in supporting learner motivation; Be knowledgeable about the population served by PAVE trainers, and; Be able to apply the ARCS Model of Motivational design for learning and performance to their curriculum and teaching/training methods; Identify strategies for resolving common problem situations encountered by trainers.

Learning is structured in two sets of four hours lessons per day, for a total of 24 hours. Each daily learning module includes a review of knowledge, new learning, and application of that learning through learning activities and discussions. Day one introduces the learning objectives, provide theoretical background for understanding of the effects of motivation and stress on learning motivation and means to support that motivation. Day two provides a deeper look into motivation, and the ARCS model, and introduces the ice-breaker as a teaching tool. Day three is a review followed by applications of the ARCS model in common situations faced by the advocacy trainers. Instructor's notes are in the notes section of each PowerPoint slide.

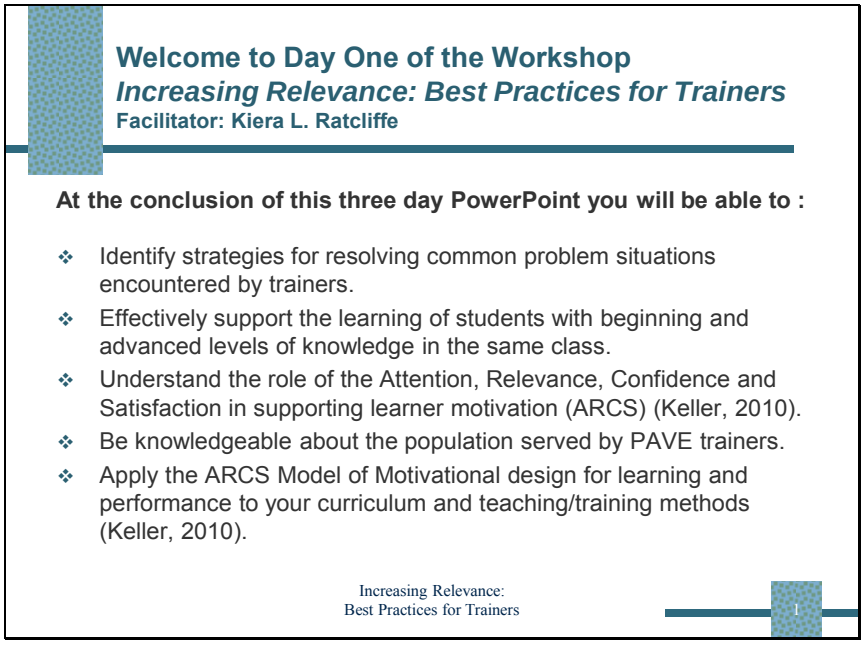
Hourly Breakdown

Day one Hour(s)	Slide(s)	Description
1.	1-2	Introduction. Learning objectives.
2.	3-8	Ice-breaker. Worked examples and relevance.
3.	9-12	CLT overview. Schema.
4.	13-18	Motivation and Stress. Motivational Design 1.
5.	19	Activity: Mini-Dialogues 1
6.	20-25	ARCS Model 1
7.	26	Activity: Mini-Dialogues 2
8.	27	Review learning outcomes.

Day two Hour(s)	Slide(s)	Description
1.	28	Introduction. Learning objectives. Review prior learning.
2.	29	Who are our students?
3.	29	Who are our students? Stressors on parents.
4.	30-32	Stressors on parents. ARCS as motivational support.
5.	33-36	Motivational Design 2
6.	37-40	How to use Ice-breakers
7.	41	Activity: Best Ice-breaker
8.	42-44	Motivational Design review. Review learning outcomes.

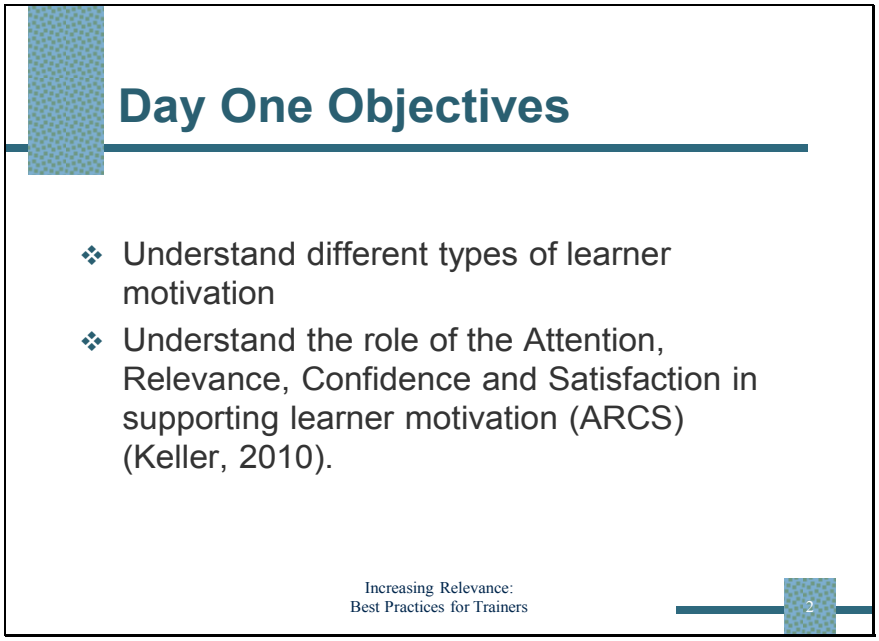
Day three Hour(s)	Slide(s)	Description
1.	45-47	Introduction. Learning objectives. Review prior learning.
2.	48	Activity: On the spot (small group)
3.	49	Activity: On the spot (large group). Motivational Design 3
4.	50	Motivational Design 3
5.	51	Activity: Most common challenges (small group)
6.	52-54	Activity: Most common challenges
7.	52-54	Activity: Most common challenges (large group)
8.	55-57	Review learning outcomes.

Slide 1



Three Day Training Goals: Identify strategies for resolving common problem situations encountered by trainers; Effectively support the learning of students with beginning and advanced levels of knowledge in the same class; Understand the role of the Attention, Relevance, Confidence and Satisfaction in supporting learner motivation; Be knowledgeable about the population served by PAVE trainers, and; Apply the ARCS Model of Motivational design for learning and performance to your curriculum and teaching/training methods (Keller, 2010).

Slide 2



Day One Learning Outcomes

By the end of today's training the learner will understand different types of learner motivation and understand the role of the Attention, Relevance, Confidence and Satisfaction in supporting learner motivation (ARCS) (Keller, 2010).

Slide 3

Introduce myself, discuss Ice-Breaker activity.
Candy Bar Ice-Breaker Activity: Each learner state their name, read their quotation, and explain what it means to them personally.
"Parenting a child with a disability can be a 'Rocky Road'".
"Our sweetest 'Payday' is when our team reaches its goals".
"'Look' for ways we can work together as a team"

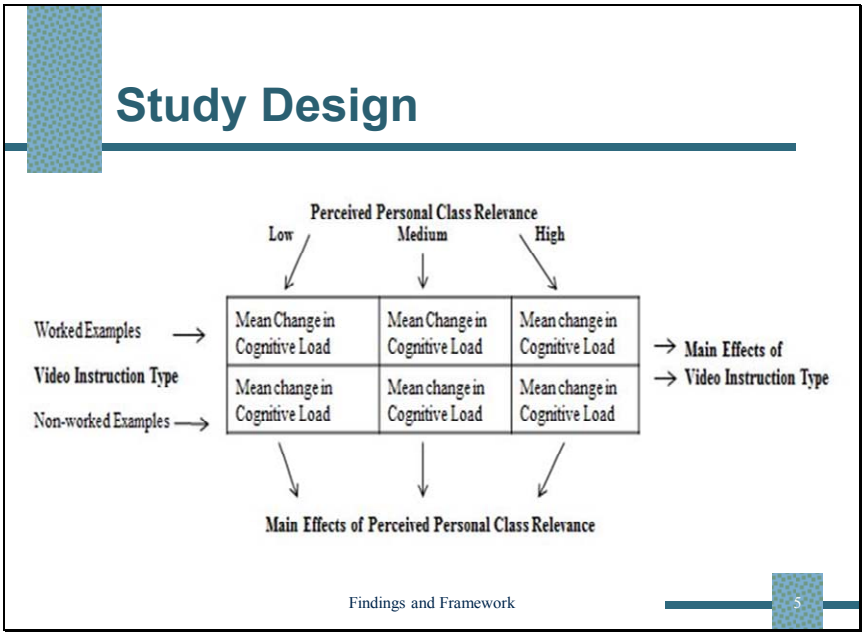
Slide 4

A Study

PAVE participated in a study comparing two different instructional techniques used in beginning advocacy classes.

1. Worked Examples were found to benefit adult learners with no frame of reference in the subject (beginners).
2. Perception of the relevance of coursework combined with use of worked examples resulted in nine times greater learning.

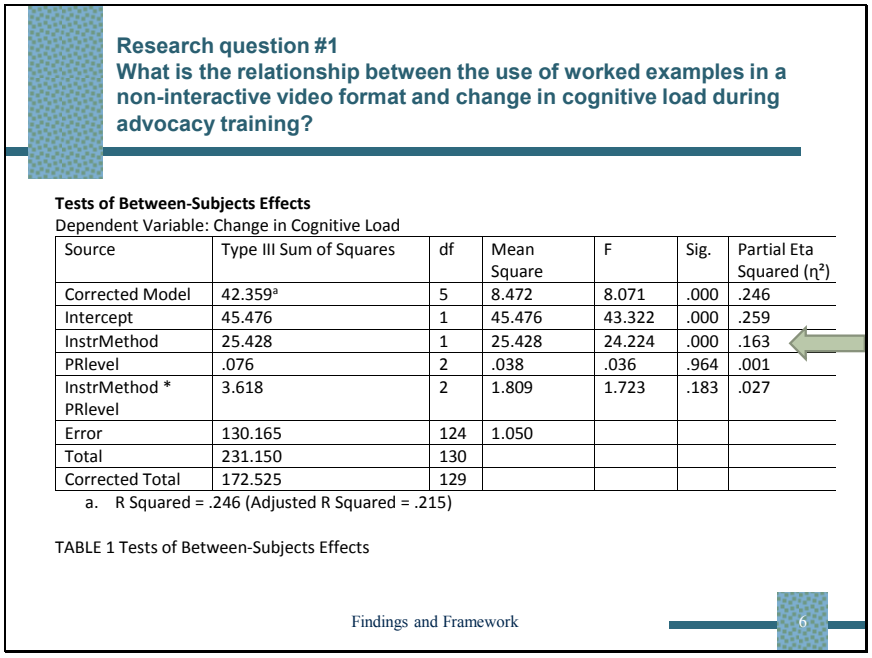
Slide 5



A 2 x 3 quasi-experimental pretest and posttest factorial design was used to compare the effects of two different instructional techniques on cognitive load, the effect of perceived personal class relevance on cognitive load, and the interaction between the two techniques (Edmonds & Kennedy, 2013). The instructional techniques utilized were worked examples in a video format and non-worked examples in a video format, both which were part of regular instruction in the advocacy training course. Data was collected through two self-reported instruments. Change in cognitive load was determined by the NASA Task Load Index and learner perception of personal content relevance was measured using the Perceived Class Relevance Scale (Hart & Staveland, 1988; Webster et al., 2011).

The two videos contained exactly the same material, but one was re-arranged so the material was presented in an order that, in theory, would be more accessible to beginning learners.

Slide 6



Research question #1
What is the relationship between the use of worked examples in a non-interactive video format and change in cognitive load during advocacy training?

Tests of Between-Subjects Effects

Dependent Variable: Change in Cognitive Load

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared (η^2)
Corrected Model	42.359[a]	5	8.472	8.071	.000	.246
Intercept	45.476	1	45.476	43.322	.000	.259
InstrMethod	25.428	1	25.428	24.224	.000	.163
PRlevel	.076	2	.038	.036	.964	.001
InstrMethod * PRlevel	3.618	2	1.809	1.723	.183	.027
Error	130.165	124	1.050			
Total	231.150	130				
Corrected Total	172.525	129				

a. R Squared = .246 (Adjusted R Squared = .215)

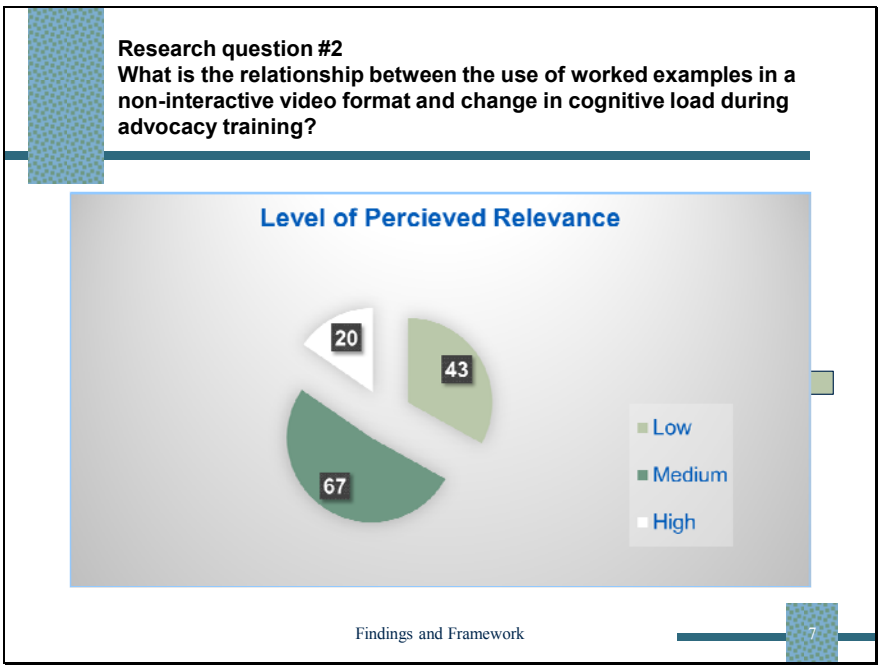
TABLE 1 Tests of Between-Subjects Effects

Findings and Framework 6

What is the relationship between the use of worked examples in a noninteractive video format and change in cognitive load during advocacy training? Findings regarding research question one revealed a statistically significant main effect between the use of worked examples in a noninteractive video format and change in cognitive load ($p = .000$), ($\eta^2 = .163$) (Creswell, 2012; Edmonds & Kennedy, 2013).

The results showed a direct connection between using the "worked examples" format of the video and improved instructional outcomes.

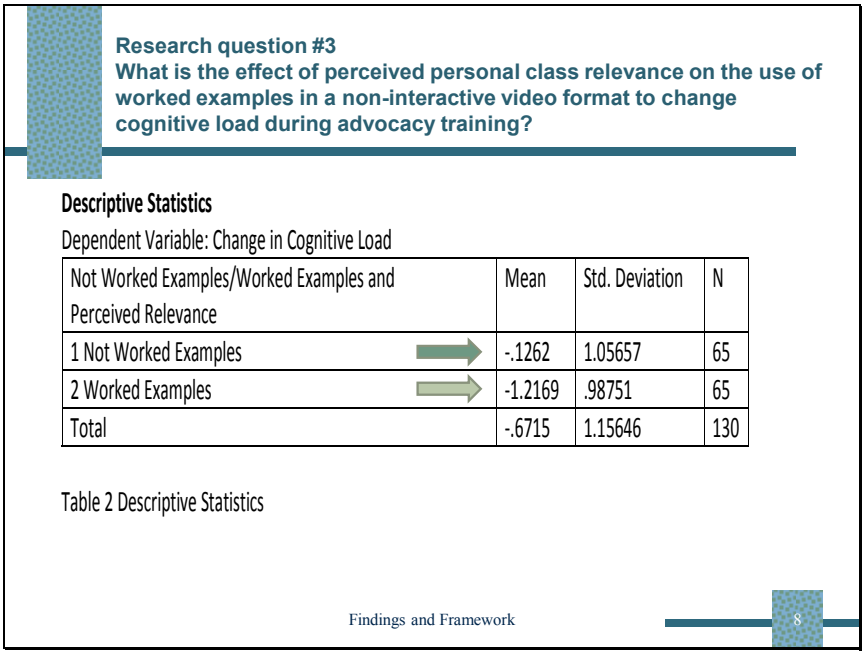
Slide 7



What is the relationship between the use of worked examples in a noninteractive video format and change in cognitive load during advocacy training? Findings regarding research question two showed the relationship between perceived personal class relevance and change in cognitive load during advocacy training was not statistically significant ($p = .964$) (Table 1). Therefore the null hypothesis was accepted: There is no relationship between perceived personal class relevance and change in cognitive load during advocacy training. However, follow-up pairwise comparisons separating the three levels of perceived course value revealed statistically significant interaction effects in the low ($p = .03$) and medium ($p = .000$) personal class relevance groups (Edmonds & Kennedy, 2013). The effect on cognitive load for those with high perceived relevance was statistically insignificant. These findings highlight the importance of supporting the learner's perception of course relevance during instruction. The combination of the perception that a course is relevant to the learner and instruction using worked examples was found to be efficacious to those experiencing low and moderate levels of perceived relevance. The small number of participants with a high level of perceived relevance made statistical analysis challenging for this group, but the effect on cognitive load for those with high perceived relevance closely approached statistical significance.

This finding suggests that the perception of course relevance has an effect on a student's ability to focus attention on the learning task. This perception combined with a worked examples format for beginning learners is highly beneficial to all adult learners.

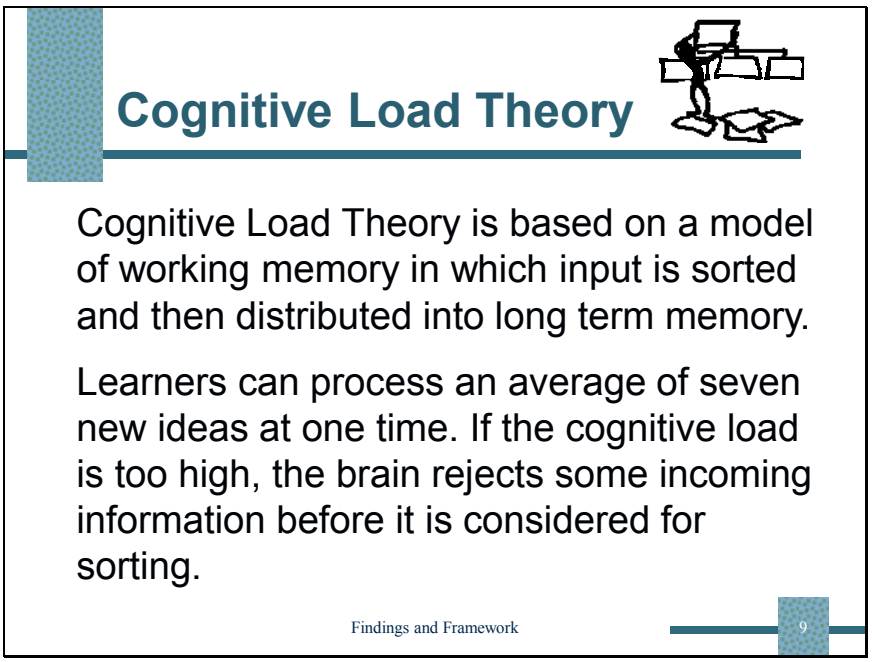
Slide 8



What is the effect of perceived personal class relevance on the use of worked examples in a noninteractive video format to change cognitive load during advocacy training? Findings were mixed regarding question three on the effect of perceived personal class relevance on the use of worked examples in a noninteractive video format to change cognitive load. The ANOVA analysis showed change in cognitive load in relation to the perceived level of relevance and instructional method were not statistically significant ($p = .183$) (Table 1).

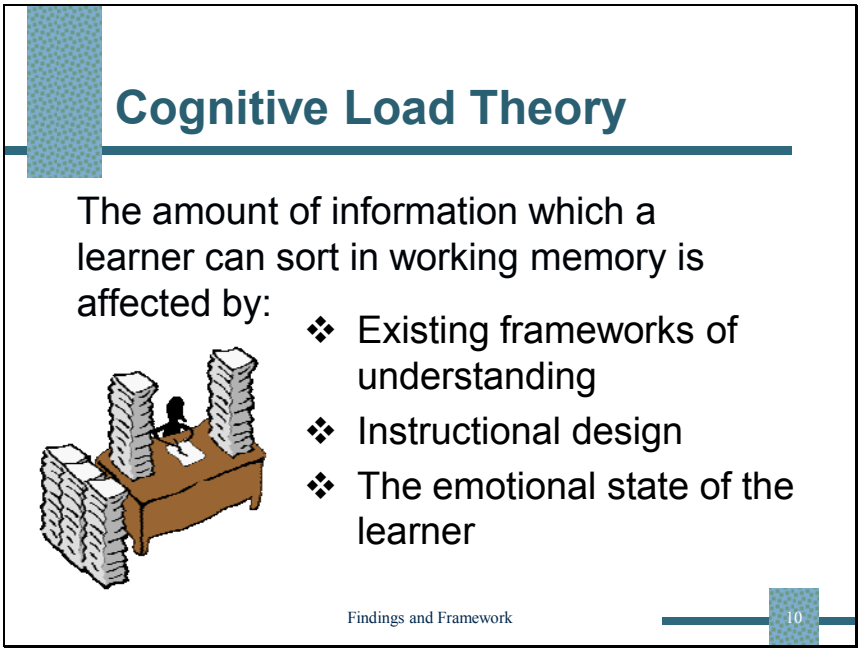
The Descriptive Statistics chart showed those learners who received instruction using worked examples experienced a more than nine fold decrease in cognitive load on average. Thus, all learners benefitted from the use of the worked examples arrangement of the curriculum (the video).

Slide 9



The terms we will use with an example introductory advocacy lesson for beginning learners are: Behavior plan, Intervention, IEP, 504, LRE, and Special Education.

Slide 10

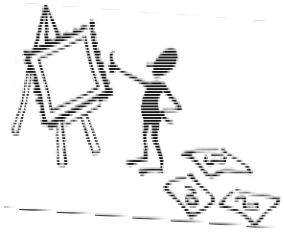


Cognitive load is the amount of info a person can process at one time. A high cognitive load means too much info and some is not able to be processed. A lowered cognitive load means the person is spending more intellectual capacity analyzing/processing data and less deciding which data should be analyzed/processed.

Slide 11

Instructional Design

- The amount of material the working memory can processed at a given time can be optimized
- Frameworks of understanding (schema) allow complex data to be processed as one piece of information



Multiplication tables, for example, are memorized and these schema calculations are accessed as one piece of information.

Slide 12

Frameworks and Grouping

- Creating an understanding of the actions or operations needed to solve a complex problem is helpful in building schema
- Use intentional pauses to allow time to process

Input is sorted and then distributed into long term memory. Learners can process up to seven ideas at one time. (Reviewing main idea introduced in slide nine).

Slide 13

Stress and Working Memory

Stress and anxiety have been found to impede the ability of the learner to direct attention to the learning task.

Break here if appropriate; otherwise pause to take questions and make an observational assessment.

Shift focus to motivation

Slide 14

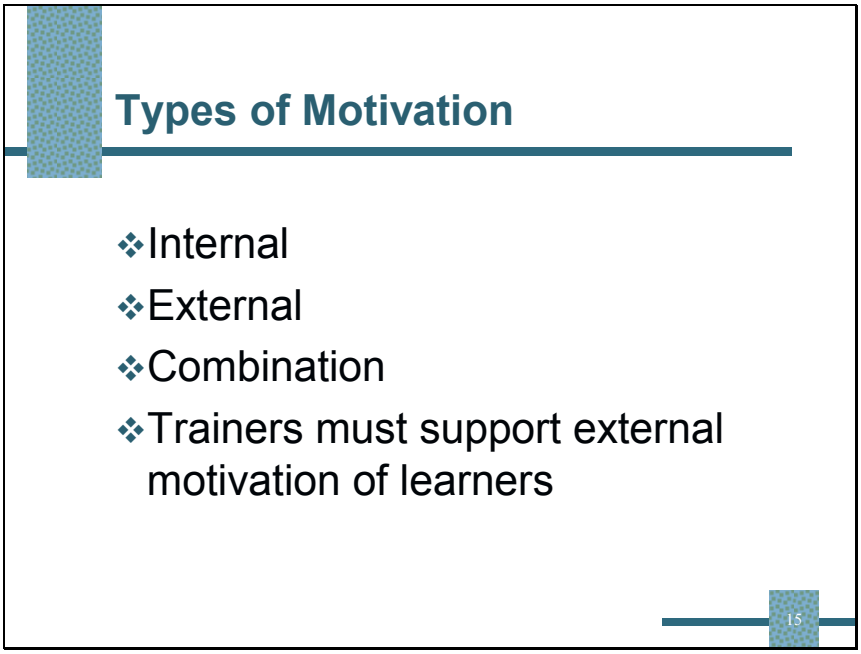
Motivation and Adult Learning

- Stress causes the brain to process fewer items
- Learners arrive in class with their own motivation levels.
- Trainers can positively or negatively affect motivation levels in the classroom.

"We know that we have one shot at 80% of these learners, and we need to give them as much information and support resources as possible while there are there." (nonymous advocate)

14

Slide 15



Direct instruction: The effect of motivation on learning.
What part of motivation can advocacy trainers impact?

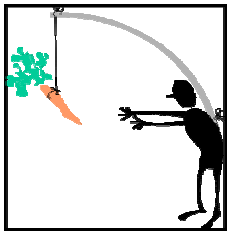
Motivation the learners bring with them into the classroom can and must be supported.

Slide 16

External Motivation

Externally motivated learners may feel pressured by others to learn, which can result in difficulty concentrating.

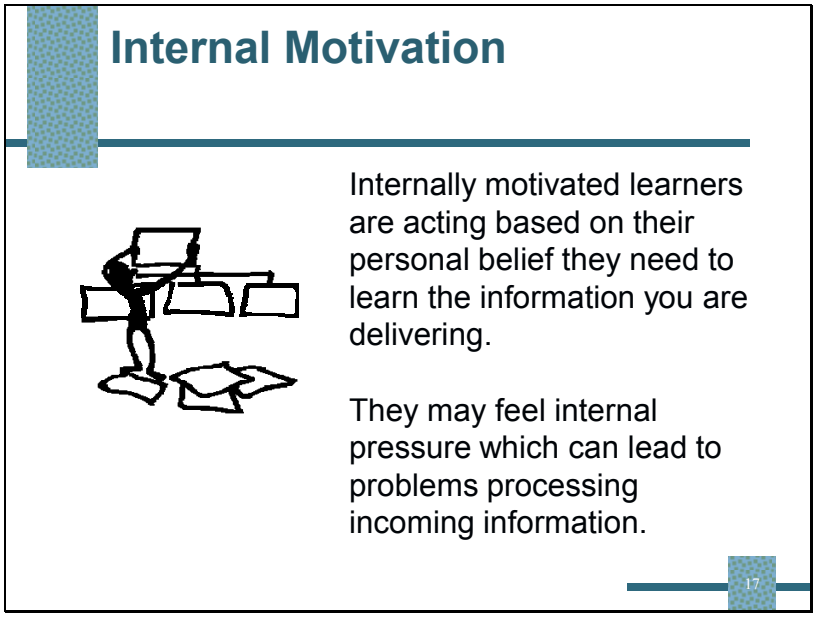
They may have trouble staying engaged during training and seek quick answers to complex questions.



16

Class members volunteer examples of these types of learners in an interactive, instructor-led discussion.

Slide 17



"Internal" is intentionally substituted for "intrinsic" for ease of communication.

Class members volunteer examples of these types of learners in an interactive, instructor-led discussion.

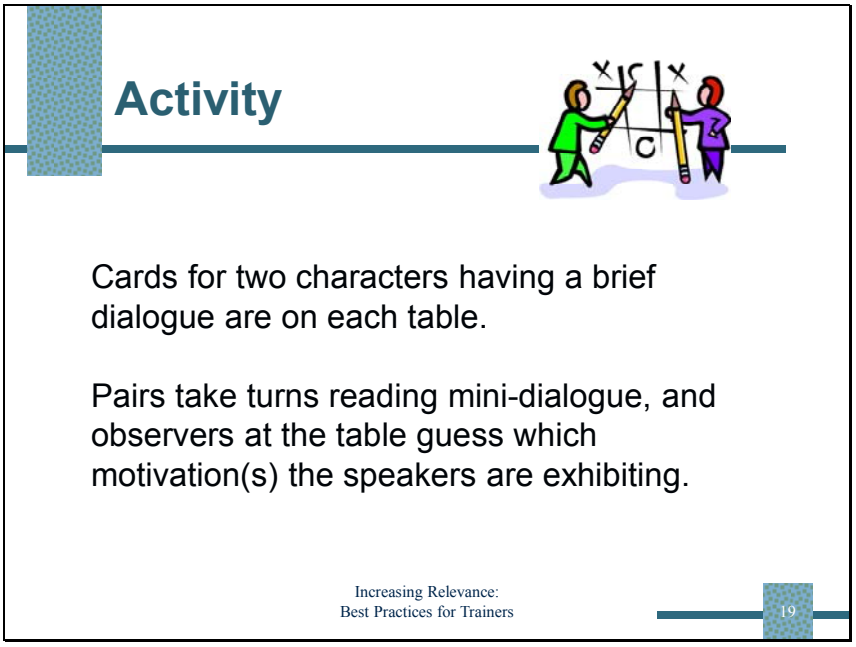
Slide 18

Mixed Motivation

Learners with mixed motivation may feel responsible to others as well as themselves for their learning in advocacy training.

They may respond by withdrawing or engaging inappropriately or aggressively during training.

Slide 19



Cards for two characters having a brief dialogue are on each table.

Internally motivated mini dialogue:

Speaker One: I am the only one who has the time to attend all these meetings.

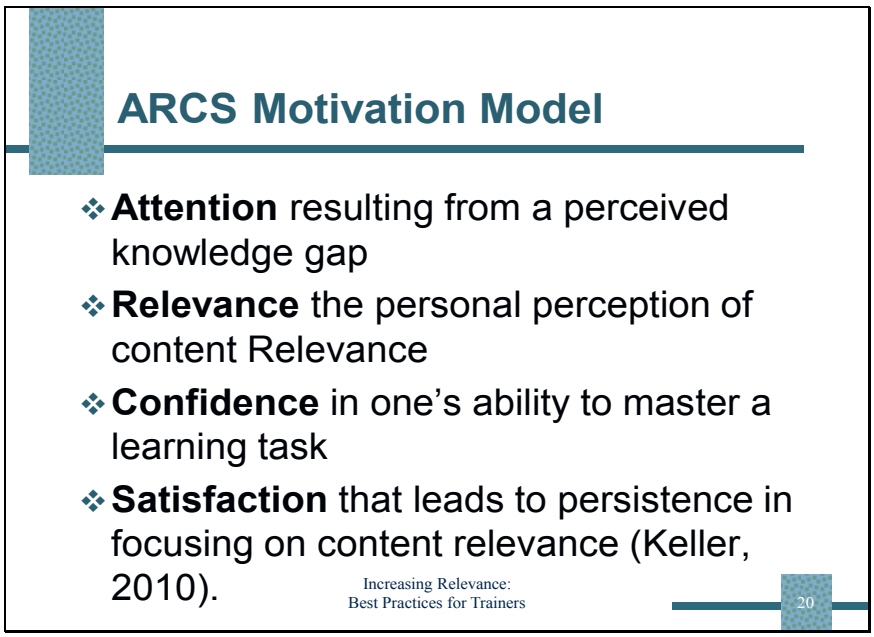
Speaker Two: Why don't you ask for help from your friends? I could go with you.

Speaker One: That's so nice (yawn), but I have to stay on top of this myself. I worry he might miss something important. Sometimes I lay awake at night trying to be sure I'm not making a mistake…

(Discussion point: Internally motivated learners are acting based on their personal belief they need to learn the information you are delivering. They may feel internal pressure which can lead to problems processing incoming information.)

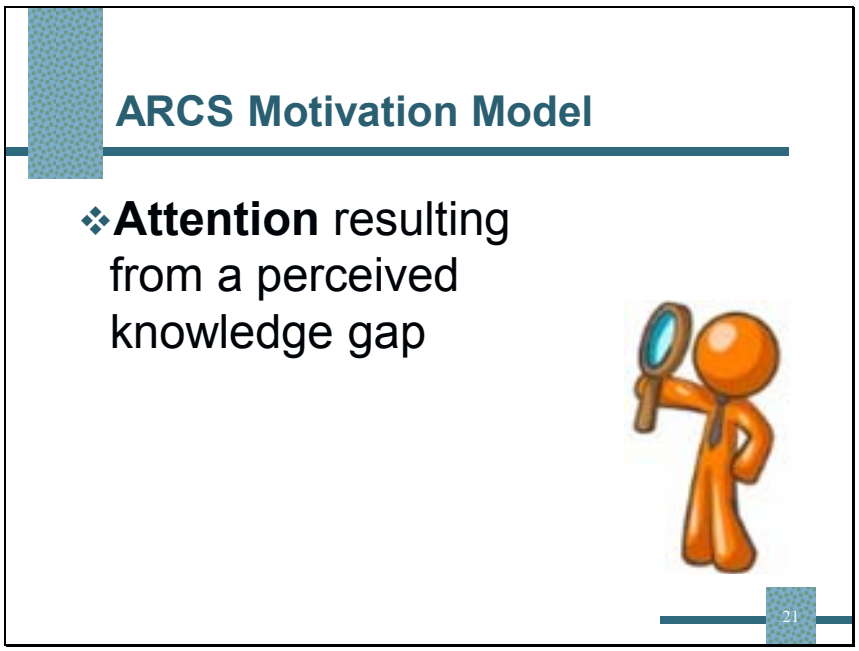
Class is invited to brainstorm and create mini-dialogues for external and mixed motivation, if appropriate.

Slide 20



Introduce of ARCS framework as tool to support motivation.

Slide 21



You have the information I need.

Slide 22

ARCS Motivation Model

- **Relevance,** the belief that learning is useful both now and in the future.

22

I want to know more, it is important to me.

Slide 23

ARCS Motivation Model

- **Confidence** in one's ability to master a learning task

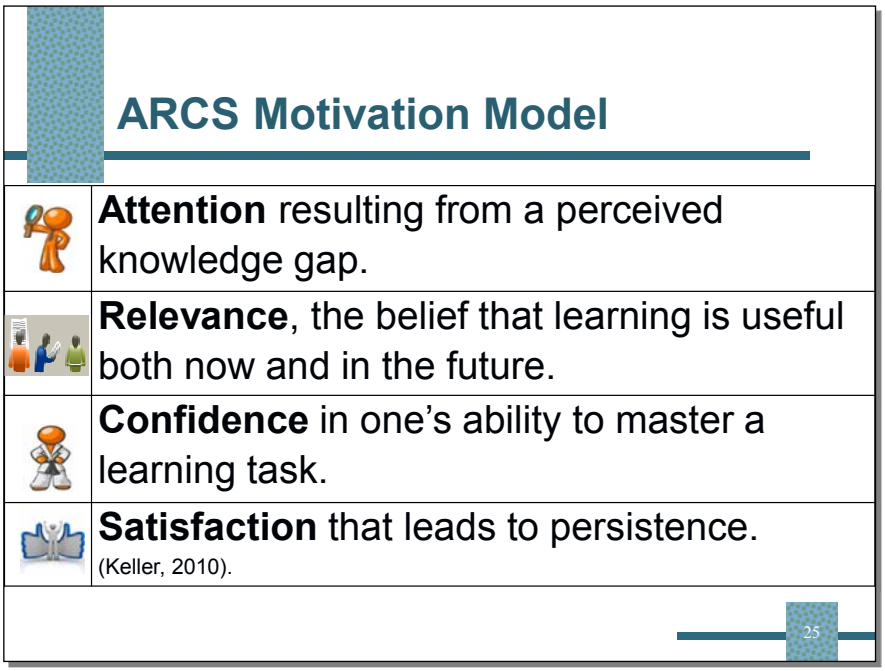
23

I'm pretty sure I can learn this.

Slide 24

I learned this and now I can use it. I want to learn more about this in the future.

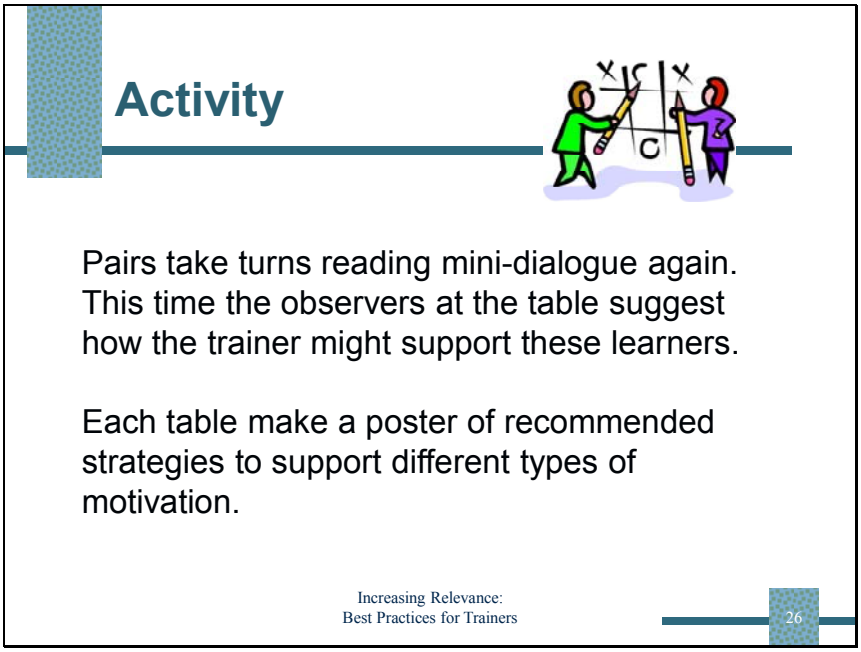
Slide 25



This is a 24 x 36 inch **poster on the wall** (posted in two locations) as well as **a handout** at each table.

On day three, a detailed version of this information with a template for adding ARCS supports will be distributed and utilized in training (**Motivational Supports Handout,** slide 50).

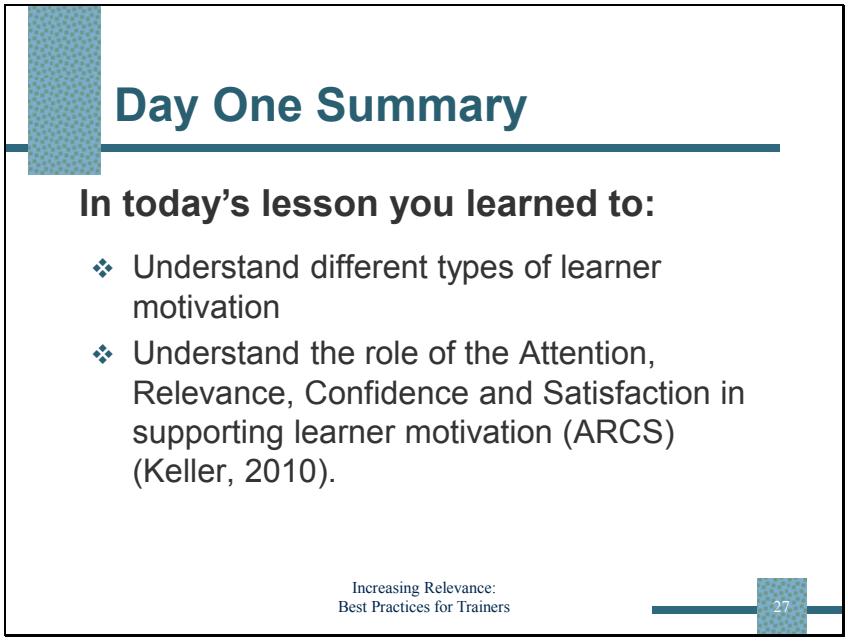
Slide 26



Pairs take turns reading mini-dialogue again. If not yet developed by the class, develop the other two mini-dialogues for external and mixed motivation at this time. This time, the observers at the table suggest how the trainer might support these learners at their own table using an ARCS motivational strategy

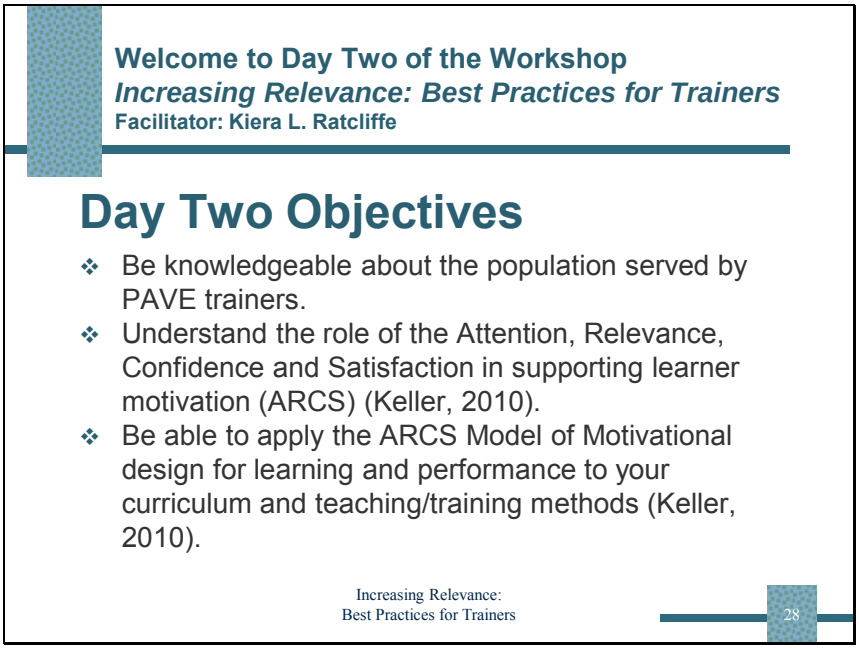
Each table write down and share out their best recommended strategies to support different types of motivation using paper and markers provided, referencing poster and handout seen on slide 25.

Slide 27



Review learning outcomes.

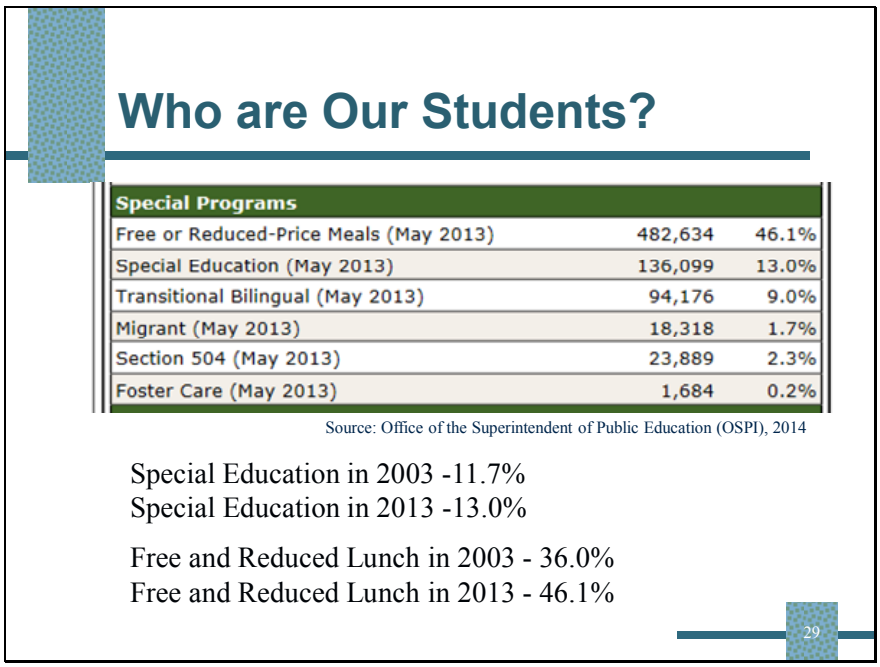
Slide 28



Day Two Learning Outcomes

By the end of today's training the learner will: Be knowledgeable about the population served by PAVE trainers; Understand the role of the Attention, Relevance, Confidence and Satisfaction in supporting learner motivation (ARCS), and; Be able to apply the ARCS Model of Motivational design for learning and performance to your curriculum and teaching/training methods (Keller, 2010).

Slide 29



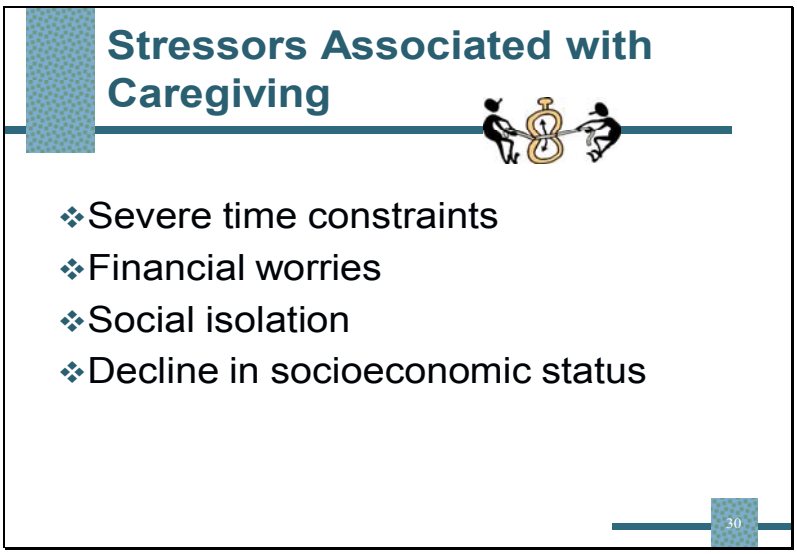
Poverty
Low socioeconomic status parents attend IEP meetings at a lower rate and participate less when they attend (Jones & Gansle, 2010).

Educational Challenges
Mandic et al. (2012) found 36.5% of Americans aged 25-49 have minimal literacy skills and experience difficulties integrating complex information from reading a text; parents of children in special education had lower literacy scores than the general sample (Mandic et al., 2012).

Parents with lower educational levels and families with low socioeconomic status are overrepresented in special education (Jones & Gansle, 2010).

Best Practices in adult education provide equitable access to information for learners of all backgrounds and abilities.

Slide 30



Stress and anxiety have been found to impede the ability of the learner to direct attention to learning tasks. For parents of special needs children, time is a limited and valuable commodity. Learning in advocacy training must be structured as to make the best use of parents' time.

Time and money needed for medical procedures, meetings, and specialized therapy creates long term financial hardships for families In a two-parent home, one parent of a special needs child often needs to reduce their hours or quit working in order to gaining access to needed services and provide care, resulting in decreased income, increased stress and loss of personal time (NAC, 2009; Uskun & Gundogar, 2010).

Parents of children with disabilities often experience social exclusion and the distancing of friends and extended family members (Dehnavi et al., 2011; Thompson & Emira, 2011).

The stress produced by financial hardship and social isolation is both chronic and cumulative, and can result in feelings of anxiety and demoralization (Santiago et al., 2011).

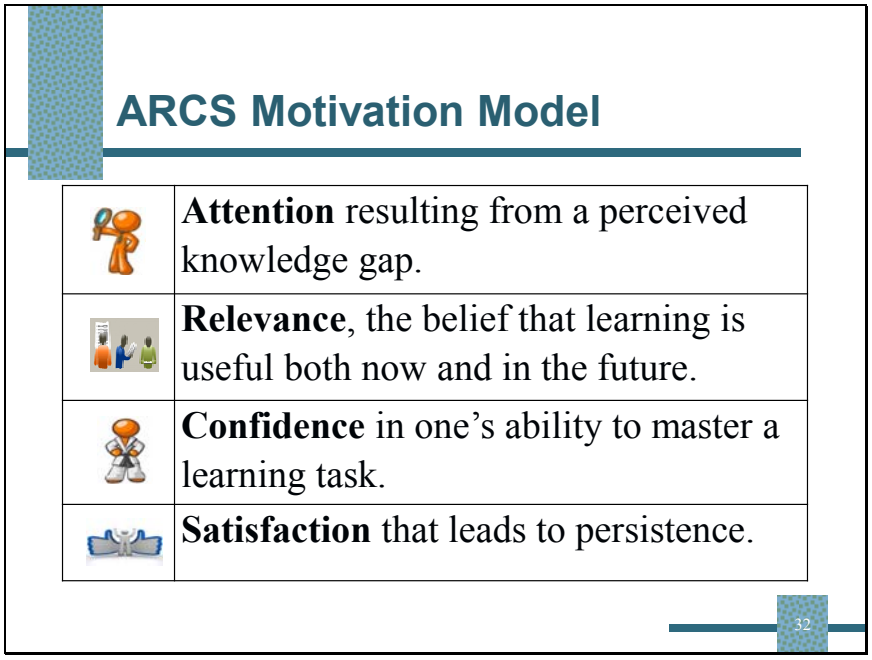
Slide 31

"Everyone says they are all for taking care of a disabled person until you have to leave work suddenly because the person you care for had a seizure at daycare, or poked themselves in the eye and scratched their cornea on purpose to get attention. You are passed over for raises and promotions. The boss thinks you are a clock watcher because you HAVE to be home before the van drops the person you care for off at home. They already dropped her off once and you weren't there. Then there is the time you have to take while at work to take care of the disabled persons business. Social security sends you a letter out of the blue that they can't get in touch with you even though you haven't moved or changed your phone number in 10 years. So now you have to spend hours on the phone…the majority of it on hold, hoping no one walks in and catches you doing it at work. You spend so much time just trying to make people do their jobs…trying to keep all the ducks in a row. They never stay in line though. It's never ending. You have to take off time for doctor's appointments, psychiatric appointments, dental appointments. You

use up all your vacation time and sick days on the person you care for so when you get sick….and you will…you have no sick days left and you're in trouble again."

Discussion "Frequently observed experiences of local caregivers." This discussion generates three most common types of motivational challenges faces by advocacy trainers. These three will be used on day three for a targeted activity (slide 50).

Slide 32



ARCS review. Class brainstorm and discussion of strategies to support learner motivation using ARCS.

Slide 33

Supporting Attention

Attention: Create a learning experience that captures interest, stimulates curiosity, and is varied enough to hold learner attention.

Guiding question: How can I make this learning experience interesting and stimulating?

33

Strategies: Use humor and surprise when appropriate to maintain interest. Guide learners to think through challenges and solve problems relevant to the subject. Use several teaching methods to engage all students.

Slide 34

Supporting Relevance

Relevance: Create a learning experience that meets student needs and ties into their interests.

Guiding question: In what ways will this learning experience be valuable to my students?

34

Strategies: Use an ice-breaker to understand learner's immediate needs and motivation. Explain how the lesson will be useful now and in the future through a story or anecdote. Post goals and review them with students.

Slide 35

Supporting Confidence

Confidence: Create a learning experience that creates an expectation of success, provides opportunities for student success, and encourages student control over their learning.

Guiding questions: How can I make this learning experience a success for my students? How can I ensure learners experience control over their own success?

35

Strategies: Use different teaching strategies to include all learners. Refer to posted goals during instruction and point out student progress.

Slide 36

Supporting Satisfaction

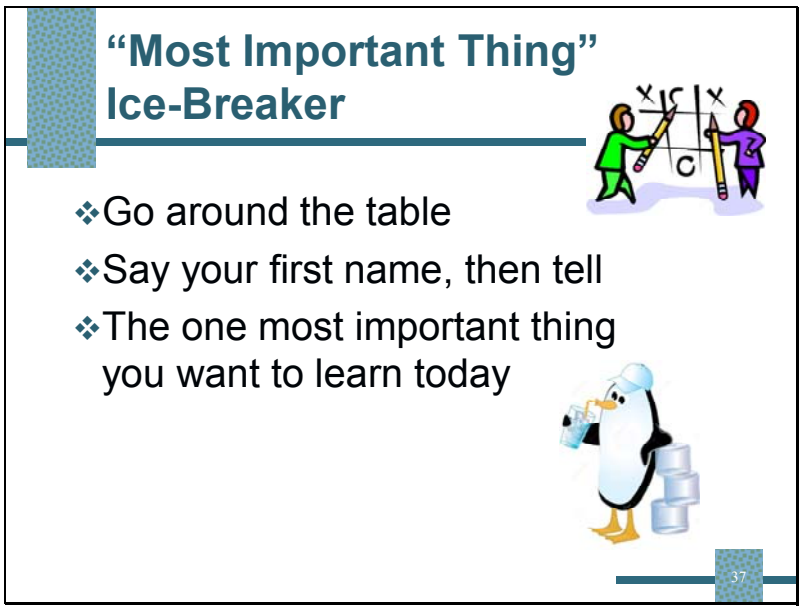
Satisfaction: Create a learning experience that provides learners an opportunity to apply their learning and reinforce learner success.

Guiding question: In what ways will this learning experience be positive and create the desire to continue learning in my students?

36

Strategies: Provide learners an opportunity to share out learning. Give positive feedback when appropriate.

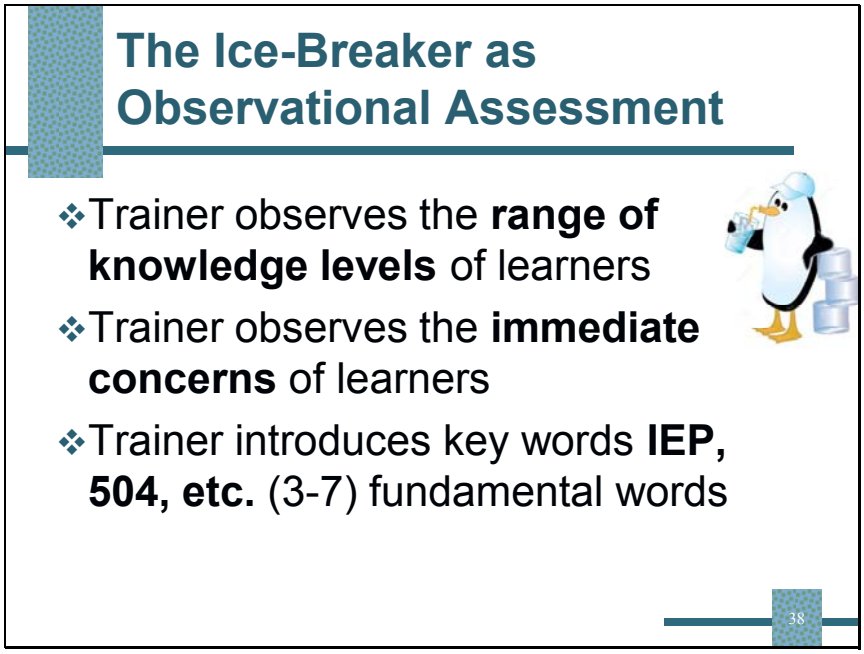
Slide 37



Think-Pair-Share How does this ice-breaker support motivation?

This ice-breaker sets the stage for a study of how to use ice-breakers to assess learners and devise motivational supports suited to their needs.

Slide 38



Trainer observes the range of knowledge levels of learners – in order to appropriately differentiate instruction.

Trainer observes the immediate concerns of learners –allows educator to select relevant examples; introduce the idea of increasing relevance in the curriculum to support persistence.

Trainer introduces essential words IEP, 504, etc**.** (3-7) essential words.

Slide 39

The Ice-Breaker as Teaching Tool

- Trainer creates a framework
- Trainer introduces five to seven essential words:
  - **Behavior plan**
  - **Intervention**
  - **IEP**
  - **504**
  - **LRE**
  - **Special Education**

39

Trainer reintroduces essential words based on data gathered in the most recent training.

Slide 40

Add Motivational Support

- Reflect on motivational needs of the target audience
- Recall what was learned by your ice-breaker observations and housekeeping interactions

40

Large group discussion.

Slide 41

Best Ice-Breaker Activity

- Each table brainstorm and select the best ice-breaker
- On the sheet provided, describe how the ice-breaker supports motivation through supporting Attention, Relevance, Confidence, and Satisfaction
- Share out the results

41

Ideas:

•Paper Planes (Anonymous activity): On a paper plane, write answers to these three questions: “What brings you here on this journey?”, “What souvenirs do you want to take with you?”, “Where are you going?” Stand in a circle, throw paper planes in the center. Everyone is invited to take one and read aloud.

•Bowl of Pennies: Trainer brings a bowl of pennies. Students choose one, and share something that happened to them or something important to them about the year the penny was minted.

•Vote, and then play one of the above suggested icebreakers, or one developed from the class.

Slide 42


Motivational Design
Motivational Design Strategy
Reflect on motivational needs of the target audience.
Generate ideas
Refine and select best motivational supports
Integrate into lessons
Increasing Relevance:
Best Practices for Trainers
42

Slide 43

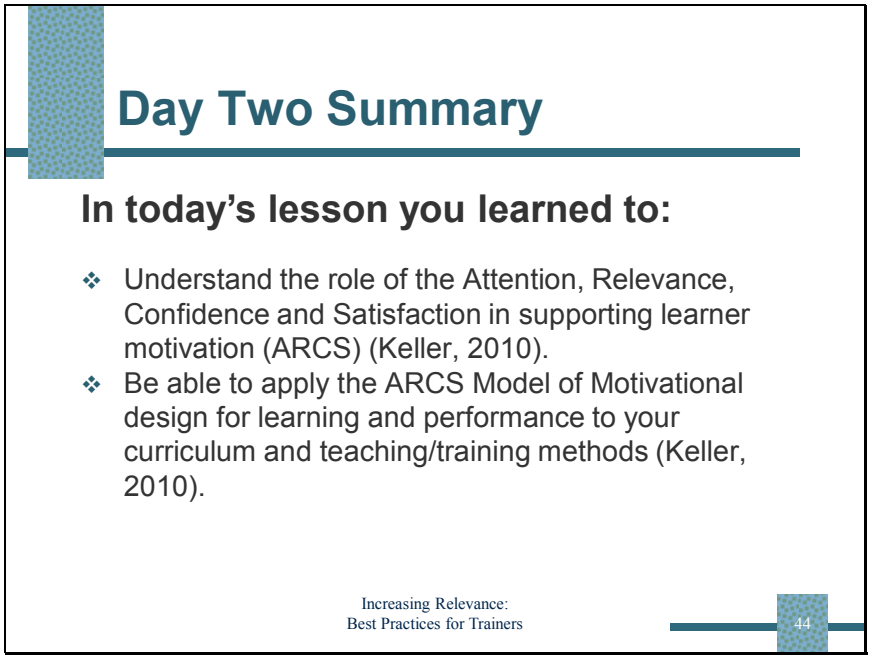
Add Motivational Support

- Reflect on motivational needs of the target audience
- Recall what was learned by your ice-breaker observations and housekeeping interactions

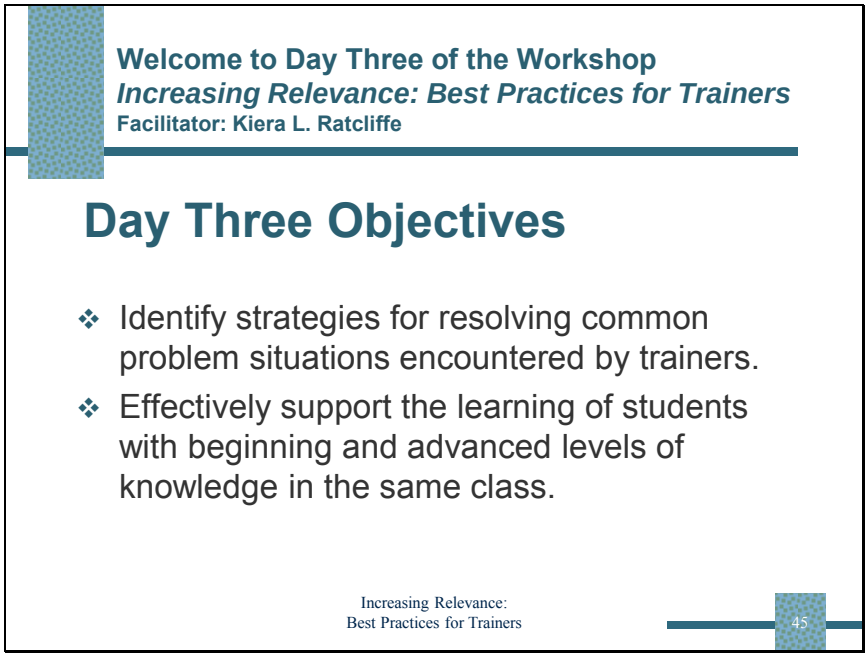
From direct instruction on the target audience:
From Ice Breaker: "Trainer observes the **range of knowledge levels** of learners – in order to appropriately differentiate instruction
Trainer observes the **immediate concerns** of learners –allows educator to select relevant examples" (Keller, 2010, p. 64).

Large group discussion

Slide 44


Day Two Summary
In today's lesson you learned to:
Understand the role of the Attention, Relevance, Confidence and Satisfaction in supporting learner motivation (ARCS) (Keller, 2010).
Be able to apply the ARCS Model of Motivational design for learning and performance to your curriculum and teaching/training methods (Keller, 2010).
Increasing Relevance:
Best Practices for Trainers
44

Slide 45



Day Three Learning Outcomes

By the end of today's training the learner will: Identify strategies for resolving common problem situations encountered by trainers and effectively support the learning of students with beginning and advanced levels of knowledge in the same class.

Slide 46

Motivational Design

- Reflect on motivational needs of the target audience.
- Generate ideas
- Refine and select best motivational supports
- Integrate into lessons

Slide 47

ARCS Motivation Model

	**Attention** resulting from a perceived knowledge gap.
	**Relevance**, the belief that learning is useful both now and in the future.
	**Confidence** in one's ability to master a learning task.
	**Satisfaction** that leads to persistence.

47

Review prior learning.

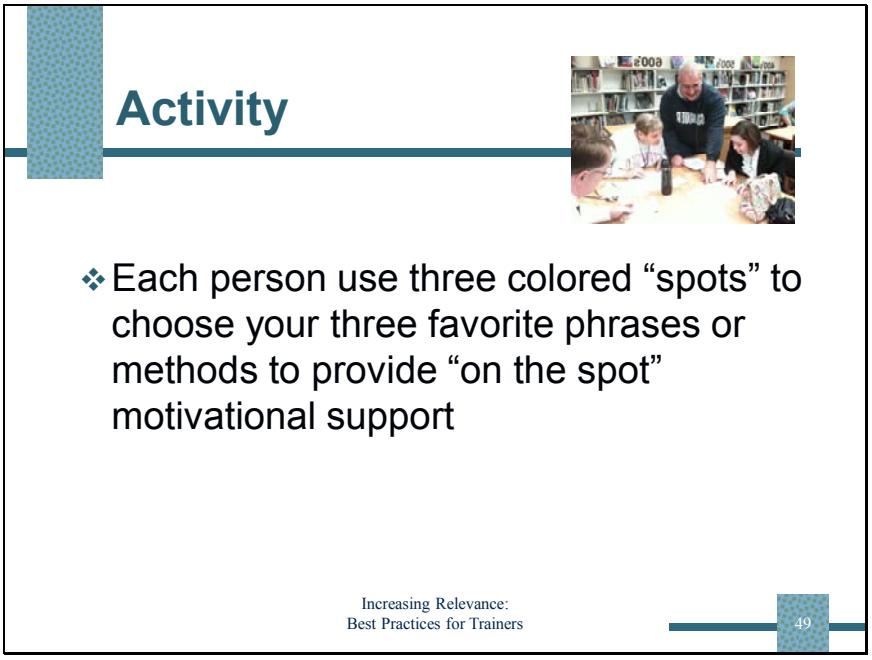
Slide 48

Activity

- Brainstorm: Each table generate a list of three “go to” phrases or other methods that provide “on the spot” motivational support.
- Each group share out their three phrases

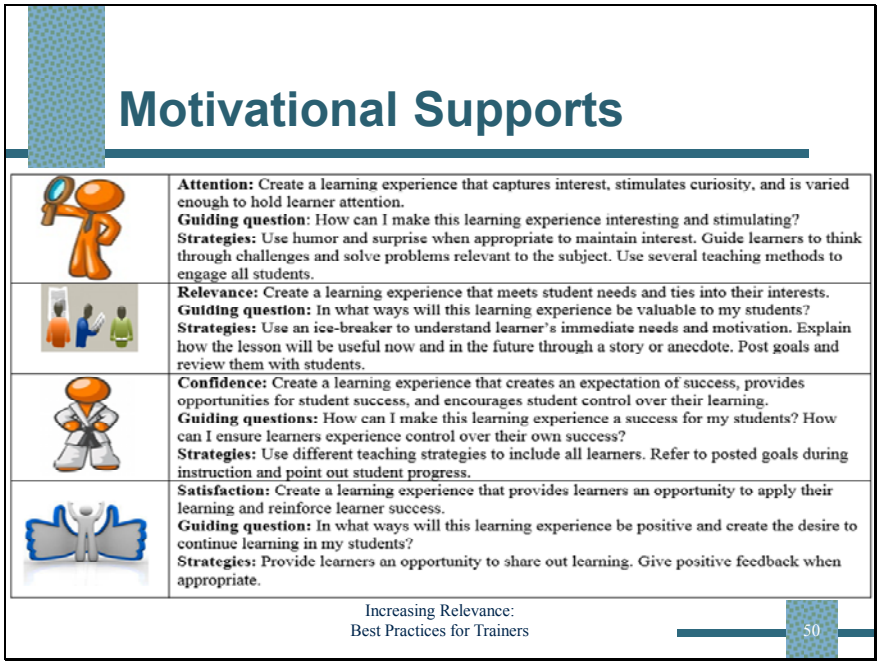
Small group activity:
Brainstorm three “go to” phrases or other methods that provide “on the spot” motivational support.
Each group share out their three supports for these learners.

Slide 49



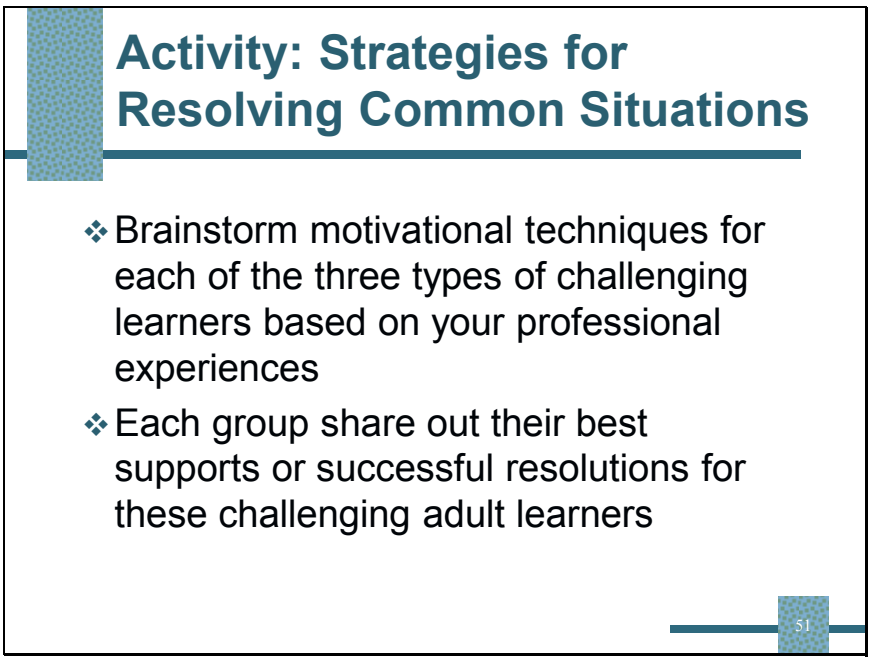
Large group activity:
Facilitator writes “go to” phrases or other methods that provide “on the spot” motivational support.
Refine and select best motivational supports via class discussion.
Trainers use colored dots to stick next to each of their three favorite phrases. The phrase or other method with the most wins.

Slide 50



Pass out **Motivational Supports Handout** and give instruction based on known stressors in target audience (parents).

Slide 51



Three most common motivational challenges presented by parents were generated by advocacy trainers on day two during discussion in slide 31. These three will be used for a targeted activity.

Brainstorm motivational techniques for each of the three types of parents, based on your professional experiences.

Each group share out their motivational supports for each of these three types of learners.

Facilitator write supports on flipchart, then students transfer to appropriate poster.

Slide 52

Scenario One:
The Expert aka "Rule-Bender"

This parent takes "short cuts" to get services which may cost their loved one those same services in the future. They are encouraging others to do the same, creating confusion, and slowing down the class.

52

Suggestion: Trainer tells an anecdote about "someone" who lost services as a result of taking short cuts.

Learners at each table (small group) are asked to volunteer one example of this issue that they have successfully resolved. All learners benefit from the suggestions of experienced practitioners and peers.

Slide 53

Scenario Two: The Parent in Crisis

These parents are so distressed they are completely focused on their immediate issue and are having trouble participating in the class.

Parents in crisis may talk about their issues without giving others an opportunity to speak and stop the presentation of information needed by all learners.

53

Suggestion: Acknowledge the serious and complex nature of the problem. Offer to focus on 'their' problem and offer resources later.

Learners at each table (small group) are asked to volunteer one example of this issue that they have successfully resolved. All learners benefit from the suggestions of experienced practitioners and peers.

Slide 54

Scenario Three: "The Dominator"

This learner is accustomed to authority and attempts to speak for the group and/or take over the meeting. This slows the transfer of information and frustrates the other parents.

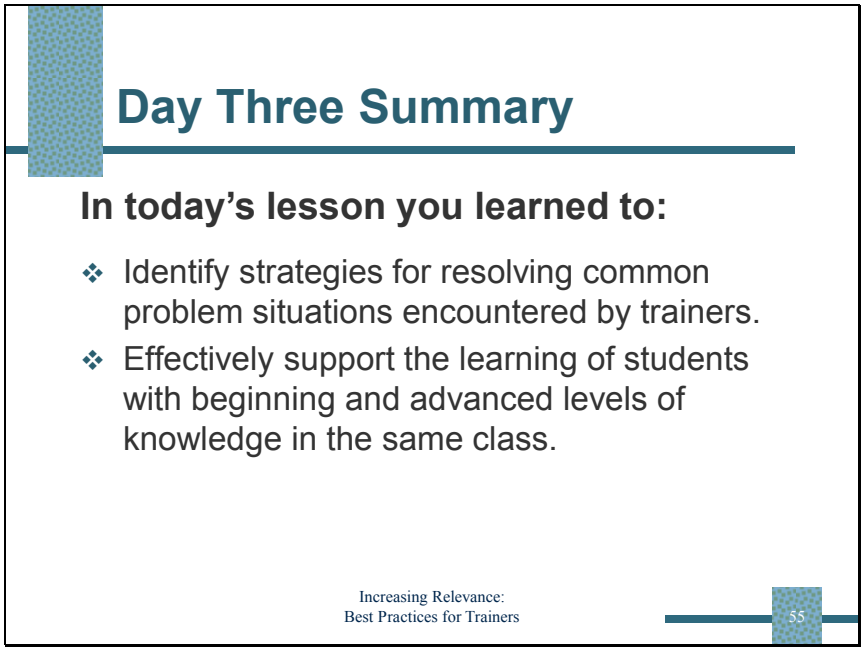
54

Suggestion: In a military setting, a trainer may have to give way. Be sure to have established 3-7 words, concepts and return to them to get back on track.

Learners at each table (small group) are asked to volunteer one example of this issue that they have successfully resolved. All learners benefit from the suggestions of experienced practitioners and peers.

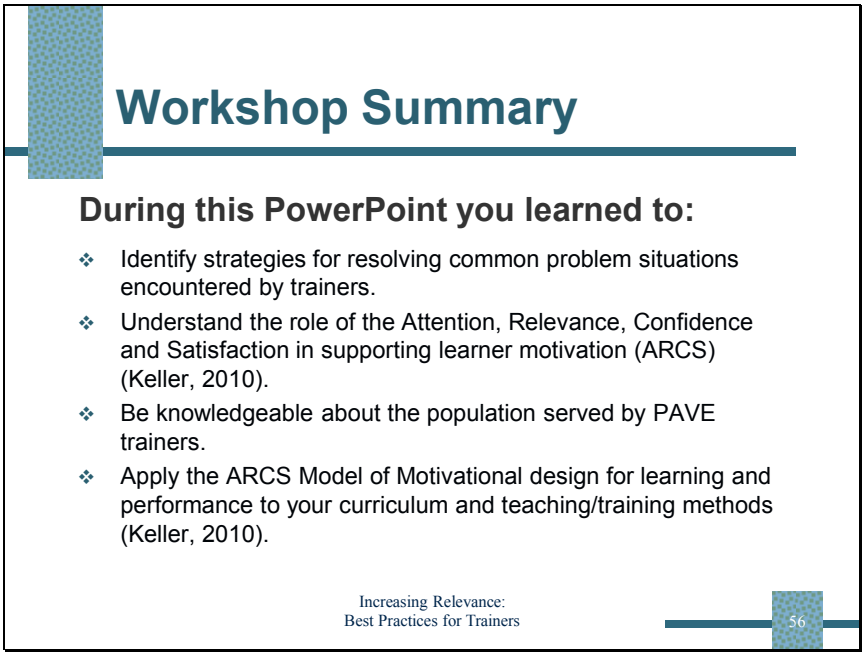
Put three posters with student ideas on wall. Leave markers and encourage learners to add to the list.

Slide 55



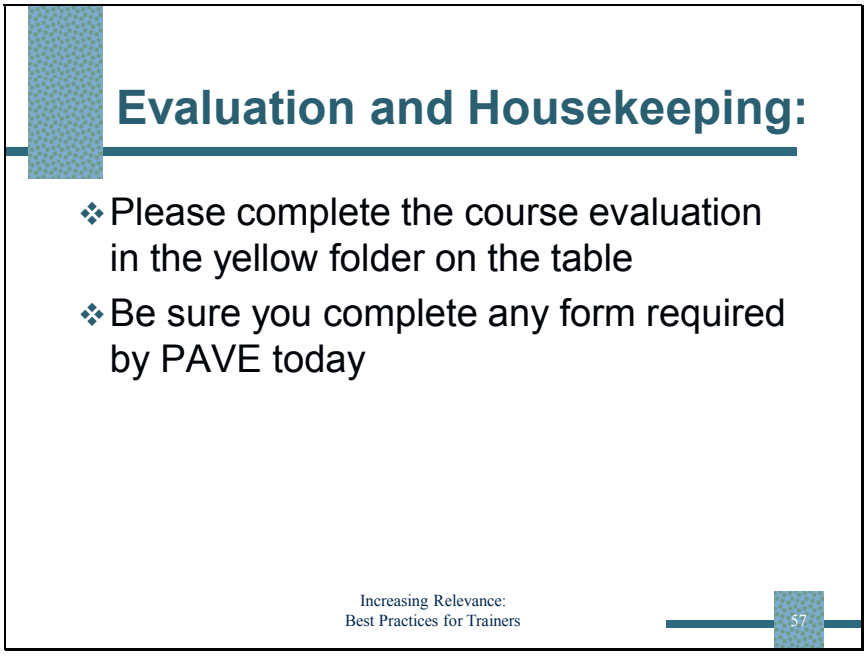
Review learning outcomes.

Slide 56



Review learning outcomes.

Slide 57



Invite learners to complete the Instructional PowerPoint Evaluation.

Instructional PowerPoint Evaluation

There are 34 statements in this questionnaire. Please think about each statement in relation to the class you have just taken and indicate how true it is. Give the answer that truly applies to you, and not what you would like to be true, or what you think others want to hear. Think about each statement by itself and indicate how true it is. Do not be influenced by your answers to other statements.

Please circle the most correct response. Use the following values to indicate your response to each item:

1 = Not true
2 = Slightly true
3 = Moderately true
4 = Mostly True
5 = Very True

1 2 3 4 5 1. The instructor knows how to make us feel enthusiastic about the subject matter of this course.

1 2 3 4 5 2. The things I am learning in this course will be useful to me.

1 2 3 4 5 3. I feel confident that I will do very well in this course.

1 2 3 4 5 4. This class has very little in it that captures my attention.

1 2 3 4 5 5. The instructor makes the subject matter of this course seem important.

1 2 3 4 5 6. You have to be lucky to get good grades or other recognition in this course.

1 2 3 4 5 7. I have to work too hard to succeed in this course.

1 2 3 4 5 8. I do NOT see how the content of this course relates to anything I already know.

1 2 3 4 5 9. Whether or not I succeed in this course is up to me.

1 2 3 4 5 10. The instructor creates suspense when building up to a point.

1 2 3 4 5 11. The subject matter of this course is just too difficult for me.

1 2 3 4 5 12. I feel that this course gives me a lot of satisfaction.

1 2 3 4 5 13. In this class, I try to set and achieve high standards of excellence.

1 2 3 4 5 14. I feel that the grades or other recognition I receive is fair compared to other students.

1 2 3 4 5 15. The students in this class seem curious about the subject matter.

1 2 3 4 5 16. I enjoy working for this course.

1 2 3 4 5 17. It is difficult to predict what grade the instructor will give my assignments.

1 2 3 4 5 18. I am pleased with the instructor's evaluations of my work compared to how well I think I have done.

1 2 3 4 5 19. I feel satisfied with what I am getting out of this course.

1 2 3 4 5 20. The content of this course relates to my expectations and goals.

1 2 3 4 5 21. The instructor does unusual or surprising things that are interesting.

1 2 3 4 5 22. The students actively participate in this class.

1 2 3 4 5 23. To accomplish my goals, it is important I do well in this workshop.

1 2 3 4 5 24. The instructor uses an interesting variety of teaching techniques.

1 2 3 4 5 25. I do not think I will benefit much from this course.

1 2 3 4 5 26. I often daydream while in class.

1 2 3 4 5 27. As I am taking this class, I believe that I can succeed if I try hard enough.

1 2 3 4 5 28. The personal benefits of this course are clear to me.

1 2 3 4 5 29. My curiosity is often stimulated by the questions asked or the problems given on the subject matter in this class.

1 2 3 4 5 30. I find the challenge level in this course to be about right: neither too easy nor too hard.

1 2 3 4 5 31. I feel rather disappointed with this course.

1 2 3 4 5 32. I feel that I get enough recognition of my work in this course by means of grades, comments, or feedback.

1 2 3 4 5 33. The amount of work I have to do is appropriate for this type of course.

1 2 3 4 5 34. I get enough feedback to know how well I am doing.

Thank you for your feedback.

Appendix B: NASA Task Load Index

This survey asks you to tell about your feelings about the "task" of learning in this class. Circle the response that best fits how you feel at this moment:

1. Mental Demand: How mentally demanding was the task?

Very Low								Very High
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**

2. Physical Demand: How physically demanding was the task?

Very Low								Very High
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**

3. Time-related Demand: How hurried or rushed was the pace of the task?

Very Low								Very High
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**

4. Performance: How successful were you in accomplishing what you had to do?

Perfect								Failure
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**

5. Effort: How hard did you have to work to accomplish your level of performance?

Very Low								Very High
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**

6. Frustration Level: How insecure, discouraged, irritated, stressed and annoyed were you?

Very Low								Very High
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**

Please complete this two-sided document BEFORE watching the "Learning about IEPs" video.

Perceived Task Relevance Survey

Circle the response that best fits how you would complete the statements below.

1. The knowledge and skills I am learning in this class will help me reach my personal goals.

Strongly Agree Strongly Disagree
1 2 3 4 5 6 7

2. The knowledge and skills I am learning in this class are related to interests I have outside of class.

Strongly Agree Strongly Disagree
1 2 3 4 5 6 7

3. The knowledge and skills I am learning in this class are important to me.

Strongly Agree Strongly Disagree
1 2 3 4 5 6 7

4. The knowledge and skills I am learning in this class are not related to my personal goals.

Strongly Agree Strongly Disagree
1 2 3 4 5 6 7

5. The knowledge and skills I am learning in this class have little in common with my personal interests.

Strongly Agree Strongly Disagree
1 2 3 4 5 6 7

6. The knowledge and skills I am learning in this class will help me succeed in other areas of my life.

Strongly Agree Strongly Disagree
1 2 3 4 5 6 7

7. The knowledge and skills I am learning in this class are not valuable to me.

Strongly Agree Strongly Disagree
1 2 3 4 5 6 7

8. The knowledge and skills I am learning in this class can be used in other aspects of my life.

Strongly Agree Strongly Disagree
1 2 3 4 5 6 7

Please complete this two-sided document BEFORE watching the "Learning about IEPs" video.

Appendix C: NASA Task Load Index

Please complete this one-sided document AFTER watching the "Learning about IEPs" video.

This survey asks you to tell about your feelings about the "task" of learning in this class. Circle the response that best fits how you feel at this moment:

1. Mental Demand: How mentally demanding was the task?

Very Low Very High
1 2 3 4 5 6 7 8 9

2. Physical Demand: How physically demanding was the task?

Very Low Very High
1 2 3 4 5 6 7 8 9

3. Time-related Demand: How hurried or rushed was the pace of the task?

Very Low Very High
1 2 3 4 5 6 7 8 9

4. Performance: How successful were you in accomplishing what you had to do?

Perfect Failure
1 2 3 4 5 6 7 8 9

5. Effort: How hard did you have to work to accomplish your level of performance?

Very Low Very High
1 2 3 4 5 6 7 8 9

6. Frustration Level: How insecure, discouraged, irritated, stressed and annoyed were you?

Very Low Very High
1 2 3 4 5 6 7 8 9

Appendix D: Letter of Informed Consent

You are invited to participate in a study comparing two groups receiving differing training. Participation in the study is not part of the training.

Attendance at today's training is not related to the study. With the permission of PAVE, the researcher is inviting adults 18 years or older who are participating in workshops, trainings, or classes about Individual Education Plans to be in the study. This form is part of a process called "informed consent" to allow you to understand this study before deciding whether to take part.

This study is being conducted by a researcher named Kiera Llord-Ratcliffe, who is a doctoral student at Walden University.

Background Information:
The purpose of this study is to determine the helpfulness of an instructional method designed to help beginning learners using a short video clip.

Procedures:
If you agree to be in this study, you will be asked to complete a five minute, two-paged survey now and a three minute one-page survey towards the end of the training.

Voluntary Nature of the Study:
This study is voluntary. Everyone will respect your decision of whether or not you choose to be in the study. No one at PAVE or the Parent Training and Information Program will treat you differently if you decide not to be in the study. If you decide to join the study now, you can still change your mind later. You may stop at any time.

This study will test a technique that may help improve instruction for learners with little or no background in a subject. If the technique is found to be effective, it could result in faster training times for parents of students with disabilities and others who need to learn about a subject quickly.

Risks and Benefits of Being in the Study:
Being in this type of study involves some risk of the minor discomforts that can be encountered in daily life, such as becoming tired or annoyed when filling in the two sets of questionnaires. Being in this study would not pose risk to your safety or wellbeing.

Payment: There will be no payment for participation in the study.

Privacy: Any information you provide will be kept confidential. In order to protect your privacy, signatures are not being collected. The surveys are pre-numbered to avoid any

need for identification. Your completion of the survey will indicate your consent, if you choose to participate.

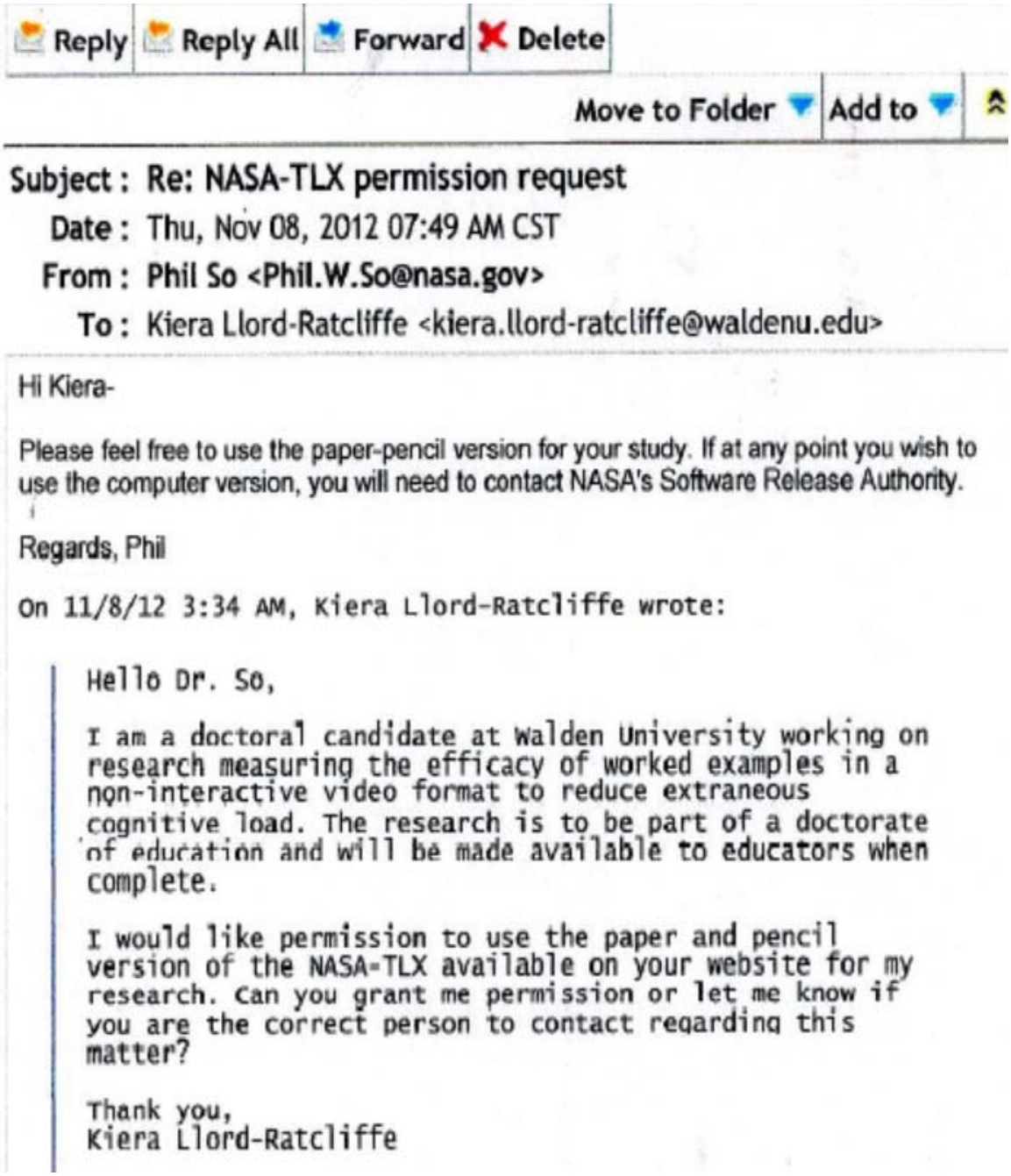
Data collected will be kept secure by entering numbered (unidentifiable) data into the researcher's personal computer and then password protecting the files. Data will be stored for a period of at least 5 years, as required by the university, then erased or shredded.

Consent:
Implied consent is being used. This means you have read the above information and understand the study well enough to make a decision about your involvement. By completing the surveys, you give your "implied" consent to participate in the research and verify you are eighteen years of age or older.

Contacts and Questions:
You may ask any questions you have now. Or if you have questions later, you may contact the researcher via email at Kiera.Llord-Ratcliffe@waldenu.edu. If you want to talk privately about your rights as a participant, you can call Dr. Leilani Endicott. She is the Walden University representative who can discuss this with you. Her phone number is 1-800-925-3368, extension 3121210. Walden University's approval number for this study is 09-04-13-0076447 and it expires on September 3, 2014.

Please keep this form for your records.

Appendix E: Permissions



Reply | Reply All | Forward | Delete

Move to Folder | Add to

Subject : Re: NASA-TLX permission request

Date : Thu, Nov 08, 2012 07:49 AM CST

From : Phil So <Phil.W.So@nasa.gov>

To : Kiera Llord-Ratcliffe <kiera.llord-ratcliffe@waldenu.edu>

Hi Kiera-

Please feel free to use the paper-pencil version for your study. If at any point you wish to use the computer version, you will need to contact NASA's Software Release Authority.

Regards, Phil

On 11/8/12 3:34 AM, Kiera Llord-Ratcliffe wrote:

> Hello Dr. So,
>
> I am a doctoral candidate at Walden University working on research measuring the efficacy of worked examples in a non-interactive video format to reduce extraneous cognitive load. The research is to be part of a doctorate of education and will be made available to educators when complete.
>
> I would like permission to use the paper and pencil version of the NASA-TLX available on your website for my research. Can you grant me permission or let me know if you are the correct person to contact regarding this matter?
>
> Thank you,
> Kiera Llord-Ratcliffe

Reply | Reply All | Forward | Delete | Attachments | Move to Folder | Add to

Subject : RE: instrument request
Date : Thu, Aug 09, 2012 06:44 PM CDT
From : "WEBSTER, COLLIN" <WEBSTERC@mailbox.sc.edu>
To : Kiera Llord-Ratcliffe <kiera.llord-ratcliffe@waldenu.edu>
Attachment : Surveys_Final_2-19.doc

Hi, Kiera,

Always nice to hear someone is interested in using my work. I've attached the instrumentation from the study for you and you are welcome to modify as needed. Refer back to the article to see which items were included in the final analyses. Good luck with your doctoral studies and let me know if I can help in any way.

By the way, I am now at the University of Wollongong in NSW, Australia. My new email address is cwebster@uow.edu.au

Best,
Collin

From: Kiera Llord-Ratcliffe [kiera.llord-ratcliffe@waldenu.edu]
Sent: Thursday, August 09, 2012 6:37 AM
To: WEBSTER, COLLIN
Subject: instrument request

Hello Dr. Webster,

I enjoyed reading your article "The Influence of State Motivation, Content Relevance and Affective Learning on High School Students' Intentions to Use Class Content Following Completion of Compulsory Physical Education." I am a doctoral student doing research on the use of worked-examples to reduce cognitive load, and am using content relevance as a mediating variable.

Would it be possible for you to forward me the instrument you used? Also, would you consider (after reviewing any changes) allowing me to modify it to pertain to my population of parents and caregivers receiving advocacy training for their students in K-12 Special Education?

Thank you very much,

Kiera Llord-Ratcliffe, B.M., M.S. Ed.

Gmail by Google

Kiera Llord-Ratcliffe <kiera.llord-ratcliffe@waldenu.edu>

CIS Permission

4 messages

Kiera Llord-Ratcliffe <kiera.llord-ratcliffe@waldenu.edu> Mon, Jun 16, 2014 at 1:38 PM
To: jkeller@fsu.edu

Dr. Keller,

I am a doctoral candidate at Walden University. I am preparing a project using the ARCS framework and have determined that the Course Interest Survey instrument would be the appropriate instrument to measure student's reaction to the instructor-facilitated learning.

May I please have your permission to use the CIS instrument in my doctoral project?

Thank you,

Kiera Llord-Ratcliffe

John Keller <jkellersan@gmail.com> Fri, Jun 20, 2014 at 6:03 AM
To: Kiera Llord-Ratcliffe <kiera.llord-ratcliffe@waldenu.edu>

Dear Kiera,

You are most certainly welcome to use these instruments. If you would like to have copies of them together with scoring and pschometric information, please send me a message next week. I am traveling at the moment and do not have those files with me.

Best wishes,
John L.

John M. Keller, Ph.D.
Professor Emeritus
Educational Psychology and Learning Systems
Florida State University

9705 Waters Meet Drive
Tallahassee, FL 32312-3746
Phone: 850-294-3908

Official ARCS Model Website: http://arcsmodel.com. UPDATED 18 SEP 2013
Professional Website: http://mailer.fsu.edu/~jkeller/JohnsHome/
Keller, J.M. (2010), ***Motivational Design for Learning and Performance: The ARCS Model Approach.*** New York: Springer. Now available in English, Japanese, and Korean.

"When facing a difficult task, act as though it is impossible to fail.

If you are going after Moby Dick, take along the tartar sauce."

Appendix F: Letter of Cooperation from a Community Research Partner

Vicky McKinney, Director
Partnerships for Action, Voices for Empowerment (PAVE)
Statewide Parent Training and Information Program
6316 S. 12th Street
Tacoma, WA 98465-1900

Dear Kiera Llord-Ratcliffe,

Based on my review of your research proposal, I give you permission to conduct the study entitled Worked Examples in Video Lessons to Reduce Cognitive Load within the Statewide Parent Training and Information Program. As part of this study of two groups receiving differing training, I authorize you to do the following:

1. At the beginning of the advocacy training session as the same time as other course materials are distributed, the researcher will pass out a manila envelope to each learner containing two handouts:
    A. A double-sided paper labeled "before video" containing the NASA Task Load Index and the Perceived Class Relevance Scale surveys and
    B. A single-sided NASA Task Load Index survey instrument labeled "after video".

2. The researcher will request and ensure learners are seated far enough apart for their participation status and survey responses to be private. The learners will have several handouts for use during the training which non-participants may use to cover their answers or read during the minutes made available for survey responses to ensure privacy.

3. At the beginning of the advocacy training session the researcher will invite learners 18 and older to participate in a study comparing two groups receiving differing training. The voluntary and confidential nature of participation in the study as well as implied consent will be explained by the researcher. Pretest and posttest surveys will be pre-numbered for later analysis to maintain anonymity. All participants 18 or older will be invited to participate. All participants will receive manila envelopes with study materials, and those who decline will be able to do so without attracting attention to themselves. Those who choose not to participate will have brochures and other information on the topics of the training to read at their seating area.

4. The researcher will instruct all learners to take out the surveys from the manila envelopes. Those who wish to participate will be directed to complete the double sided

paper labeled “before video” containing the NASA Task Load Index and the Perceived Class Relevance Scale surveys and to subsequently return the double sided survey to the manila envelope.

5. All students in the advocacy training sessions will watch a video teaching the terms “Individual Education Program” and “Free and Appropriate Public Education” as part of the normal course of advocacy training. All classes will view the same video lesson as part of the IEP advocacy training.

6. Participants in both groups of learners, those watching the video lesson using “worked examples” format and those watching the “non-worked examples” format of video lesson will take the NASA Task Load Index (Appendix C) labeled “after video” as a posttest to measure any change in cognitive load.

7. The researcher will instruct all those participating to return all tests to the manila envelopes. The advocacy training will continue as usual.

I confirm that I am authorized to approve research in this setting.

We understand that our organization’s role is to oversee and deliver PAVE’s training sessions. We confirm any alteration in the training for some attendees is the responsibility of PAVE.

I understand that the data collected in this study will remain entirely confidential and will not be provided to anyone outside the research team without permission from the university IRB. Individuals’ participation will be voluntary and at their own discretion.

Sincerely,

Vicky McKinney, Director
Partnerships for Action, Voices for Empowerment (PAVE)
Ph: (253) 565-2266 (v/tty)
Toll Free: (800) 5727368 (V/tty)
Fax: (253) 566-8052
Email: Vicky McKinney <vmckinney@wapave.org>

Curriculum Vitae

Kiera Llord-Ratcliffe

Objective

EdD seeking to combine business experience in media and consulting services with teaching and curriculum development to deliver successful and measurable improvement in organizational learning and training projects. Kiera thrives in complex environments demanding multicultural savvy combined with metrics-driven management in U.S. and international markets.

Employment History

Internet/Media Strategies Inc., Partner

1996-2014 Internet/Media Strategies (I/MS) is a business and strategic consultancy to global media and technology companies. Recent projects include: Archival Research for online video game, Motivational design and Train the Trainer Workshops, Instructional design, ADDIE model, workshop facilitator. At launch, Kiera handled administrative management, including HR and financial reporting. Direct marketing for conference business and monthly newsletter (10,000 circulation). Our clients have included Microsoft, America Online, Time-Warner Inc., and a variety of smaller companies.

Puyallup School District, Teacher

Rogers High School; Stahl Junior High School; Edgemont Junior High School

2004-2014 English/Honors English /French/Spanish Teacher. Developed research-based curriculum, and metrics driven analysis of learner progress. Participated in vertical and horizontal teams. Mentor teacher for educators new to worksite. Mentor of student teachers.

2009-2014 AVID Site Team Member, English Translator, and recruiter for jobsite AVID program to increase college readiness for at-risk learners. Conducted classroom observations, delivered related professional development, and coordinated building documentation for jobsite AVID certification in 2012.

2004-2009 Diversity Affairs Representative. Coordinated jobsite efforts with the Puyallup School District main office to increase diversity awareness including presenting contents of monthly multicultural classes to colleagues at the jobsite. Organized jobsite contribution of student exhibits and coordinated volunteers for the annual Honoring Cultures Diversity Celebration at the state fair.

Member of the Indian Education Parent Advisory Committee (Cherokee): Collaborated with other Native American parents to create community partnerships and develop program which provide academic and social support for 225 students representing a variety of tribes.

St. Clare Hospital, Patient Representative

1995-1996 Kiera was the first non-paid patient representative at this regional Catholic hospital in Lakewood, Wash. Responsible for managing family and doctor interaction, as well as patient engagement, in the Emergency Room.

Professional Musician: Opera Singer

1985-1996 Professional Singer in various West Coast venues. Voice Teacher. Choir director. Event planning of formal classical recitals, receptions, and theatrical productions. International travel working with multilingual casts.

Education

Year	*Degree*	*Institution*
12/2014	Doctor of Education	Walden University
6/2009	Master of Science, Ed.	Walden University
5/2004	Teaching Certificate	St. Martin's University
1/1993	Bachelor of Music	San Francisco Conservatory of Music

Languages

English and Spanish	Native/bi-lingual proficiency
French and Italian	Professional working proficiency
German	Limited working proficiency

Teaching Endorsements

Middle level Humanities (LA/SS)	Grades 4-9
English-Secondary	Grades 5-12
ESL, Bilingual Education, French	All grade levels