

GRANT PROPOSAL:
IN THE CLASSROOM – TRAINING TEACHERS TO SUPPORT
STUDENTS WITH BRAIN INJURIES

by

MELISSA McCART

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Student: Melissa McCart

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This dissertation has been accepted and approved in partial fulfillment of the requirements for the Doctor of Education degree in the Department of Educational Methodology, Policy, and Leadership by:

Dr. Charles Martinez	Chair
Dr. Keith Hollenbeck	Core Member
Dr. Joanna Smith	Core Member
Dr. Robert Horner	Institutional Representative

and

Scott L. Pratt	Dean of the Graduate School
----------------	-----------------------------

Original approval signatures are on file with the University of Oregon Graduate School.

Degree awarded June 2015

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DISSERTATION ABSTRACT

Melissa McCart

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Department of Educational Methodology, Policy, and Leadership

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Title: Grant Proposal: In the Classroom –Training Teachers to Support Students with Brain Injuries

This two-phase grant proposal utilizes a group waitlist and single subjects multiple baseline design to evaluate *In the Classroom with Brain Injury for Educators*, which is a digitally applied online professional development series that can be used to increase knowledge, skills, and awareness of educators to provide effective school-based supports for students with brain injuries using cognitive behavior change theories. Phase 1 evaluates the series employing a group waitlist design with a delayed posttest. Phase 2 utilizes a single subjects multiple baseline design study to analyze student behavioral outcomes related to the intervention and change in teacher behavior. This project has impactful implications. The evaluation of the *In the Classroom with Brain Injury for Educators* series will establish an evidence base in support of the professional development series and fill the void that exists in available evidence based resources for educators working with students who have brain injuries. In addition, this evaluation has the potential to improve the school experience for both students with brain injury and their teachers by providing evidence that *In the Classroom with Brain Injury for Educators* is a professional development series that improves teacher and student behavioral outcomes.

CURRICULUM VITAE

NAME OF AUTHOR: Melissa McCart

GRADUATE AND UNDERGRADUATE SCHOOLS ATTENDED:

University of Oregon, Eugene
California State University, San Bernardino
National University, La Jolla, California

DEGREES AWARDED:

Doctor of Education, 2015, University of Oregon
Master of Science, 2001, University of Oregon
Bachelor of Science, 1997, National University

AREAS OF SPECIAL INTEREST:

Low Incidence Disabilities
Applied Behavior Analysis
Special Education Policy
Curricular Accommodations

PROFESSIONAL EXPERIENCE:

Project Coordinator, Center for Brain Injury Research and Training University of Oregon, Eugene, Oregon, 2012- Present
Vice Principal, O'Hara Catholic School, Eugene, Oregon, 2005-2011
Behavior Consultant, Lane Education Service District, Eugene, Oregon, 2004-2005
Special Education Teacher, Awbrey Park Elementary, Eugene, Oregon, 1999-2004
Mentor Teacher, Advocated Schools, Joshua Tree, California, 1997-1999

GRANTS, AWARDS AND HONORS:

University of Oregon, Christine Anne Gillesse Award. Recognition of Outstanding Commitment to Children with Special Needs. 2002

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CHAPTER I

INTRODUCTION

Specific Aims

This two-phase grant proposal utilizes a group waitlist and single subjects multiple baseline design to evaluate *In the Classroom with Brain Injury for Educators* online series of professional development for teachers of students with brain injuries. There are two specific aims for this project. The first aim is to show that participation in a professional development series increases knowledge, skills, and awareness of educators to provide effective school-based supports for students with brain injuries. The second aim is to confirm positive student's behavioral outcomes are related to teacher's participation in the professional development series. Phase 1 of the proposed project evaluates the series employing a group waitlist design with a delayed post-test. Phase 2 of the proposed project utilizes a single subjects multiple baseline design study to analyze student behavioral outcomes related to the intervention and change in teacher behavior. The evaluation of the *In the Classroom with Brain Injury for Educators series* will establish an evidence base in support of the professional development series and fill the void that exists in available evidence based resources for educators working with students who have brain injuries. In addition, this evaluation has the potential to improve the school experience for both students with brain injury and their teachers by providing evidence that *In the Classroom with Brain Injury for Educators* is a professional development series that improves teacher and student behavioral outcomes. There is a documented lack of teacher training in the area of brain injury and it is vital that an

evidence-based curriculum be established and utilized by educators to increase teacher performance and student outcomes.

Description of the Problem

Brain injuries are a leading cause of childhood death and disability worldwide (Davies, Fox, Glang, Ettl, & Thomas, 2013; Glang, Ettl, Tyler, Siantz, & Todis, 2013). According to The Centers for Disease Control and Prevention (CDC) (2010), in the United States, each year more than 1.7 million people sustained a Traumatic Brain Injury (TBI). The CDC (2010) estimated each year 631,146 children visit emergency rooms for symptoms related to brain injury. More than 60,000 of the 631,146 children and adolescents who visit the emergency room each year are hospitalized after sustaining brain injuries (Faul, Xu, Wald, & Coronado, 2010). In all, approximately 145,000 children who have TBI are attending schools, with potentially lasting effects of brain injuries that manifest in social, behavioral, physical, and cognitive issues (Zaloshnja, Miller, Langlois, & Selassie, 2008). More importantly, a large portion of these 145,000 children are in our school systems with brain injuries that require interventions and/or supports above what is offered in general-education classrooms to be successful (Dettmer, Ettl, Glang, & McAvoy, 2013). Only 8% percent of students formally identified through the special education process as having a brain injury significant enough to impact their learning attend alternative placements rather than typical public schools. Thus, 92% are placed in a public school setting and spend a portion of their day in a general education classroom. More importantly, 47% spend more than 80% of their school day in the regular education classroom (Snyder, & Dillow, 2013). Children with all types of brain injuries often have cognitive and behavioral challenges that negatively

impact school success (Dettmer et al., 2013). While evidence based assessment and instruction can help accommodate for the behavioral and academic challenges of students with brain injury, most teachers receive little or no pre-service or in-service training for working with students who have sustained brain injuries and are unprepared to meet the needs of these students (Glang et al., 2013). Yet, these students are in classrooms and are entitled to appropriate instruction. This is problematic because TBI is a special education eligibility category under the Individuals with Disability in Education Act (IDEA) that requires educators to be highly trained and prepared to provide appropriate educational and behavioral services to advance the learning of students with TBI.

IDEA, enacted by Congress in 1975, was designed to ensure children with disabilities would be granted a free appropriate public education in the least restrictive environment. During the 1991 revision of IDEA, TBI became an eligible category for students to receive special education services. IDEA (2004) defined TBI as:

an acquired injury to the brain caused by an external physical force, resulting in total or partial functional disability or psychosocial impairment, or both, that adversely affects a child's educational performance. Traumatic brain injury applies to open or closed head injuries resulting in impairments in one or more areas, such as cognition, language, memory, attention, reasoning, abstract thinking, judgment, problem-solving, sensory, perceptual, and motor abilities, psychosocial behavior, physical functions, information processing, and speech. Traumatic brain injury does not apply to brain injuries that are congenital or degenerative, or to brain injuries induced by birth trauma. (300.7(c)(12))

Not included within the TBI definition are injuries that are congenital, degenerative or induced by birth trauma these types of injury are called Acquired Brain Injury (ABI). ABI occurs from a variety of incidents, including near-drowning, anoxic events, strokes, tumors, and injuries resulting from disease or medical procedures. ABI can be IDEA-eligible, but under the umbrella of categories such as other health impaired or learning disabled. Contrastingly, TBI results from events such as falls, motor vehicle or pedestrian accidents, abuse, sports accidents, penetration injuries, or blows to the head. The learning abilities and needs of children with both ABI and TBI are often similar (Bullock, Gable, & Mohr, 2005). Thus, from this point forward, when appropriate, both TBI and ABI will be referred to as *brain injury* as there is little difference in terms of educator knowledge or training.

Following brain injury, children may face multiple challenges, including loss of previously attained skills, difficulties acquiring new learning, impulsivity, impaired decision-making, and social and emotional issues (Glang et al., 2013; Ylvisaker & Feeney, 2007). This array of challenges often impairs academic and social progress needed for school success (Davies et al., 2013; Ylvisaker, Turkstra, & Coelho, 2005).

Description of the Depth of Need

The *No Child Left Behind Act (NCLB, 2002)* and IDEA (2004) directed educators of students with brain injuries use evidence-based strategies in their classrooms. Yet, educators lack the knowledge to make accommodations because they do not receive adequate pre-service and in-service training to meet NCLB and IDEA mandated for students challenged by this disability (Glang et al., 2013). The first step in meeting the moral and ethical imperative of serving students with brain injury appropriately in the

classroom is providing educators with the skills to perform the duties asked of them when working with this challenging student population.

Under-Identification/Mis-Identification of Students with Brain Injuries

Despite the large number of children who sustain brain injuries each year, approximately 83 percent are not formally identified as IDEA eligible (Glang, Todis, Sublette, Brown, & Vaccaro, 2010), which creates an IDEA eligible population that is either underserved or un-served by their schools. As previously stated, approximately 145,000 children should receive formal educational supports each year for brain injury-related needs (Zaloshnja et al., 2008); but just 25,000 students actually received special-education services under the TBI category in 2010 (Faul et al., 2010; Glang et al., 2014). When Glang et al. (2014) surveyed, special education directors they found students served as TBI-eligible account for only 0.4% of all special-education students in their states. Logically, it follows there are many more students with brain injuries who require additional support than are actually being served in the schools. Thus, it is imperative to increase teacher knowledge around identifying and serving students with brain injury.

Delayed identification. It is difficult to identify students for brain-injury eligibility after a year has passed from the injury due to required medical documentation that can be difficult to obtain. Children who sustained a brain injury at young ages, or have emerging problems because of that brain injury, are unlikely to be identified or are placed in incorrect eligibility categories (Glang et al. 2014; Glang et al., 2013). In some cases, students experience sequelae of brain injuries that emerge months or even years after the initial injuries making it difficult to link the emerging challenges to the initial brain injury (Ylvisaker et al., 2005). Sequelae of brain injury most commonly influencing

school performance are memory loss, behavioral problems, executive function impairment, attention difficulties and physical challenges (i.e., headaches, fatigue, and nausea). Glang et al.'s (2014) survey of state special-education directors found 55% of states reported awareness that their state's TBI counts are inaccurate.

Lack of training for educators contributes to the under- and mis-identification of children with brain injuries (Glang, Dise-Lewis, & Tyler, 2006). Educators who lack awareness and/or knowledge of brain injuries, even mild injuries or concussions, may misinterpret physical or other signals of educational needs, resulting in missed opportunities to establish eligibility for services (Glang, Ylvisaker, Stein, Ehhardt, Todis, & Tyler, 2008). As a result, educators who have students with brain injuries in their classrooms often struggle to meet those student's unique needs.

Challenge of Educating Students with Brain Injuries

Educating students with brain injuries can be challenging because of their varied and changing needs. Agreeing, Glang et al. (2010) stated "students with brain injuries challenge educators with their idiosyncratic learning and profiles that, in many cases, change over time in response to developmental changes and increasing academic and behavioral expectations" (p. 426). Vu, Babinkian, and Asarmow (2011) found that the academic skills of students' with brain injury were impaired both immediately after and over time following the injury. Those academic skills take the form of challenges with attention, memory difficulties, slow processing speed, fatigue, retaining information, delays in work completion, misunderstanding concepts, attention, impulsivity, environmental sensitivities, and difficulty in transferring newly learned information or skills from one setting to another (Anderson et al. 2010; Zaloshnja et al., 2008).

In addition to academic challenges, students with brain injuries typically demonstrate wide variety in functioning after their injuries. Trauma to the brain can affect all areas of a child's functioning, including cognition, behavior, and social skills, all of which are essential to school success (Glang et al., 2013). While most people have a frame of reference as to what behavior challenges and social skills deficits look like they may not have a picture of what cognition challenges look like. Cognition refers to ability to think clearly and use memory, speech, academic skills, learning, observation, and senses to form or develop individual thoughts about a subject (Kennedy et al., 2008). Lack of functional cognition paired with behavioral and social deficits present challenges for both students and teachers in terms of academic performance and all around school success. Students with brain injuries tend to struggle in these most vital areas, making school success difficult without accommodations (Bowen, 2005; Glang et al., 2013).

Academic performance. A student's academic difficulties can emerge immediately or gradually following a brain injury, often impairing a child's academic functioning permanently (Glang et al., 2013). Delays in cognition that threaten academic performance are common following childhood brain injuries. Compromised executive functions, including memory, processing speed, attention, concentration, problem solving, planning and decision-making, can contribute to academic and behavioral problems. Any combination of deficits in these vital skills problematizes the classroom environment (Blosser & DePompei, 1991; Bowen, 2005; Ylvisaker et al., 1995). In addition, students with brain injuries often return to school significantly behind peers due to long absences necessary for physical recovery (Ylvisaker, Hartwick, & Stevens, 1991).

Behavioral impact. Increases in challenging behavior are common after brain injuries (Glang et al., 2013; Ylvisaker et al., 2005). Students with brain injuries may exhibit emotional distress, disruptive behavior, poor conduct, poor moral reasoning, and difficulty with peer relationships and empathy (Glang et al., 2013; Ylvisaker et al., 2005). Schwartz et al. (2003) examined rates of long-term behavioral problems following 133 participants' with moderate to severe brain injuries, finding 77 (58%) exhibited long-term behavioral problems. Of the sequelae associated with brain injuries, a student's difficult behavior could be most challenging for educators as it affects all functions of daily life from academic to social and family interactions, and potentially decreased quality of life (Glang et al., 2013). Executive function, the lack of mental processes to perform activities such as planning, organizing, strategizing, paying attention to and remembering details, and managing time and space, contributes to behavioral and social problems that are common in children with brain injuries (Bowen, 2005). For example, students with brain injuries are more likely to engage in risk-taking behaviors and have difficulty controlling their emotions (Bowen, 2005; Glang et al., 2013). Often, behavioral problems are not seen as manifestations of brain injuries, which can result in inappropriate accommodations and/or interventions. Addressing and remedying behavioral and social problems is as important to success in school as addressing academic skills and cognitive difficulties (Glang et al., 2013; Ylvisaker & Feeney, 2007; Ylvisaker et al., 2005).

Developmental impact. Effects of injuries on children's developing brains are associated with poorer outcomes than injuries occurring later in life (Anderson et al., 2010; Glang et al., 2013). When a child's brain is injured, development can be disrupted, sometimes causing permanent altering of the brain and its functions (Anderson et al.,

2010; Glang et al., 2013). Anderson et al. (2010) compared children with brain injuries to non-injured peers and found increased risk for developmental impairments in all domains of cognitive function for children with brain injuries. Children with early childhood brain injuries have greater risk for significant skill deficits. Furthermore, they often have poor long-term outcomes that may not be attributed to their injuries (Anderson et al., 2010; Schwartz et al., 2003). Experiencing a brain injury at any age may disrupt normal childhood brain development, contributing to future deficits in multiple areas, including the ability to perform at an age-appropriate level (Anderson et al., 2010). Difficulties faced by students with brain injuries directly impact their ability to learn new information, complete work, and build and maintain friendships (Davies & Ray, 2014; Linden, Braiden, & Miller, 2013). Thus, it is vital for educators to have the skills to meet these student's developmental needs.

Educators Lack Knowledge and Training to Meet Student Needs

Educators need to know exactly what brain injuries are and how they differ from other disabilities in order to plan effectively and accommodate the needs of students with brain injuries (Blosser & DePompei, 1991). Although good intentioned, most educators lack the knowledge and training to accommodate for the needs of students who have sustained a brain injuries when they return to school (Davies et al., 2013; Glang et al. 2013; Davies & Ray, 2014).

Lack of knowledge. Students who return to school after brain injuries often meet a lack of educator knowledge about effective interventions (Glang et al., 2013; Davies et al., 2013). Educator knowledge about brain injuries is not only lacking, but also may be riddled with misconceptions (Hux, Bush, Evans, & Simanek, 2013). In a study of

students preparing to be educators, special and regular educators alike showed similar levels of inaccurate perceptions about brain injuries, including aspects of student recovery, learning, memory, and special-education eligibility (Hux et al., 2013). Because few educators know which interventions are effective for students with brain injuries or how to accommodate for the student's unique challenges, many are forced to utilize techniques designed for populations of students with other disabilities (Glang et al., 2008; Ylvisaker et al., 2001). Both pre-service and in-service teachers need training to meet the needs of students with brain injuries (Mohr & Bullock, 2005).

Funk, Bryde, Doelling, and Hough (1996) found in a study of educators that participants lacked understanding of the definition and criteria for TBI and over two-thirds of participants indicated they were not knowledgeable in the area. Participants were aware of some difficulties students with brain injuries faced, but did not know how to educate the students effectively. Unfortunately, the lack of understanding has not diminished over time. More recently, Mohr and Bullock (2005) used focus groups to examine educators' level of preparedness, awareness of brain injuries and their perceptions of their effects. Results revealed none of the participants had received training during their undergraduate teacher education programs, though 85% of participants thought it was very important. Many participants indicated information on brain injuries was given on a *need-to-know basis* and training was not common across their school districts. As recently as 2013 Davies et al. (2013) conducted a study to examine the levels of training educators received in teacher training programs on brain injury. They found that of the 156 education department faculty that represented 100 universities in all five regions of the United States 67.7% of the faculty stated they did

not provide any brain-injury specific training in the teacher preparation courses they taught. Of the 32% of faculty that did cover brain injury 63.6% reported examining brain injury for less than one class period. Among general education faculty specifically only 7.4% indicated covering brain injury in any way.

Since 1991, there is a documented lack of training for educators and a lack of knowledge among educators to adequately meet the needs of students with brain injury (Blosser & DePompei, 1991; Funk et al., 1996, Mohr & Bullock, 2005; Davies et al., 2013). Educator training has been identified as a critical need yet there has been very little progress made in the last 34 years to remedy the situation (Blosser & DePompei, 1991; Funk et al., 1996, Mohr & Bullock, 2005; Davies et al., 2013).

Lack of adequate training. Utilizing evidence-based instructional practices can help with the academic and behavioral challenges associated with brain injuries. School systems, however, lack on-staff professionals who understand the causes and challenges of brain injuries and are able to apply strategies to intervene (Glang et al., 2010; Shaughnessy, Greathouse, Neely, & Wright, 2006). Because so few educators receive training to work with the brain injured population, access to professionals to provide support is limited and difficult to find. In a survey of educators working with students with brain injury 92% reported having no relevant training (Glang et. al 2006).

Poor pre-service training. When became a special-education eligibility category in 1991, Blosser and DePompei and Ylvisaker, Hartwick, and Stevens identified a lack of pre-service educator training in brain injuries, a problem that improved little in the next 23 years. In 2002, Chapman found a sample of 300 educators of which only 4.1% had received any coursework on brain injuries. Glang et al. (2006) surveyed educators

working with students with brain injuries and found 92% reported having no training in the academic ramifications of brain injuries. Davies et al. (2013) surveyed 156 education department university faculty representing 100 universities and found 67.7% of the faculty reported that they did not provide any brain-injury specific training in the teacher preparation courses they taught. Training in brain injuries for pre-service educators, including speech and language providers, special educators, instructional assistants, occupational therapists, behavior specialists, classroom teachers, school psychologists and others, who work with this population of students is limited or not present in pre-service education programs (Glang et al. 2008; Ylvisaker et al., 2001).

Collegiate education programs have under-addressed the topic of how to best meet the needs of students with brain injuries, leaving educators to enter the field unprepared (Blosser & DePompei, 1991; Davies et al., 2013). Unaware of strategies for addressing school-related implications, educators struggle to find appropriate accommodations and interventions for their students (Blosser & DePompei, 1991). Thus, there is a large need for the availability of such training for working educators.

Poor in-service training. State directors of special education reported a large percentage of educators who believed they lacked adequate training in brain injuries (Dettmer et al., 2013; Glang et al., 2014). In a 2013 survey by Glang et al., directors indicated a lack of awareness about TBI as a disability stating educators did not understand long-term consequences of brain injury. State directors identified factors that contribute to a gap in educator knowledge, including lack of training among educators about brain injury and its implications for educating children (Glang et al., 2014).

Lack of training for educators and other school-related personnel has a pervasive effect on all aspects of under-identification and education of children with brain injury (Glang et al., 2006). Given the general lack of awareness that continues to characterize the field of education, guidance and assistance is needed to improve educational supports for students with brain injuries (Dettmer et al., 2013). The most-often suggested step to address difficulty around working with students with brain injuries is increased training for educators, including professional development, workshops, (Blosser & DePompei, 1991) and web resources (Glang et al., 2013).

Resource Deficits

Not only did educators not get the training and professional development they needed to adequately work with students with brain injuries, there also was a lack funding that led to fewer opportunities for training and a lack of resources for them. Those resource deficits are found both at the state level and the local level.

State deficits. Because TBI is considered a low-incidence disability, states allocate few resources for TBI (Glang et al., 2013). Allocations of very little or no special-education dollars for TBI challenge states's capacities to provide training specific to the disability. Though some training on other disabilities possibly could generalize to brain injuries, educators need brain injury-specific professional development. Brain injuries place enormous demands on educators, and many school districts recognize the essential need for their educators to possess greater knowledge of the issues surrounding brain injuries. However, lack of resources to provide training make it difficult for districts to meet the need (Bullock et al., 2005). Further perpetuating the problem, few resources exist for educators to access evidence-based practices independently (Glang et al., 2008).

Local deficits. Educators have few resources available for promising or research-based practices for working with students with brain injuries; there is little evidence of effectiveness of interventions designed for these students (Dettmer et al., 2013; Glang et al., 2010; Glang et al., 2008). Few studies have provided evidence-based practices for interventions specific to brain injury. In the last two decades, there has been minimal research, especially with randomized controlled trials in classroom situations (Glang et al., 2013). Few interventions that promote positive educational outcomes have been tested specifically on children with brain injuries, forcing educators to look toward research on children with other disabilities and try to generalize for children with brain injuries (Davies et al., 2013; Dettmer et al., 2013). A gap in the evidence base of research for students with brain injuries makes for limited information, products, or training to guide educators while working with this population of students (Bowen, 2005; Dettmer et al., 2013; Glang et al., 2008).

A further problem stems from the absence of knowledgeable experts in the field of brain injury specific to educating students with brain injury. The lack of experts limits training available in person to educators. Knowledgeable individuals are more likely to implement, or support implementation of effective plans for students with brain injuries (Dettmer et al., 2013). However, with the lack of pre and in-service training available, few educators qualify to support appropriate implementation of IDEA for students with brain injuries (Blosser & DePompei, 1991; Chapman, 2002). Few educators are prepared to address this population's unique learning needs (Blosser & DePompei, 1991; Chapman, 2002; Davies et al., 2013).

Need exists to provide educators with training in promising practices that could improve student outcomes (Dettmer et al., 2013). Given the dire need for resources and educator knowledge amid a lack of state and district funding, finding effective and efficient ways to deliver quality training requires additional attention. Utilizing cognitive behavior change theories applied in an online format may be an effective form of delivering this training (Pintrich, Schunk & Meece, 2014).

Online Professional Development Is an Effective Modality

Online, interactive instruction is effective for delivering educator training and is increasingly being used for professional development (Masters, Magidin deKramer, O'Dwyer, Dash, & Russell, 2010; Meyen & Yang, 2005; Moon, Passmoe, Reiser, & Michaels, 2013). Advantages of interactive online instruction include tailoring evidence-based instructional design principles and learning experiences for the individual learner (Cook et al., 2010; Means, Toyama, Murphy, Bakia, & Jones, 2009). Additionally, web-based training provides professional development efficiently and accessibly, overcoming barriers of time, funding, expertise, scheduling, and travel while impacting a change in educator knowledge and practices (Fisher, Schumaker, Culbertson, & Deshler, 2010; Reeves & Pedulla, 2013). Means et al. (2009) found online training also offers economic and educational opportunities as well as increased community participation and efficiency of time and resources.

Efficiency of online training. The current climate of school reform emphasizes professional development (NCLB, 2002). However, the push for additional professional development creates financial and time burdens for already strained educational systems (Dede, Ketelhut, Whitehouse, Breit, & McCloskey, 2009). Given the state of education,

systems need tools that build educator capacity, respect educator time constraints, cost little, and impact educator knowledge and practices. Dede et al. (2013) suggested online training could answer the need for efficient professional development by accommodating for time and funding constraints. Online training does not require educators to gather, allows educators to access training on their own time from any location, and does not require hiring specialists to conduct the ongoing training (Dede et al., 2013; Fisher et al., 2010). Online training requires no special software and can be accessed with limited computer skills (Fisher et al., 2010; Means et al., 2009). These advantages offer the capacity to reach unlimited numbers of educators, providing access to experts who might be otherwise inaccessible, making online training a cost- and time-friendly option with good outcomes (Dede et al., 2013; Fisher et al., 2010; Means et al., 2009).

Educational impact of online training. Several recent studies indicate online training is as effective as face-to-face training with equivalent learning outcomes (Fishman et al., 2013; Fisher et al., 2010; Masters et al., 2010). The U.S. Department of Education's 2009 meta-analysis of online learning reviewed more than 1,000 empirical studies and found an average in which students using online learning environments outperformed counterparts in face-to-face instruction (Means et al., 2009). Studies examining the efficacy of web-based training found increases in knowledge, skills, and participant satisfaction and engagement (De La Paz, Hernández-Ramos, & Barron, 2004; Fisher et al., 2010).

In web-based learning, unlike face-to-face, group-based professional development, content can be tailored specifically to each user, thereby increasing the efficacy of the program (Cook et al., 2010; Means et al., 2009; Morrison, Moss-Morris,

Michie, & Yardley, 2013). Computerized individual instruction allows the learning experience to respond to the individual participants questions, needs and performance (Fishman et al., 2013; Means et al., 2009). Research indicated messages and modeling are more effective when tailored to the specific audience (Schmid, Rivers, Latimer, & Salovey, 2008). Other validated instructional design components that could be included in online training are: (a) exercises with assessment and feedback loops to ensure comprehension; (b) portions using scenarios that test user comprehension; and (c) sufficient practice and review specific to the user's needs (Fisher et al., 2010; Means et al., 2009). Using web-based training can facilitate practice of newly learned skills over expanding intervals of time, a proven technique for improving retention (Fishman et al., 2013; Turkstra & Bourgeois, 2005).

Available Online Curriculum: *In the Classroom with Brain Injury for Educators*

Currently, the only online curriculum for training teachers to work with students who have brain injuries is an adaptation of Feeney and Ylvisaker's work on project LearNet created by Glang, McCart and Slocumb at The Center for Brain Injury Research and Training (CBIRT). The training is titled *In the Classroom with Brain Injury for Educators*. The target outcomes of the curriculum are improved teacher knowledge and practice. The *In the Classroom with Brain Injury for Educators* utilized the six design principles of direct instruction: (a) big ideas; (b) conspicuous strategies; (c) mediated scaffolding; (d) strategic integration; (e) primed background knowledge; and (f) judicious review to deliver exceptional content in an evidence-based manner (Harniss, Hollenbeck, & Dickson, 2004). Specific to *big ideas*, *In the Classroom with Brain Injury for Educators* identified eight *big ideas* to organize the content of instruction and within the

big ideas more specific topics and categories are explored. *In the Classroom* utilized the *conspicuous strategies* of discriminating the most important from less important information, summarizing ideas, explaining the skill/strategy, modeling the skill/strategy through the use of videos and interactivity, asking explicit questions, providing opportunities for applied learning and giving specific feedback to the users. *In the Classroom* facilitates *mediated scaffolding* because the online format allows content to be tailored specifically to each user and the learning experience responds to the individual users questions, needs and performance. Within the series, *strategic integration* is accomplished by the teaching slowly building upon itself. Users do not advance in the series until they have shown mastery of each learning experience. Strategic integration is re-enforced as each learning experience begins by priming the back ground knowledge or previously learned material at the beginning of each experience. Finally, *judicious review* is built into the series by the use of interspersed opportunities for questioning and applying newly learned information to scenarios. Additionally, the series utilized cumulative quizzes after each learning experience that must be passed in order to move on in the series. The *In the Classroom* series is a well-designed teacher training that utilized the best practices in instructional design. A draft overview of the *In the Classroom* series content is shown in Appendix A.

Summary

For many school districts it is not feasible to train educators in the area of brain injury at the school level. Districts lack the resources of money and time the training would require. Based upon meeting the six direct instruction design principles, the web-based training *In the Classroom with Brain Injury for Educators* is a viable option that

provides the same or improved learning as face-to-face instruction. This solution will provide an evidence-based national platform for the training of educators in the area of brain injury, thus ameliorating the lack of knowledge and training.

CHAPTER II

METHODS AND ANALYSIS

Described in this chapter is the overview of the proposed grant project, the two phases of study and their associated research questions as well as a budget summary for both phases of the grant.

Overview of Proposed Project

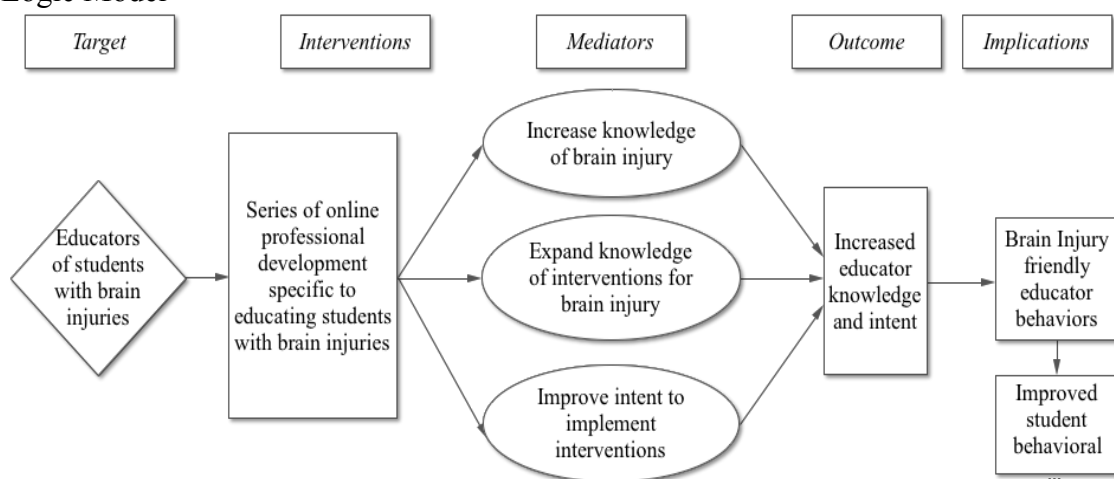
The proposed project a two-phase grant proposal that will evaluate a web-based intervention called *In The Classroom –Training Teachers to Support Students with Brain Injuries*. The goal of the intervention is to increase educator’s knowledge, skills, and awareness to provide school supports and interventions for students with brain injuries and evaluate the effectiveness of the intervention to improve the (a) implementation of brain injury informed educator behaviors and (b) student outcomes in the classroom environment. Using educator online training, the goal of the intervention is to improve students’ outcomes by increasing educator knowledge and skills. Phase 1 details the design and launch of a study utilizing a waitlist design group with a delayed post-test 2 in order to determine the training’s impact on teacher knowledge and intent to implement accommodations. It will answer the following questions by statistically analyzing the data collected in Phase 1, to determine the training’s impact. Does the *In The Classroom – Training Teachers to Support Students with Brain* series of online professional development significantly (a) increase knowledge of brain injuries; (b) expand knowledge of brain-injury interventions; and (c) improve intent to implement interventions?

Phase 2 utilizes a single subjects multiple baseline design to analyze student

outcomes related to the intervention and change in teacher behavior by answering the following question (a) Does the *In The Classroom* series of on-line professional development for educators significantly improve the implementation of brain injury informed educator behaviors and improve student behavioral outcomes?

Figure 1 illustrates the intended impact of the *In The Classroom –Training Teachers to Support Students with Brain Injury* series using a logic model. Cognitive behavior change theories digitally applied to adult learners will result in increased knowledge, intent to implement new knowledge, improved implementation of brain injury informed educator behavior and improved student behavioral outcomes. Cognitive behavior change occurs with increased knowledge and practice, so one can logically assume that increasing educator knowledge is the necessary first step to improving students with brain injuries outcomes (Pintrich et al., 2014). The content and delivery of the modules uses Tolman’s (1949) expectancy learning theory. Tolman described this as learning that makes it possible for people to not only learn more but to make correct choices and to more rapidly form new cognitive maps (Tolman, 1949).

Figure 1
Logic Model



The target population of the intervention is *educators* who teach students with brain injuries. Participating educators will engage in the series of online professional development modules. These modules will assist educators to improve in the areas of (a) knowledge of brain injury, (b) knowledge of interventions for brain injury, and (c) participant's intent to implement learned interventions. Phase 2 will utilize educator and student observations to discover if the *In The Classroom* series of on-line professional development for educators positively improves (a) educator implementation of brain injury informed behaviors and (b) improves student behavioral outcomes in the classroom environment?

Phase 1 - Randomized Waitlist Design

During Phase 1, a test of the effects of the *In the Classroom* Series will be conducted with the goals of answering the below research questions.

Research Questions

1. Does the *In The Classroom* series of on-line professional development for educators significantly increase knowledge of brain injury?
2. Does the *In The Classroom* series of on-line professional development for educators significantly increase knowledge of brain injury accommodations?
3. Does the *In The Classroom* series of on-line professional development for educators significantly increase intent to implement interventions?

Design

The design of this study will use a randomized waitlist control group pre and post test, with a delayed posttest two design to evaluate the impact of online training for educators and staff on the measures of knowledge of brain injury, knowledge of

accommodations, and intent to implement interventions (see Table 1). Measures will be designed and developed by the project staff and advisory panel to determine the efficacy of the professional development series (see Table 2). Three different version of each pre and post-test will be developed to improve the validity of the measures and so participants will not be able to learn the tests A pretest and posttest of general knowledge and knowledge of accommodations, and pretest and posttest survey to measure intent will be developed for use in testing. As illustrated in Table 1, members of the control/delay a group (waitlist) will receive the *In The Classroom* on-line training 30 days after the first group. Each group will take the pre and post-tests together when the study begins. Group 1 will immediately participate in the intervention and Group 2 will wait to participate in the intervention until Group 1 has finished. When Group 1 has finished the intervention, Group 1 will take the pre-test measures and Group 2 will take a pre-test 2 measure. At this point Group 2 will begin the intervention. When group 2 completes the intervention Group 1 will take a delayed follow up post measure and Group 2 will complete the post measure. This design allows for the gathering of information about interaction among treatments and sustained knowledge after the intervention is complete. One hundred twenty eight participants will be recruited by utilizing CBIRT's extensive network of colleges around the country to distribute the need for participants and to direct participants to further information. Information seeking participants will be posted on the CBIRT website, social media sites (such as Facebook and Twitter), in the Team Newsletter, on BrainLine and other sources as they become available. Participants will be divided into two groups randomly utilizing Urbaniak's (1997) software called *Research Randomizer*, which generates computerized random assignments to groups. Group one is

the immediate treatment group and group two is the waitlist control group. The waitlist control group is defined as a randomized group assigned to a *waiting list* to receive the intervention after the first treatment group has taken it. Importantly, all educator participants will eventually receive the *In The Classroom* series intervention. Participants will be randomly assigned to the experimental group that will receive the intervention in weeks one through four or to the waitlist control group that will receive the intervention in weeks four through eight.

Table 1
Group Waitlist Pretest - Posttest Design with Delayed Post Two

	<i>Pretest</i>	<i>Intervention</i>	<i>Posttest/ Pretest</i>	<i>Intervention</i>	<i>Posttest</i>
Group 1	Pretest: Measure	Intervention: In The Classroom 4 weeks/ 30 days	Posttest: Measure	X	Delayed Post- test 2 Follow-up
Group 2	Pretest 1: Measure	X	Pretest 2: Measure	Intervention: In The Classroom 4 weeks/30 days	Posttest: Measure

Benefits of a waitlist design. A waitlist design is a modification of a true randomized controlled trial. The only difference is that the participants assigned to the waitlist serve as the control group but also receive the treatment at a later date. Using a waitlist control design serves three purposes. The first purpose or benefit is that all participants will eventually receive the intervention. A waitlist study design does not withhold intervention from any research participant. Moreover, withholding access to professional development may be unethical. For the control group to not receive the professional development intervention may have a negative impact on teachers and

students as all participants are working with students with disabilities and participating in the study will allow teachers to better serve their students. Second, the waitlist or group two serves as the control as the untreated comparison in by aligning the post-test of Group 1 with the pre-test of Group 2. Finally, utilizing a waitlist design may help with participant recruitment, as the participants are self-selecting to be part of the study. They are educators who want to know more about brain injury and may not participate if they don't get the intervention.

Independent variable. The intervention condition for study will be the online training in its complete form. Experimental participants will log onto a secure website to access the *In The Classroom* series. All participants will receive the intervention. Group 1 will receive the intervention 30 days prior to Group Two. The 128 participants will be randomly assigned to participate in either Group 1 or Group 2. After educators have completed the training a significant increase in the dependent measures is expected.

Dependent variables. Dependent variables for this study are: (a) educator knowledge of brain injury, (b) educator knowledge of brain injury accommodations, and (c) educator intent to implement accommodations. The dependent variables will be given as a pretest and as the posttest.

Instruments

In order to ensure the instruments of measure are valid, a 12 member assessment advisory panel, made up of six of educators and six experts will be utilized. Table 2 is a draft of the advisory panel that will be tasked with ensuring the validity of measures. The panel will be made up of panellists that fit a specific role and whose experiences will allow them to provide feedback from specific points of view. This will provide balanced

feedback from multiple perspectives that are important for the validity of the measures. The panel will be asked to review the measure questions, provide feedback and assist in determining types of questioning needed. The panel will review the measures in various drafts and their feedback will guide the next iteration. This cycle will continue until the panel is confident in the validity of the measures and complete versions are ready for use. Members of the Advisory Panel will be paid 400 dollars each for their participation in the project to compensate for the time they have committed.

Table 2
Draft Assessment Advisory Panel

Educators	Sue Hayes -TBI Team Liaison Penny Jordan – TBI Team Liaison Julie Fulton – 5 th Grade Teacher Rollen Fowler – School Psychologist Wendy Friedman – Occupational Therapist Brooke Wagner – Elementary Principal
Lay Members	Jenna Sneva – Student with a Brain Injury Ronda Sneva – Parent of Jenna Sneva
Experts	Maria Crowley– Alabama Department of Rehabilitation Judy Dettmer – Colorado Department of Education Dr. Tim Feeney – Director, Overcoming Barriers to Learning Dr. James Chesnut – Oregon Health Sciences University

The above panel represents experts in the areas of brain injury who are working in schools, general educators, school psychologists, occupational therapists, school administrators, brain injury researchers, parents, survivors and medical professionals.

As illustrated in Table 3, the study will use three measures. The instruments of measure are (a) pre and post questionnaire of TBI knowledge, (b) pre and post questionnaire of accommodations, and (c) a pre and post survey of intent.

Table 3
Alignment between Research Questions and Instruments

Research Question	Measures/Data Collection Instruments
Does the <i>In The Classroom</i> series of on-line professional development for educators increase knowledge of TBI?	Pre-intervention: Questionnaire of TBI knowledge
	Post-intervention: Questionnaire of TBI knowledge
Does the <i>In The Classroom</i> series of on-line professional development for educators increase knowledge of TBI accommodations?	Pre-intervention: Questionnaire of knowledge of accommodations
	Post-intervention: Questionnaire of knowledge of accommodations
Does the <i>In The Classroom</i> series of on-line professional development for educators increase intent to implement interventions?	Pre-intervention: Survey-Measure of intent
	Post-intervention: Survey-Measure of intent

Questionnaire of knowledge/accommodations. Both the pre and post intervention questionnaires of TBI knowledge and accommodations will be developed based on the content of the *In The Classroom* series learning experiences. The program-specific questionnaire will assess TBI general knowledge and content and skills taught by the learning experiences. Three versions of each measure will be created and questions will be written to reflect information presented and taught. There will be 20 multiple-choice and fill-in-the-blank questions. Re-iteration will account for 75 percent of the responses and applied learning will account for 25 percent of the responses. Fill-in-the-blank and multiple-choice type questions will demonstrate surface level learning while scenarios followed by problem solving activities will demonstrate applied learning.

Internal validity will be of the highest priority. Questions will be reviewed and refined using feedback from the assessment advisory panel. The questionnaires will be delivered over the internet using a secure server. Participants will be given links to complete both the pre and post questionnaires.

Survey of intent. A online survey measuring educator intent to implement accommodations and interventions will be given to the educator participants in both groups pre and post intervention. The survey will be created using a Likert scale. Each question will ask if the educator is *highly unlikely* (1), *unlikely* (2), *likely* (3) or *highly likely* (4) to implement a specific intervention or accommodation in their classroom. A forced choice Likert scale (positive or negative, but no neutral) utilizing four responses will be used. Forced choice allows for no middle response and compels participants to make a choice without offering the comfortable and neutral middle answer. The survey questions will be written and analyzed by the staff and advisory panel for internal validity. Questions will be based on the interventions and accommodations taught in the content of the *In The Classroom* series learning experiences. Questions that are not valid will be rewritten or thrown out entirely. The survey will be reviewed and refined until the internal validity is strong as judged by the staff and advisory panel.

Setting and Participants

One hundred twenty-eight participants will be assessed three times in the areas of knowledge of brain injury, knowledge of accommodations and intent to implement using an online forum. Educator participants will take assessments online from a location of their choice. The sample for the study will be comprised of 128 educators recruited from school districts in Oregon. To be included, participants must meet all of the following

criteria; (a) be 18 years or older; (b) currently employed as a special educator or works with a student who has TBI. Special educators will include teachers, occupational therapists, speech-language pathologists, vocational counselors and paraprofessionals; and (c) must be able to obtain school permission to be part of the study.

The educators in both the control and intervention groups will complete all measures. Educators will be paid \$25 for each assessment for a total of nine assessments (9 assessments at \$25 = \$225.00). Educators will be paid upon their completion of all assessments or when they are no longer participating in the Phase 1 study.

Hypothesis

It is expected that after participating in the intervention condition (online training) there will be a statistically significant improvement of educator knowledge of brain injury, knowledge of accommodations, and increased intent to implement accommodations. The results are expected to be significant at a .05 alpha level.

Analysis

Group 1's and Group 2's pretests and posttests will be analyzed to look at growth differences that are attributed to the online trainings. I will use SPSS to conduct a repeated measures analysis of variance (rANOVA) to calculate whether statistical differences between the two groups in terms of pretest to posttest answers exist. Effect size will be calculated using SPSS. A commonly used measure of effect size is Eta squared. Eta squared is the estimate of the degree of association in the population. The desired effect size is 0.5 for the study.

The proposed sample size of 128 participants should be adequate to have strong power and account for the possibility of attrition because a statistical power analysis for

the two-way Analysis of Variables was performed to determine the optimal sample size needed using an A-Priori sample size calculator (<http://www.danielsoper.com/statcalc3/calc.aspx?id=47>). Given the desired probability level of .05, the anticipated effect size of 0.5, and the desired statistical power level of .80 a sample size of 128 educators with 64 in each in Group 1 and Group 2 the study should reliably detect differences between groups and themes among the larger group.

Phase 2–Classroom Observation/ Single Subjects Multiple Baseline Design

The goal for Phase 2 is to evaluate the impact of the *In the Classroom Series* on student outcomes by actually observing teachers and students. Phase 2 will utilize a single subjects multiple baseline design study to determine the depth of causal relationships between the independent variable of the *In the Classroom Series* of professional development and the dependent variable of student behavioral outcomes (Horner, Carr, Halle, McGee, Odom, & Wolery, 2005). Phase 2 of the study will determine if the *In The Classroom* series of on-line professional development for educators significantly improved implementation of brain informed behaviors by educators and improved student behavioral outcomes in the classroom environment.

Method

To determine if a significant causal relationship exists between the independent variable of the *In the Classroom Series* of professional development and the dependent variable of student behavioral outcomes the study will utilize a single subject multiple baseline design study. Using this design ensures the evaluation will be sufficiently rigorous to assure the study findings are robust and credible. Using a single subject multiple baseline design is ideal for evaluating student behavioral outcomes in relation to

the *In the Classroom Series* of professional development (Horner et al., 2005). This design offers many advantages: (a) homogenous groups, that are not available with the brain injury population, are not required; (b) data clearly represents changes for individuals; and, (c) emphasis is placed on functional significance.

Intervention - independent variable. The intervention or independent variable is the *In the Classroom Series* of professional development. All educator participants will complete the series. Student participants will not have an intervention other than the potential change in teacher behavior resulting from the educator intervention. Teachers will complete an online series of professional development called *In the Classroom Series*. The on-line intervention will be completed in a location of the teacher's choice. The series is made up of 27 approximately 20-minute learning experiences that will take about nine total hours to complete. The participants will have 30 days to complete the series of training. By utilizing a log in and pass word the interface of the training series will be able to track participant's progress and prompt them to complete the series. As, the entire intervention is delivered in an online format the fidelity of implementation will be strong and documented using web analytics.

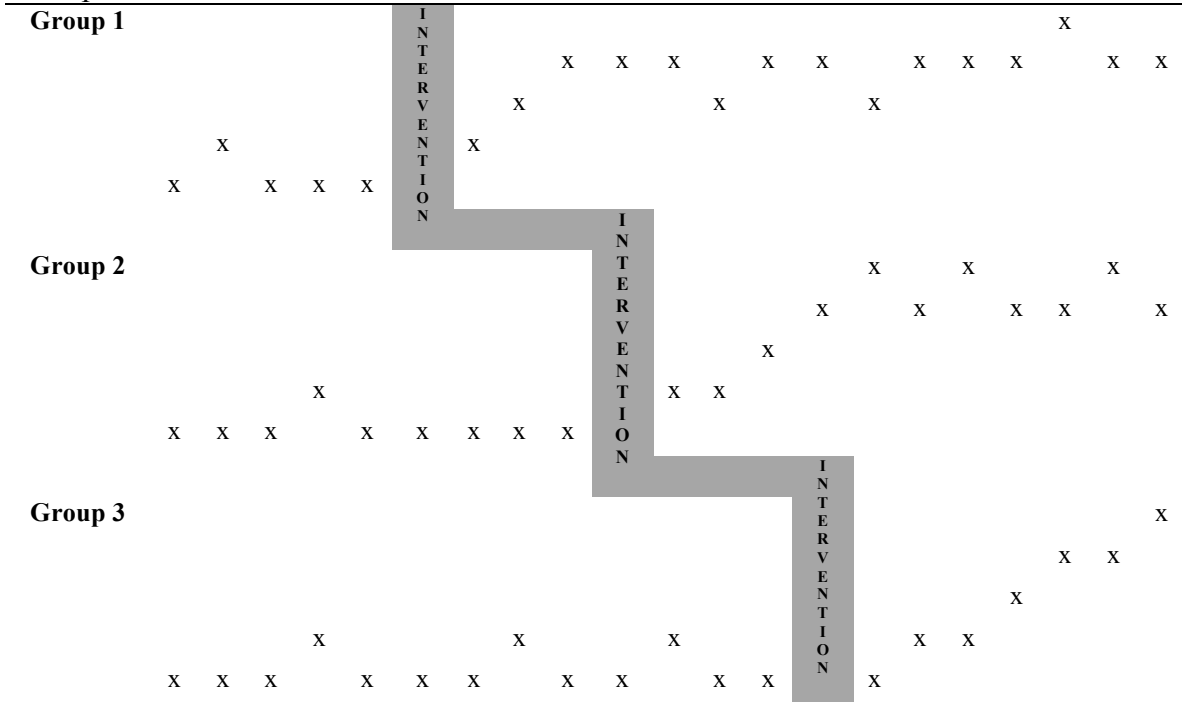
Participants. Participants for the single subjects multiple baseline study are not the same participants used in Phase 1. In Phase 2, there will be six dyads of six teachers who are currently assigned to work with a student who has a mild to moderate brain injury and one student with a brain injury. The dyads will be randomly assigned to one of three groups with two dyads per group. The students who meet the criteria for selection will be randomly selected from each of the six classrooms. If there is only one student with a brain injury in the selected classroom that student will automatically be selected

for the study. Phase 2 selection criterion include: (a) teacher must be the lead teacher for the student's main classroom, (b) the student in the pair must have a mild to moderate brain injury, (c) the student and teacher must be in the K-12 education system, (d) the participating student with TBI has a behavioral goal on their IEP, and (e) teacher must be able to obtain school and parent permission to participate in the study. Each teacher will be paid \$200.00 each upon completion of the intervention and an additional \$500.00 upon completion of up to 20 or more classroom observations.

Comparison condition. In order to be scientific in a single subject design a baseline comparison condition must be established. To do so participants, both teachers and students, will be observed at least 5 times and up to 13 with potentially more if a predictable baseline condition has not been established times in the classroom setting during the same instructional period. These observations will occur within a three-week window. The data collected during these observations will establish the baseline condition. After baseline is established for Group 1, those teachers will have 30 days to complete the entire intervention. When the 30 days are over, Group 1's teacher and student participants will be observed at least 5 to 13 additional times in the classroom setting during the same instructional period. Three weeks are allowed for both the pre-intervention and post-intervention observations to account for student, teacher absences and unforeseen events. After Group 1 has shown three positive days of post-intervention success, Group 2 will start the intervention. The same rule will follow for Group 3. This observational series both pre-intervention and post-intervention should be sufficient to establish a consistent baseline and comparison group. However, should the data not establish a trend that would allow for the "prediction of future responding" further

observations will need to be conducted (Horner et al., 2005). This series will create a comparison condition allowing the data from the pre-intervention observation and data from the post-intervention to be compared. See Figure 2 for an illustration of the comparison condition.

Figure 2
Comparison Condition Timeline



Setting description. Initially, both the teachers and students will be observed in the classroom setting during the same instructional period in order to establish a confident baseline condition. After the baseline observations are finished, teachers will complete the on-line intervention in a location of their choice. The intervention must be completed within a 30-day period. Upon completion of the intervention and the 30-day period both the teachers and students will be observed additionally in the same academic period as the baseline observations until a total of at least 20 observations are complete.

Data collection/dependent variable. Before collecting baseline data student records will be reviewed to determine that there is an IEP goal on behavior and the teacher will be interviewed to establish the severity of behaviors. Once need is established baseline observations will begin. The students will be observed for (a) problem behavior, (b) direction following, (c) academic engagement, and (d) on task behavior. Teacher behavior data will be collected at the same time as the student. Data collectors will collect information about the classroom environment, direction giving, utilizing routines, use of slowed processing strategies, use of academic accommodations and instructional pacing. In addition, data collectors will collect data on poor teaching practices that are individual to each teacher. An example of poor teaching practices are publically addressing student issues, public behavior correction, or giving unwanted attention. The occurrences of poor teaching practices will be compared visually to see if the intervention had an effect on the frequency of occurrence. Data collectors will code both the student and teacher data simultaneously at 30-second intervals for a total of 30 minutes during observations. All observations will take place during the same subject and time of day. Over a three-week period, baseline observations prior to the intervention will take place. During each observation, the two data collectors will mark if the student is or is not doing the above items and record teacher data.

Inter-rater reliability. Prior to conducting observations in the formal study, data collectors or coders will be trained on the use of the data collection tool and practice with it until they can reach 90% agreement using Cohen's kappa. Cohen's kappa will be used to measure agreement between data collectors because it accounts for the conditional probability that the observers agree or disagree by chance. Once 90% is reached they will

be assigned to a classroom and begin formal data collection. The multiple baseline design will be implemented across teacher and student dyads with the dyads grouped into three groups of two creating three pairs. To account for data collector bias each participant dyad and groups will be assigned two data collectors. For every observation done two data collectors will conduct the observations and their data will be compared for inter-observer reliability. See Table 4 for a visual of the design for inter-observer reliability. For the observation to be included, the data collectors will need to be at 90% agreement.

Table 4
Inter-Rater Reliability Design

<i>Group</i>	<i>Dyads</i>	Coder 1	Coder 2	Coder 3	Coder 4	Coder 5	Coder 6		Coder 1	Coder 2	Coder 3	Coder 4	Coder 5	Coder 6	
Group 1	1	X	X					Intervention	X	X					
	2	X	X						X	X					
Group 2	3			X	X						X	X			
	4			X	X						X	X			
Group 3	5					X	X							X	X
	6					X	X							X	X

Analysis



Data collected from the observations both pre and post intervention will be analyzed using a systematic visual comparison that is unique to each dyad. These visual comparisons will be looking at variability and trends in performance of the teacher and student both pre and post intervention. In order to claim that a positive change in the dependent variable is a function of the participant experiencing the intervention a specific data pattern is needed (Horner et al., 2005). I will be looking for consistency of frequencies prior to the intervention and a rapid decrease in frequencies following the intervention for the student data. For the teacher data, I will be looking for consistency in

behavior prior to the intervention and rapid increasing in brain injury friendly behaviors as well as a rapid decrease in poor teaching behaviors following the intervention. In addition, Tau-U will be calculated using the online calculator (<http://www.singlecaseresearch.org>). Tau-U is a nonparametric technique with a strong statistical power defined as the percent of all data that show improvement over time (Parker, Vannest, Davis, & Sauber, 2011). Tau-U is a pairwise comparison of all data points in each phase making it compatible with visual analysis (Parker & Vannest, 2012). The utilization of a visual analysis paired with Tau-U will create a strong validity of analysis.

Project Timeline

The proposed project has a timeline for completion of two years. Year one will consist of a group waitlist design study to measure knowledge and intent of educators. In year two a single subjects multiple baseline study will be conducted. Table 5 illustrates the project timeline.

Table 5
Project Timeline

	<i>Year 1</i>	<i>Year 2</i>
Phase 1- Group waitlist design study of knowledge and intent		
Phase 2- Single subjects multiple baseline study of application and student outcomes		

Requested Budget

The Center on Brain Injury Research and Training (CBIRT) is a center at the University of Oregon. As a division of the Oregon University System, CBIRT conducts

its business in accordance with established state policies for purchasing, payroll, and travel reimbursements without regard to source of funding. Funds are requested for a 2-year period, October 1, 2015 through September 30, 2017. The total amount requested to fund this two-year proposal is \$825,077.00 with itemized costs outlined in the budget narrative. See appendix C to review the complete budget for this project.

CHAPTER III

IMPLICATIONS

Implications

This Chapter highlights three important areas. First, Internal, external, statistical conclusion, and construct validity will be discussed for each Phase of the proposed project. Secondly, possible results for both Phase 1 and Phase 2 are considered. Lastly, a reflection of the work is highlighted.

Validity Considerations

In this group waitlist study and single subjects multiple baseline study, the potential for internal, external, statistical and construct validity threats exist. The following will reference each type of validity by Phase and address threats that exist in each. Plans to address the threats are considered and discussed.

Phase 1 internal validity. The greatest threats in this study are to its internal validity. The selection of participants may limit generalization. With participants self-selecting to be included in the study, the spectrum of educators may not be well represented in the initial sampling process. Volunteer educators may be intrinsically motivated to learn the material, which might positively impact the intervention outcomes.

Phase 1 external validity. While overall, external validity is strong in this study. There are two potential threats to external validity: (a) Sampling plan and (b) interaction among treatments. As stated earlier, the concern with the sampling plan is that it is based on volunteerism. Educators will volunteer or self select to be participants in the study. Therefore, they may be more motivated than the average educator and not be representative of the entire spectrum of educators.

Interaction among the topic areas within the intervention series could pose an issue as much of the content overlaps within this project. Thus, it will be unknown whether educators learn the information on brain injury across the entire treatment instead of within each topic area. To account for this, participant's scores will be analyzed at the summative level.

Phase 1 statistical conclusion validity. Low reliability of measures is potentially present in the study. To account for this, the expert panel will vet all measures. Questionable items will be thrown out or edited until the panel is confident in the measures validity.

Phase 1 construct validity. Mono operational bias is present in the design because it will only use pretests and posttests of the teams design. Unfortunately, this is necessary because there are no existing measures in this area. To partially account for this mono operational bias and to create stronger construct validity in the development phase, the measures will be given to the advisory panel to screen and to trial. Questions that are not valid will be rewritten or thrown out entirely. The measures will be reviewed and refined until the validity is strong as judged by the expert consultant group.

Phase 2 internal validity. The internal validity of this phase of the study is threatened by the selection of participants which may limit generalization. With participants self-selecting to participate, the spectrum of educators may not be well represented in the initial sampling process. Volunteer educators may be intrinsically more motivated to learn the material, which might positively impact the intervention outcomes. Another concern that will not be able to be accounted for is the local culture. Meaning that each school has culture and context that impact teacher behavior. The research will

not account whether school culture compelled the teacher to volunteer versus the teacher's own self-directed behaviors. In addition, the observations will be completed in a classroom setting making it near impossible to account for unforeseen antecedents such as not eating breakfast, recess incidents, head aches, etc.

Phase 2 external validity. The external validity of this phase of the study also is threatened only by the volunteer participants. Because the participants are volunteers the type of educator represented may not include all types. Thus, the generalizability of the finding may be impacted and might only be associated with teachers who have self-identified a need to learn more about students with brain injury.

Phase 2 construct validity. The construct validity subcategory of *Hypothesis Guessing within Experimental Conditions* as part of this phase may be impacted because both the student and the teacher will be aware of the observers presence and this may impact their behavior. For example, the teacher might try harder than normal to use less poor teaching techniques and to use what was taught in the intervention or the student may behave better or worse due to the observer's presence.

Possible Results

The results of this proposed intervention and studies will be used to determine the effectiveness of the online series of training. Should the initial results show improved educator knowledge of brain injury, improved knowledge of accommodations, increased intent to implement accommodations and actual positive change in teacher behavior and student outcomes there will be reason to further study the impact and potential for use of this type of educator training. The results of the studies will serve as indicators that given further research the results may be consistent with those of the studies. The development

of training for educators may increase awareness and have a positive impact on the culture of serving students with brain injuries.

Phase 1 possible results. Logically, there are two possible results for Phase 1 of this study. Either, the educators will make significant growth or they will make minimal to no growth. Hypothetically, after participating in the intervention condition (online training) there will be a statistically significant improvement of educator knowledge of brain injury, knowledge of accommodations, and increased intent to implement accommodations. Significant growth is postulated because the *In the Classroom* series is a collection of evidence based practices for teachers to use when working with students who have brain injuries. As noted previously, prior research has shown that there is little pre and in-service training on brain injury for educators and that educators need training in order to better serve the students they work with who have brain injuries (Blosser & DePompei, 1991; Funk et al., 1996, Mohr & Bullock, 2005; Davies et al., 2013). Thus, *In the Classroom* should increase educator knowledge of brain injury. However, there is the possibility that the online trainings will not have the desired effect. Should this be the case, further program analysis will be needed to ensure growth is made after participating in the intervention.

Phase 2 possible results. There are a variety of possible outcomes of Phase 2 of this study. The hypothesis is that both teachers and students in all six dyads will make significant improvement. I conjecture the significant growth because the *In The Classroom* series will provide teacher training that was not received in teacher preparation courses and is not readily available for educators specific to working with student who have brain injuries (Glang et al., 2010; Shaughnessy et al., 2006). Thus, the

In The Classroom series should significantly improve teacher behavior and improved teacher behavior should positively impact student outcomes. However, it is possible to have outcomes such the student's behavior improving but the teacher's behavior will maintain or lessen. I don't anticipate this outcome but should this happen further analysis of the data will be required to look at extenuating factors that may have impacted the desired outcome. Another possible outcome I am anticipating is that the teacher is making improvement but the student's behavior getting worse. I anticipate this may happen in some of the dyads due to *extinction bursts*. Meaning that if a behavior has worked for a student prior to the intervention and the teacher then changes what will work the student may escalate that behavior in an attempt to have it continue to work for them (Colvin, 2010). The observers and I will be able to determine if this is the case by examining data collected during the classroom observations.

Potential Implications

Each phase of this proposed project has the potential to impact the education community as a whole but, more specifically special education practices, all educators who work with students who have brain injuries and students who need support.

Phase 1 implications. Phase 1 is a group waitlist design study. This Phase will inform the community of the potential to use online training specific to working with students who have brain injury and may impact the use of online training in the future and for other disability categories. This phase will gather evidence that not only does this project meet some of the need for available resources but delivering resources and training using an online format is an effective modality (Masters et al., 2010; Meyen et al., 2005; Moon et al., 2013).

Phase 2 implications. Phase 2 is the single case design study. This study will impact both the six teachers and six students involved directly and hopefully make school better for the teachers and students. As, highlighted in the literature review, students with brain injury can be greatly impacted in ways that make school, learning and the classroom experience highly challenging for both the student and the teacher (Davies et al., 2013; Ylvisaker et al., 2005). This phase will gather evidence that with training teachers can do a better job and the school experience for students with brain injury can be improved. It will also inform the community of the potential to change student outcomes using an online format.

Summary

The focus of these studies is one that has not been specifically explored. While many aspects of the project have been explored extensively (professional development, online design, classroom accommodations, struggles of students with brain injury) those singular interventions have not been put together into one project with an operational outcome specific to working with students with brain injuries and improving student behavioral outcomes through changes in teacher behavior. Should this project and study have even minimal success in terms of showing statistically significant increases in knowledge of brain injury, knowledge of brain injury accommodations, intent to implement interventions, teacher behavioral changes and changes in students behavioral outcomes an evidence base will begin to be established that supports the use of the *In the Classroom* series of training.

Reflection

Should this grant move from a dissertation to actual grant for funding, I would

need to do three additional tasks. First, I would need to select a funding agency and use that request for application (RFA) to guide the organization and submittal of the grant application. Secondly, I would secure a grant team to fill the roles outlined in the budget (Appendix C). Lastly, I would secure letters of commitment from school districts who would like to have their teachers and students participate in the studies of the project.

Writing this grant proposal has been extremely beneficial. I have learned the process and intensity of grant writing. My career has benefited as I am beginning to take command of a new skill. It is clear to me that with each grant I write or participate in the writing of I will learn more from the process and the people involved. I have learned that grant writing is a constant process of learning and that no one is ever done in terms of his or her skills. Each grant will challenge you to think about things in ways you have not and push you to expand your knowledge base. I feel very fortunate to have been given the opportunity to participate in the grant writing option for my dissertation.

APPENDIX A

IN THE CLASSROOM LEARNING BIG IDEAS/TOPICS/TEACHING POINTS

In The Classroom Learning Experience Big Ideas/Topics/Teaching Points

<i>Big Ideas</i>	<i>Topic/Teaching Points</i>
Introduction	What is Different About Brain Injury <ul style="list-style-type: none"> • Impact on classroom success • Family trauma • Invisible injury • Behavior manifestations
Brain Injury	What Educators Should Know <ul style="list-style-type: none"> • What is a Brain Injury? • How does a Brain Injury happen? • Signs and symptoms • Trajectory of recovery after a brain injury
Environmental Modifications	Organizing the Classroom Environment <ul style="list-style-type: none"> • What’s different about organizing a brain injury informed classroom? • Limiting/strategic stimulation • Limiting mess/everything has a place • Posting routines and schedules • Available tools for accommodation
Identification and Assessment	Importance of Identification and Assessment <ul style="list-style-type: none"> • ADA, 504 and IDEA • Appropriate eligibility • Guides decision making for students individual plan • Assessment as a guide to appropriate instruction Ongoing Assessment/Monitoring Strategies <ul style="list-style-type: none"> • Increase frequency of monitoring for students with Brain Injuries • Formative assessment to guide instruction • Strategies for monitoring growth
Supporting Positive Behavior	Positive Behavior Supports <ul style="list-style-type: none"> • Use well taught routines/expectations • Promote positive interactions • Offer choices • Provide meaningful/relevant instruction and tasks Supporting Functions of Behavior <ul style="list-style-type: none"> • Behavior is a symptom of an underlying issue • Emotional lack of stability affects behavior • Understanding trauma and its impact on behavior • Creating accommodations that increase positive behavior

Managing Severe Behavior

- Choose battles wisely
- Remain calm/state the situation clearly and simply
- Try redirection
- Be a helper
- Have an individualized plan of action for severe behavior

Attention Strategies

- Provide stable routines
- Use redirection/feedback
- Use engaging instruction and activities
- Provide specific assignments within larger tasks

Teaching Positive Communication

- All adults work together to analyze the students problem behaviors
- Determine what the student is trying to communicate
- Develop and agree on a plan
- Teach the student alternative behaviors that still meet their needs
- Practice the behavior until it is automatic

Teaching Self-Regulation Strategies

- Understand the students challenge and where it comes from
- Teach self regulatory scripts (big deal/little deal)
- Customize script for you student
- Practice to automaticity

Inflexibility

- Why are students inflexible?
- Understand the individual cause
- Strategies to support an inflexible student

Classroom Routines

- Provide more detailed routines
- Teach routines to automaticity
- Teach routines in multiple settings
- Review routines
- Provide reminders

Evidence-Based Instruction

Academic Accommodations

- Understand the root of the students struggles
- Make a plan for accommodations that allow for success
- Use strategies that closely fit the student's needs
- Provide instruction that minimizes errors
- Allow accommodations that support the students challenges

Instructional Routines

- Provide stable, repetitive routines for all instruction

- All instruction follows a similar pattern
- Provide the same accommodations across instructional areas.

Technology to Support Academic Success

- Why use technology?
- Finding technology resources
- Selecting appropriate technology
- Teaching technology use

Generalization Strategies

- Teach skills in multiple settings/situations
- Have students practice teaching each other
- Practice transferring a skill to a new situation
- Practice skills to automaticity

Reading Comprehension Strategies

- Understand the depth of the students problem
- Identify the students particular weakness
- Choose and put in place accommodations that fit the students needs
- Use environmental accommodations

Memory Strategies

- Understand the individual problem
- Plan appropriate accommodations
- Use errorless learning
- Use external reminders

Organizational Strategies

- Provide routines and schedules
- Provide models of success
- Practice the task
- Provide advanced organizers

Slowed Processing

- Understand the root of the problem
- Check for understanding of question/directions
- Use stable routines
- Use organizational/non-verbal supports

Instructional Pacing

- Understand the relationship between pacing and academic challenges
- Make instructional routines automatic
- Pace instruction as rapidly as the student will tolerate
- Slow down for new instruction
- Use frequent student responses to assess understanding

Sense of Self

- Understand the issue

- Work with the family to build positive associations
 - Be respectful/never use empty praise
 - Provide high level tasks that promote positive self identity
- Social Support Strategies
- Social Competence
- Keep all training in context
 - Train social partners
 - Teach a few skills at a time
 - Keep practice in context
 - Keep rewards natural and logical
- Friendship and Peer Acceptance
- Complexity of the issue
 - Involve the family and peers
 - Use strategies to support positive peer interaction
- Collaboration
- Collaborating with Parents
- Importance of listening to their story
 - Understanding the injury has been trauma for the family
 - Listening skills
 - Parents know their child best
- Collaboration Strategies
- Include everyone equally
 - Be respectful of others
 - Value all ideas
 - Seek outside assistance if needed
-

APPENDIX B

IN THE CLASSROOM TOPIC SAMPLE AREA OUTLINES

In The Classroom



Academic Accommodations to Minimize Frustration

Description of the problem

Aggressive or confrontational behavior, whether physical or verbal, is disruptive to the daily classroom routine, making it difficult for all to learn, and in the worst cases can cause risks to the health and safety of the student and to others. Uncontrolled behavioral difficulties commonly result in lost opportunities to develop positive relationships with others, and can result in removal from the classroom.

Causes

Students with TBI can be easily frustrated with academic tasks. Many students with brain injury get upset with the perceived disparity between what they could do prior to injury and what they can do after their injury. They also have difficulty with the differences between their abilities and those of their peers. The combination of the neurological effects of brain injury and the feelings of loss and frustration often result in difficulties controlling behavior when under stress, as is the case when academic work is challenging.

Solution

Provide instruction that minimizes errors, which can provoke negative behaviors and interfere with learning. In addition, teach strategies for identifying and managing situations that might result in problems before they emerge.

Strategies

- **Success is key**

Start each activity with a task the student can do successfully.

Example: If you are teaching 2-step multiplication as a new lesson, start the lesson with a review of 1-step multiplication that you know the student has mastered.

- **Break apart tasks**

Break larger tasks into smaller steps to create small successes along the way.

Example: If your student struggles with maintaining focus but needs to take a long test, break the test into sections that you know your student can complete. Put each section on its own piece of paper.

- **Use a systematic process for each task**

It is important that students completely understand what they are being asked to do. Using a systematic process for each task will help your student to complete the task.

- Provide clear examples of what each step of the task will require in order to complete it successfully.
- Model the entire sequence of steps, step-by-step.
- Verbally review the steps with the student and have him/her verbalize each step before beginning.
- Provide specific and meaningful feedback after the student completes each step.
- Ask the student how they thought they did and if they need any help.
- Continually re-evaluate with the student the next set of achievable steps.

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Strategies continued

- **Encourage self-monitoring**
For some students, self-monitoring does not come naturally. Support students by scaffolding their self-monitoring.

Example: Try asking one of the following:
 - How do you think you are doing?
 - What's working or not working for you?
 - Is this task easy, difficult or just right?
 - When do you think you will need help?
- **Make a plan for help**
Include how everyone will know the student needs help and what exactly help will look like.

Example: If your student needs help frequently, but does not like to draw attention by raising their hand, teach them to place their pencil at the corner of their desk when they need help. You and the student will know the signal, but no one else will.
- **Establish minimum work requirements**
Establish minimum work requirements and steps for achieving goals in collaboration with the student.

Example: Specific time limits, such as "You must complete five problems in 10 minutes" tend to generate oppositional responses. Instead, ask the student, "How many problems do you think you can complete in 10 minutes?" Then re-evaluate this goal and provide positive support.
- **Teach students phrases**
These phrases can be used as escape valves when they feel pressured.

Example: "I need a break" or "I'm starting to feel overwhelmed." Then reward students for using a phrase rather than waiting until they start to lose control.
- **Make use of all available resources**
Counseling, support staff and physical tools such as organizers can help accommodate the student's other brain-injury-related challenges and thereby minimize the frustration and discouragement that frequently get acted out in aggressive ways.

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Inflexibility

Description of the problem

Students with TBI sometimes get “stuck” on an activity. They can have difficulty with new tasks or changes in the schedule, routines, activities or staff. A student may become overwhelmed or anxious when changes are made to familiar routines, activities or schedules, causing them to become inflexible. Students who experience this problem may have trouble making transitions during the school day (from lunch or gym back to classroom work), tolerating changes in schedules, adjusting to changes in staff, etc. In extreme cases, even seemingly simple transitions, such as from sitting to standing, can be difficult and cause stress.

Causes

Inflexibility is often associated with damage to the frontal lobes, the most common site of injury in TBI.

Solution

Help inflexible students make it through the day with minimal stress for everyone.

Strategies

- **Plan ahead**

When a student knows what to expect, they have less anxiety. This reduces the chance of the student becoming inflexible. If you know you need to change a routine, first tell the student what the change will be so he will know what to expect. Next, allow time to practice so there will be some familiarity with the new routine. It can also be helpful to teach the student some specific self-talk to use during the transition. For example, “This change is challenging, but it will be ok.”

Example: “Today will be the last day you work on your homework assignment before leaving class. Starting tomorrow, you will write the assignment down right before leaving class, and you will start it at home. Today we will practice by writing down the assignment and instructions about where to start when you get home. Then we will put everything away and take a break. After a few minutes, I will have you role play what you will do when you get home. This will be good practice for doing it on your own.”

- **Make associations**

Sometimes it can be helpful for the student to associate herself with a hero who is famously flexible.

Example: If your student likes soccer, you might point out a player who can play several positions or has often changed teams. Then you can encourage her to be like her model and be flexible.

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Strategies continued

- **Use concrete organizers to display schedules**

Organizers can also help a student with accepting changes. Sometimes it helps to use picture schedules to outline the day's activities.

Example: A picture schedule might include photos of the bus, the student's homeroom, different classes the student has, the lunch room, the library or any other places the student goes or activities he or she completes each day. The pictures can be arranged in the order the student will visit each place or complete each activity throughout the day. When the schedule changes, change the order of the familiar pictures and verbally go over what to expect to help changes feel less threatening to the student.

- **Assure the students that some routines will stay the same.**

Often inflexible students use routines for comfort in a frightening world. When one routine needs to change, make sure that they understand that others will remain the same.

Example: "The routine for when you begin your homework assignment has changed, but the routine for doing it and turning it in is still the same."

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Managing Severe Behavior Challenges in the Midst of Crisis

Description of the problem

Many students with TBI have limited ability to control their own behaviors, are often confused and frustrated by the daily requirements of school and are simply angry about the changes that have resulted from their brain injury. Unable to understand their multiple emotions and unable to manage them, it is common for students with TBI to express depression and anxiety by acting out aggressively. It is critical to remember that many of the most severe behavioral challenges demonstrated by students with brain injury are NOT willful or purposeful.

Aggressive behavior, whether physical or verbal, can cause risks to the health and safety of the student and to others and it often results in removal from the classroom or in the worst cases, alternative placement in more restrictive settings.

Strategies

- **Remain calm and positive**

A student’s anxiety can spread to you or others and spiral out of control. If you remain calm and positive, you can interrupt the spread of anxiety and defuse the situation. It models how you want the student to behave and provides positive re-enforcement for good behavior. This is hard to do, especially when students demonstrate significant behavioral challenges. It is useful to routinely practice calm responses to emotionally charged situations with co-workers to create a series of common verbal responses to use when a problem emerges.

Example: Try one or more of the following:

- “OK, you’re not ready. I’ll wait.”
- “Looks like you need a break.”
- “No big deal.”
- “Let me know when you are ready.”

- **Try redirection**

Sometimes you can head off a crisis by redirecting a student to an entirely unrelated task. Make sure the new task is neutral to prevent inadvertent reinforcement of the aggression; you do not want a student to think, “When I threaten to hit someone, I get to go play.”

Example: If your student is getting frustrated in math, try asking them to take a note to the office. This will give them a break and allow you an opportunity to help them “catch up” when they return.

Causes

The parts of the brain that manage impulse control, including control of aggression, are frequently damaged in TBI. In addition, many students with challenging behaviors demonstrated some difficulties with behavioral regulation and impulse control prior to brain injury, and these behavioral tendencies can be exacerbated by brain injury.

Solution

Create intervention strategies to address common situations that result in behavioral challenges before they emerge (e.g., learning to take a break, identifying situations that cause fatigue, engaging in positive physical activities routinely). Use communication strategies to defuse an outburst should one arise. Have a plan to address these situations before they happen.

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Strategies continued

- **Keep everyone safe**

It will sometimes be easier to move others out of the room into a safe space than it will be to move an out-of-control student into isolation. Follow your institutional and state guidelines for physical restraint in extreme cases.

- **Present yourself as a helper rather than an enforcer**

Students have more trust in helpers than enforcers and are therefore, more likely to comply with the helper.

Example: Ask, "What can I do to help you?" or "What do you need to get back in control of yourself?" It might create an opening for verbal intervention; at the very least, it is unlikely to escalate the situation.

- **State the situation clearly and simply**

Sometimes an objective, non-judgmental statement of what has occurred can help a student regain calm. Limit the amount of chaos by choosing a single spokesperson and keeping all communications clear, calm and confident.

Example: Try saying, "OK, you were working on a math problem and something went wrong. When you're ready, we can figure it out and try something else."

- **Choose your battles wisely**

If a student appears to challenge your authority, consider the consequences before reacting. Does it matter? Is this a big enough deal that you have to address it at this exact moment? Is there a way to reach your goal without provoking the student? Only start a battle if you're sure it's what's best for the student's success and you're sure you can win. Just remember, you will not win most battles.

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Memory Problems

Description of the problem

Following a brain injury, memory can be affected in many different ways, including inconsistent memory and deficits in long term and short term memory. Memory problems can present a variety of challenges in a classroom situation for students.

Causes

TBI can compromise memory systems by specific injuries to particular parts of the brain or by microscopic injuries throughout the brain. Sometimes deficits are lifelong and severe; other times they are relatively minor and improve over time.

Solution

Understand the different memory problems commonly seen in TBI and implement compensatory strategies. The strategies you use to help your student will vary depending on how the problem presents and the needs of the individual student.

Strategies

- **Understand the problem**

Students who struggle with memory problems often have difficulty with learning, storing and retrieving information. Often, memory impairments affect new learning without damaging a student’s ability to recall things learned before the injury. Students can also have inconsistent memory problems: They remember one day, but forget the next. This can be very frustrating for a teacher!

- **Plan appropriate accommodations**

Accommodations need to be based on a student’s ability to learn and recall new material. In memory, the rich get richer; the more you know about a subject, the easier it is to learn new things about the same subject. When teaching, relate new information to things students already know. Building associations can also help with retrieval by creating multiple paths to the information.

Example: If you are teaching a lesson on chemical reactions, first draw on previous knowledge that relates to the subject. You might ask students if they have ever baked bread or mixed vinegar and baking soda. Pointing out these are chemical reactions creates associations with previously learned materials and experiences.

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Strategies continued

- **Use errorless learning**

Students with compromised learning systems learn best when almost all learning trials are correct. Trial-and-error learning, where the student is allowed the opportunity to make choices and then given feedback if an error is made, can lead to incorrect learning among students with memory impairments as the error may be what sticks in the student's mind. Instead, set your student up for success by providing coaching or modeling a task while they are first learning a new concept, activity or behavior.

Example: To give your student a spelling test, first provide a spelling list containing only two words. After the student looks at the words, ask her to cover them and write them out on her paper without looking. Next, uncover the words and compare. Gradually add more words following this same model: look, cover, copy, compare.

- **Use external reminders and organizers**

Whether students can use datebooks, appointment calendars or memory books (paper or electronic) on their own or with adult help will depend on their abilities. Prospective memory (remembering things that will happen, like an appointment or assignment deadline) tends to fare worse in a brain injury than retrospective memory (remembering things that have already happened). Therefore, external aids to organize what a student needs to do can be vital to school success.

Example: Help create a class assignment calendar for the student with a brain injury. Ask the student to check the calendar every day for daily tasks as well as look ahead for tasks that are coming up. Monitor the use of the calendar with the student as needed.

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Slowed Processing Speed

Description of the problem

After sustaining a brain injury, students may have slowed processing speed that can contribute to problems with learning. It can take longer to understand, think about and respond to questions.

Causes

Damage that commonly occurs to the brain during a TBI can significantly slow processing speed. Sometimes, when the brain is injured there is a breakdown in the ability to transmit information properly.

Solution

Help students compensate for slow information processing.

Strategies

- **Understand the problem**

Slowed processing speed can contribute to problems in areas such as attention, memory, decision making, problem solving, analysis, initiation, organization and planning. It is important to understand how it is impacting your student and to work with parents, teachers and support staff to put in place accommodations that meet your student's individual needs. Participating in classroom discussions can be frustrating and confusing because by the time the student grasps a concept or formulates a response, the conversation has moved to another subject. While they were working hard to process the last information and form a response, they may have missed the beginning of the conversation about the new concept and have no idea what the current topic is.

Example: A student with slowed processing speed may be able to follow along in a lecture, but stopping the lecture and asking that student a specific question may not be effective because the student would need to quickly access the information and formulate a response. Instead, call on a different student and ask the student with a brain injury at a later time.

- **Use the same routines**

Learning a new routine takes more processing energy than following a familiar routine. As with all things, the more you practice a skill the better you get at it. Keep instructional routines stable and familiar so they can become as automatic as possible. Establishing routines that are used daily in the same situations helps all students to be successful.

Example: A student will be more likely to remember to turn homework in if it is done at the same time (ex. beginning of class, just before leaving, etc...) in each class throughout the day.

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Strategies continued

- **Use organizational supports**

The use of organizational supports will help to minimize processing requirements and allow the student to focus on the content or meaning of what is being taught rather than the structure in which it is being presented.

Example: Provide written plans, outlines or agendas (using words or pictures as appropriate to the task and the student) to help students stay organized and oriented within a task.

- **Use nonverbal supports**

Spoken language requires rapid processing, even if you speak slowly. Use outlines, pictures, symbols and gestures to reinforce what you say and keep it in the student's mind longer than your spoken words.

Example: A daily schedule written on the whiteboard will serve as a nonverbal support that will help the student throughout the day.

- **Check understanding of directions**

Students with slow processing speed often miss directions or do not understand them completely. Make sure the student understands instructions and new information before moving on to something new.

Example: Ask the student to repeat the instruction or information back to you before moving on to something new or giving more directions.

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APPENDIX C

BUDGET NARRATIVE

The Center on Brain Injury Research and Training (CBIRT) is a center at the University of Oregon. As a division of the Oregon University System, CBIRT conducts its business in accordance with established state policies without regard to source of funding. Funds are requested for a 2-year period, October 1, 2015 through September 30, 2017. The total amount requested to fund this two-year proposal is \$825,077.00 with itemized costs outlined in the budget narrative.

Personnel/Project Staff

The below job descriptions constitute the project staff. The qualifications for the positions are described below the job title. Personnel costs are computed at current 12-month salary rates for each year. All salary payments conform to the Oregon State System of Higher Education policies.

The staff for this proposed project would have the appropriate training and experience to conduct and evaluate the proposed studies. The project staff positions are described below with the anticipated yearly Full Time Equivalent (FTE) needed. The Yearly FTE table is a summary of all FTE for all positions and the Salaries table illustrates the salary the FTE for each position represents.

Project director/principal investigator. This position will be funded at .30 FTE for year one, and .30 FTE in year two. The Project Director / Principal Investigator will oversee all aspects of the project, including consultation with the advisory panel, evaluation activities, data analysis and interpretation, preparation of the final report and manuscripts, and dissemination activities. The estimated yearly pay for this position will

be \$36,000 in year one, and \$36,000 dollars in year two for a total of \$72,000.

Co-investigator. This position will be funded at .20 FTE in year one, and .30 FTE in year two. The Co-Investigator will lead the measurement development efforts, consult on the design of the Phase 1 and Phase 2 evaluation studies, and conduct all statistical analyses for the project as well as assist with dissemination activities. The estimated yearly pay for this position will be \$15,000 dollars in year one, and \$25,207 dollars in year two for a total of \$40,207.

Project coordinator. This position will be funded at .20 FTE in year one, and .25 FTE in year two. The Project Coordinator will take a lead role in content development of measures, assist with refinement of the group design evaluation, coordinate the Phase 2 study and data collection and will be involved with dissemination activities. The estimated yearly pay for this position will be \$11,970 dollars in year one, and \$14,962 dollars in year two for a total of \$26,932.

Project coordinator. This position will be funded at .35 FTE in year one, and .50 FTE in year two. The Project Coordinator will be responsible for research participant recruitment, coordination of evaluation activities, data management, coordination of the advisory panel, and consultant and advisory panel activities. This position will have primary responsibility for data management across Phases 1 and 2. The estimated yearly pay for this position will be \$15,939 dollars in year one, and \$24,012 dollars in year two for a total of \$39,951.

Information specialist. This position will be funded at .05 FTE for year one, and .05 FTE in year two. The Information Specialist will conduct reviews of current literature and resources as needed to support the study. The estimated yearly pay for this position

will be \$2,842 in year one, and \$2,842 dollars in year two for a total of \$5,684.

Six data collection specialists. These six positions will each be funded at .10 FTE in year one, and .80 FTE in year two. The Data Collection Specialists will be responsible for all real time data collection in Phase 2. Year one FTE will be preparation for year two activities. The estimated combined yearly pay for these positions will be \$18,000 in year one, and \$154,350 dollars in year two for a total of \$172,350.

Yearly FTE

JOB TITLE	Year 1 FTE	Year 2 FTE
Project Director	.30	.30
Co-Investigator	.20	.30
Project Coordinator	.20	.25
Project Coordinator	.35	.50
Information Specialist	.05	.05
6 Data collectors	.10	.80

Salaries

SALARY	Year 2	Year 3
Project Director	36,000	36,000
Co-Investigator	15,000	25,207
Project Coordinator	11,970	14,962
Project Coordinator	15,939	24,012
Information Specialist	2,741	2,741
6 Data collectors	18,000	154,350
YEARLY TOTAL	99,650	257,272
TOTAL		356,922

Fringe Benefits

Fringe benefits include FICA, medical and dental insurance, industrial accident insurance, and unemployment benefits. Actual rates vary by individual and are listed in the budget and were calculated using the University of Oregon's fringe rates calculations. The Fringe Benefits table shows the fringe benefits cost per job title across the two years.

Fringe Benefits

FRINGE	Year 2	Year 3
Project Director	18,758	15,802
Co-Investigator	5,592	9,941
Project Coordinator	3,352	4,852
Project Coordinator	9,882	14,888
Information Specialists	1,535	1,535
6 Data collectors	7,563	95,361
TOTAL		207,819

Travel

Travel cost estimates for the project Data Collectors are based on current State rates in Oregon of meals at set per diem rate of \$52.00 per day and mileage at \$.56 per mile. The Travel table summarizes travel costs associated with this project.

Data collector travel. Travel costs are included for the six data collectors. These positions will be paid mileage for their travel to the six schools across the state of Oregon in which they will be conducting a minimum of 180 observations in Phase 2. Funds are allocated at an average of \$100 per observation for mileage (180 x \$100) for a total of \$18,000. If it more cost effective for data collectors to stay in lodging rather than drive the mileage allocation will be used for lodging. Per diem is calculated at (180 x \$52) for a total of \$9,360.00.

Travel

TRAVEL	Year 2	Year 3
Mileage	0	18,000
Per Diem	0	9,360
Yearly Total	0	27,360
TOTAL		27,360

Assessment Advisory Panel

Funds are budgeted during Years 1 for the Advisory Panel (12 members). The Advisory Panel members will be available for ongoing consultations over the course of

the project as well as contributing to regular meetings. Each member will be paid a \$400 honorarium annually that compensates them for their contributions to the process. The Assessment Advisory Panel table summarizes the costs associated with the advisory panel in year 1.

Assessment Advisory Panel

ASSESSMENT ADVISORY PANEL	Year 1
Assessment Advisory Panel	4,800
Yearly Total	4,800
TOTAL	9,600

Participant Payments

Participants will be paid for being part of the studies. Funds are included for subject activities in Years 1 and 2. The Subject Payments table summarizes subject payments across the two years of the project.

Phase 1. A group waitlist design study will be conducted in Year 1 with 128 subjects at \$225 for each the completion of six of assessments. The total cost for participant payments will be \$28,800.

Phase 2. A single subjects multiple baseline study will be conducted in Year 2 with 6 teachers and students at \$200 for the teachers at the completion of the intervention and \$500 upon completion of the ten classroom observations. The total cost for Phase 2 participants will be \$4,200.

Subject Payments

SUBJECT PAYMENTS	Year 1	Year 2
Phase 1 educators	28,800	0
Phase 2 educators	0	4,200
Yearly Total	28,800	4,200
TOTAL		33,000

Other

It is anticipated there will be additional costs that do not fit into the before highlighted categories. Specifics include project supplies and duplication, telephone, and rent. These areas of addition cost are described below and the Other Costs table summarizes the costs.

Project supplies and duplication. A total of \$2,500 is included to cover the cost of project-related consumable office supplies and materials including paper, pens, binders, etc., as well as costs of copying a variety of materials for this project across the two years. Additionally, a total of \$7000.00 is included to provide computers to the six data collectors assigned to this project.

Long distance telephone. A total of \$2,500 is included to cover the cost of Telephone and fax related to the project. Telephone and fax provide the means to communicate with consultants and for project staff to communicate with participants, and the US Department of Education. The Center on Brain Injury Research and Training maintains an 800 line so that participants can reach staff without charge. This project will cover a portion of the cost of that line across the two years.

Rent. A total of \$10,000 is included to cover the cost of rental space. Funds are included for rental costs for the building in which the project will be completed.

<i>Other Costs</i>		
OTHER	Year 2	Year 3
Supplies and Duplication	8,250	1,250
Long Distance Phone	1,250	1,250
Rent	5,000	5,000
TOTAL		22,000

Indirect Rate

Indirect charges are included at 26% of the total direct across each of the three years. The two-year total indirect for this project will be \$168,376.00 and is included in the total amount asked to fund this project.

Budget Summary

This two-year grant is requesting a total of \$825,077.000. This amount will be adequate to cover all of the outlined costs in the budget section of the grant proposal.

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