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Teaching Quality in South Texas: Examining the Factor Structures of the Modified Principles of Adult Learning Scale for Students at a Four-Year, Hispanic Serving Institution

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TEACHING QUALITY IN SOUTH TEXAS: EXAMINING THE FACTOR STRUCTURES OF THE MODIFIED PRINCIPLES OF ADULT LEARNING SCALE FOR STUDENTS AT A FOUR-YEAR, HISPANIC SERVING INSTITUTION

by

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…"In all your ways acknowledge Him, and He will make your paths straight"

Proverbs 3:6

I give all credit to the Creator and to his blessings who led me and protected me in this journey. There are many persons I have to acknowledge that helped in innumerable ways in this journey. I have had many mentors throughout the years and in many ways they are all part of my journey that led me to this point, but I will especially acknowledge the love and friendship of my wife and family. I have been supported in everything that I have endeavored to accomplish in many areas of my life and I am eternally grateful.

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DEDICATION

I wish to dedicate this work to the memory of my parents, Alicia Cisneros Tejeda and Rogerio Martinez Tejeda who provided me with the love, support, and example to be a man of my word and to work hard, and to my wife Isabell and my four children.

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University of the Incarnate Word, 2023

The purpose of this survey study was to explore the factor structure of a newly adapted survey called the Modified Principles of Adult Learning Scale (MPALS) with students at a 4-year Hispanic Serving Institution. The examination of the factor structure of the new instrument was done in order to analyze student perception of professor's instructional approach (i.e., application of constructivist Learning Theory). The MPALS is a 44-item questionnaire that upon analysis yielded three factors, titled Student Centered, Subject Centered, and Teacher Centered, which supports its use as a student measure of instructional approach consistent with constructivist Learning Theory. The experience of engaging this tool may provide respondents with a framework for insight into their own opinions about teaching and learning as students and affect how they will teach and their personal philosophy of education and instruction. Faculty might benefit from utilizing this instrument to examine student perceptions about the nature of instruction. Administrators and other educators may explore the use of the MPALS as a tool to predict student success based on the match between student perspective of instruction and instructor practice (or perspective).

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Chapter 1: Introduction to the Research

The mission of higher education is to educate people to help individuals become free thinkers who will contribute positively to society (Thelin, 2011). There are differences in how professors deliver instruction to achieve the goals of attaining and maintaining skills that bolster successful existence in society. Some traditional teachers use direct teaching behaviors like lectures and other teacher-centered and subject-centered methods (Fischer & Hänze, 2019). Some higher education teachers use constructivist and student-centered teaching principles, the philosophical opposite of traditional didacticism (Elander & Cronje, 2016; Hoidn, 2016; Trinidad, 2020). Scholars argue that effective teaching that is transformational and socially acceptable requires an epistemology that asserts social interaction and collaborative learning (Kidron & Tall, 2015; Ott et al., 2018).

Studies indicate that social interactions where students seek help from their teachers, peers, and support systems have increased self-regulated and self-directed learning, resulting in student retention and academic success (García-Ros et al., 2019). In addition, collaborative learning is exemplified in experiential learning that students enjoy, which results in deeper understanding (Wurdinger & Allison, 2017). Further studies on the effects of group learning indicate that interaction leads to experiences that shape motivation for knowledge and increased aptitude for human relations (Hadwin et al., 2018; Järvenoia, et al., 2020).

Recently, there has been a global movement to increase higher education access due to issues with low enrollment. Further, a lack of higher education completion affects students of a minority background, compounded by the social stratification and inequality that exists in most higher education institutions (Mishra et al., 2020). Finally, this completion crisis exists because

low-income families struggle to balance work and school, particularly first-generation students and new immigrants with limited knowledge of how colleges function (Scott-Clayton, 2015).

Issues in Instruction

Teaching in higher education has been underscored by traditional objectivist principles that underlie a didactic teaching delivery. Teaching in higher education encompasses a variety of teaching techniques, especially using technology (Chan, 2010; Denzin & Lincoln, 2000). Professors in the higher education system have long used authoritarian traditionalist positivistic teaching, wherein teaching and learning are teacher- and subject-centered and less student-centered (Banachowski, 1996).

Reports indicate that higher education teachers use less student-centered instruction in higher education (Kezar & Gehrke, 2014). This issue in teaching has led to a deterioration in graduation rates and student persistence (Jacoby, 2006). In a study on the effects of adjunct faculty on instructional techniques and commitment to teaching, Umbach (2008) found adjuncts use less educational innovation, less culturally sensitive approaches, and spend less time preparing for class and advising students. Jarvis (2006) indicates that teaching involves humanity and personality in the interaction between teacher and student and explains that this interaction is a relationship with a "moral component" (p.25). Some teachers are not student-centered and can present problems for some students due to power imbalance. Teachers become the sole arbiter of knowledge, and students may not learn as well as possible (Kompa, 2012).

Differences in the Delivery of Instruction

Teachers' delivery of instruction sometimes presents problems for minority and first-generation college students (Serin, 2018; Welner & Carter, 2013). Students in these two categories have specific needs that are often unmet in higher education (Banks & Dohy, 2019).

This study occurs at a newly designated Hispanic Serving Institution (HSI) with many First-Generation College Students (FGCS). First-generation college students (FGCS) are the first in their families to attend college. Higher education institutions must inspire students to have more control of their learning and experiences to encourage student success. In addition, higher education institutions must pay attention to the needs of students. One way to accomplish this is to survey a sample of the population of a higher education institution and try to ascertain what students think about the instruction they are receiving.

Statement of the Problem

There is a need to move from subject-centered and teacher-centered instruction to student-centered (Peng & Kotak, 2020). Another problem in current higher education teaching is the absence of active learning pedagogies that call for mentorship between faculty and student (Baldwin & Wawrzynski, 2011; Harris & Lee, 2019). Although there has been a movement since the 1960s to become more student-centered, there are still limitations to the teacher-student relationship that quell student achievement. Standardization and competency-based learning inherent in our education systems are still pervasive and dampen teaching and learning, and the quality time teachers can develop student-centered learning environments (Bennett & Brady, 2012; Orón Semper & Blasco, 2018). In addition, some professors lack teaching qualities associated with the tenets of higher-level thinking as critical thinking, reflective thinking, reflection, critical reflection, and self-monitoring, which have a positive and significant impact on understanding (Ghanizadeh, 2017). Finally, there is a need for a survey based on constructivist theory to explore student perception of the instruction they receive at a 4-year HSI.

Purpose of Study

This survey study aims to explore the factor structure of a modified version of the Principles of Adult Learning Scale (PALS) instrument with students at a four-year HSI to capture their respective perceptions of the instruction they are receiving. The PALS is a teacher self-assessment tool measuring teacher-centered and student-centered teaching styles (See Appendix A). For this study, I modified the PALS instrument by rewording it for use by students. The Modified Principles of Adult Learning Scale (MPALS) is the new survey instrument (See Appendix B). This study examines student perceptions of the quality of instruction based on constructivist theory as a result of analyzing the factor structures of the new survey instrument.

Significance of This Study

This study is significant as it focuses on students' needs to be heard and to learn to think critically. Higher education faculty may use the findings of this study to become more aware of their teaching behaviors and their effect on students. Teachers can analyze their teaching to improve their pedagogy and relationships with students. Students benefit from knowing what is affecting their learning and how they can improve their study habits and responsibilities as students.

Study Design

This study is a quantitative survey design that examines the factor structures of the modified survey instrument. This examination enabled the investigator to hypothesize the perception of students about their professor's teaching styles at a higher education institution. The original instrument, the PALS, is a 44-item questionnaire. Conti (1985) used the survey to examine the relationship between teaching style and adult student learning. The instrument is

valid and reliable. McCollin (2000) explains that construct, content, and criterion-related validity were established by "two separate juries of adult educators" (p. 12). McCollin (2000) conducted a pilot study and found that Cronbach's alpha was .89, which is considered very good.

This study utilizes the MPALS, a reworded PALS, designed for students to respond to questions about their teacher's teaching behaviors. The modified instrument was analyzed using exploratory factor analysis.

Research Questions

Research Question 1: Do the results of an exploratory factor analysis of the MPALS instrument support the proposed purpose (i.e., validity)?

Research Question 2: Does the MPALS measure designated constructs of constructivist learning theory previously reported for the PALS?

Theoretical Perspective

The theoretical perspective of this study is constructivist learning theory as it applies to instruction at an HSI. A constructivist worldview holds that truth and reality are variable and subjective, constructed by the individual with multiple meanings, and socially dependent (Creswell, 2014). Therefore, constructivist learning theory is used in teaching and learning as it involves personal self-direction and the construction and accumulation of knowledge via personal experience (Chuang, 2021; Swanson & Holton, 2009).

It is also important to understand that teaching styles and behaviors are affected by the belief system of teachers. Teacher's epistemological beliefs, how knowledge, the process of knowing, and its impact on thinking predicates differences in teaching (Päuler-Kuppinger, & Jucks, 2017; Schraw & Olafson, 2002). Creswell (2018) defines the constructivist worldview as involving an individual's "subjective meanings" (p.8). These meanings imply that there is

variation in an individual's understanding of a given concept that may come from the influence of education and the relationships with teachers. Katz and Halpern (2015) stressed the importance of constructivist learning theory through extensive cognitive involvement as it enhances learning through integration, retention, and understanding of information.

Definition of Key Terms

Constructivist learning theory. Students are self-directed and construct their own learning through experience.

Hispanic Serving Institution. An institution of higher education has an enrollment of at least 25 percent full-time equivalent undergraduate students who identify as Hispanic.

First generation college student. Students whose parents did not complete a baccalaureate degree (Engle, 2007; Higher Education Act of 1998).

Teacher-centered instruction. The teacher is the sole judge of knowledge to students.

Student-centered instruction. The teachers are responsive to student needs.

Delimitations and Limitations

The study is delimited to the Educator Preparation Program in the College of Education and Human Development at an HSI. The study is a quantitative survey design that will provide data from students at this institution to contribute to an increase in the quality of instruction. One's philosophy about what constitutes better-quality instruction is a strong indicator of preferences in education. Students, like professors, have teaching and learning preferences. A limitation is that professors may see their teaching style as high-quality, whether teacher-centered or student-centered. Another limitation is that students' learning preferences may differ. For example, some students may prefer the traditional teaching model, which is teacher-centered

and subject-centered. In contrast, some students prefer more student-centered teaching involving more experiential learning activities (Magulod, 2019).

This paper is five chapters. Chapter one provides an overview of the study. Chapter two is the literature review. Chapter three is a full elaboration of the research methodology. Chapter four details the results of the data analysis. Chapter five summarizes the research findings and discusses the implications for further research, policy, and practice.

Chapter 2: Literature Review

The literature review clarifies the ideas relevant to constructivist learning theory and explores how students perceive their instruction. It also considers Adult Learning Theory (Merriam, 2012) as an underlying basis of the scale/metric that is the subject of this study. The participants of this study are primarily Hispanic and FGCSs that attend an HSI. Therefore, there is a literature review of these two groups, HSIs, and teaching practices in higher education.

Articles relevant to higher education instruction, the professoriate, student characteristics, HSIs, and FGCSs, were searched using the university online library and Google scholar. The search also included studies of full-time and adjunct faculty teaching effectiveness and the impact of various teaching styles and practices on higher education faculty in general. Further, theoretical literature surrounding college-level teaching articles and those for quantitative and qualitative characteristics were reviewed (Pan, 2016). Finally, there is the inclusion of quantitative studies about faculty support, problem-based learning, student-centered instruction, student perceptions of teacher effectiveness, HSIs, and FGCSs.

Constructivist Teaching

Educators understand that their role in teaching adults is to incorporate activities based on students' understanding of the nature of truth. Therefore, a student's construct of what they believe is authentic is relative to the knowledge they have formed. Students benefit from learning activities that allow them to self-assess their own needs and multiple views (Hunter, 2008). The learning also necessitates the mindful educator function as a mentor and guide (Chuang, 2021). Further, educators can use student-centered metacognitive activities, collaborative learning, problem-based learning, and authentic learning experiences (Dewey, 1916; Kuhn, 1962; Piaget, 1976; Vygotsky,1978) to increase knowledge. Teachers who utilize constructivist principles in

their classrooms create constructivist learning environments which facilitate the internalization of new meanings (Kim, 2005; Loyens et al., 2009; Mensah, 2015; Wang, 2009).

Teacher Versus Student Point of View

Many studies were from the point of view of the teacher towards the student. The student's perspective is important, not just from the student rating of teachers, which is controversial because of the implicit bias and subjective frames of reference (Reinsch et al., 2020; Van der Schee, et al., 2019). Kane & Staiger (2012) showed that teacher evaluation is faulty and lacks professional feedback because 98 percent of teachers are "satisfactory" in their ratings. The researcher found no instrument which measured a student's perspective of teaching at an HSI using a constructivist teaching and learning theory.

Quality of Instruction

Higher education's mode of instruction is primarily teacher-centered consisting of mostly lectures, seminars, and subject-centered (Cotterill, 2015). Higher education has some issues with rigor in teaching performance (Baldwin & Wawrzynski, 2011; Banachowski, 1996; Jacoby, 2006; Kezar, 2013; Schutz et al., 2013; Umbach, 2008). Lecturing has a place in student learning as it is a technique that primes the thinking processes. However, it should be part of engaging students in activities, and involving collaborative, cooperative, and problem-based learning (Prince, 2004).

Student Perceptions of Instruction

Students have first-hand knowledge of their teachers and can discriminate between their feelings about a teacher and the quality of teaching (Kyriakides, 2005; Peterson, et al., 2000; Sprinkle, 2009; Wilkerson et al., 2000). Therefore, students are given precedence in this study as a primary data source.

Learning Environment

Faculty should support students by forming cooperative learning communities (Lightweis, 2013). In major longitudinal studies and syntheses of 20 years of research regarding the effect of college on students, researchers found that intellectual, analytical, critical thinking, and moral skills were increased due to the effort of students once faculty-provided environments that emphasized intrinsic motivations (Astin, 1993; Kuh & Hu, 2001; Pascarella & Terenzini, 2005; Terenzini & Pascarella, 1991; Umbach & Wawryzinski, 2005).

The idea that faculty provide learning environments that are supportive and conducive to intrinsic motivations requires time and effort for planning lessons that appeal to higher-order thinking skills like creativity. Learning environments are a part of student-centered instruction based on the student's individual needs for self-sufficiency and autonomy resulting from creative thinking (Brown, 2008). Creative thinking is a characteristic that emanates from students becoming independent students that plan, set goals, and self-monitoring as a result of differentiated instruction (Tomlinson, 1999). Developing self-regulation, or self-direction in learning, comes from the choices given to students to demonstrate their knowledge in various fashions by faculty who lead and "teach students how to learn" (Bembenutty, 2009, p.567). Self-direction stemming from freedom of choice is also a good predictor of academic performance (Loyens et al., 2008).

Student Motivation

Keeping students' interest levels high in teaching is sometimes challenging. College students are typically intrinsically motivated but can still benefit from unique and varying instructional practices. Espousing self-determination theory, Vansteenkiste et al. (2006) explained how student motivation is a product of differentiated teaching techniques that utilize

autonomy-supporting behavior, which they describe as empathetic gestures on the teacher's part that prompt intrinsic motivation. This choice enhances self-directed behavior, which promotes an increase in positive learning outcomes. Much of the research of this review regarding higher education faculty instruction and students involved the behavior or performance of faculty in their teaching and support of students that translates into an outcome of autonomy that students need for increased learning opportunities.

Glasser's Choice Theory (2010) shows that students choose their behavior based on their needs for survival, love and belonging, power, freedom, and fun, motivate decision-making and execution of those decisions. Glasser (2010) explains that autonomy is freedom humans desire and work for to be happy. Students who are allowed freedom of choice in their learning are happy and have better outcomes if certain conditions are met. Therefore, it is important to recognize that freedom of choice is not achieved simply by an individual's volition and that conditions are precursors to freedom of choice in learning.

Bernot and Metzler (2014) found that autonomy most conducive to learning involves effective guidance by caring and supportive faculty, which leads students to active learning, problem-based learning, case studies, presentations, and discussions with peers (Kantar, 2014). Student choice in these academic endeavors leads students to deeper attention and thinking. Motivation and learning transfer are correlated with knowledge application when students use elaboration skills while solving authentic problems (Brandon & All, 2010; Loyens et al., 2007).

Student-Centered Instruction

Students have more of an active role in their learning which has important implications for teaching. Cornelius-White (2007) conducted a meta-analysis of about 1,000 articles and 119 studies about student-centered relationships and constructivist instruction strategies from 1948 to

2004 and found positive correlations with the following: critical and creative thinking, I.Q. increase, participation/initiation, motivation to learn, engagement, higher order thinking, self-esteem, social connections, and social skills, as well as behavior improvement. The correlations were due to students showing genuine concern for their voice, their individual and cultural differences, and having a student-centered belief.

Active learning, thus, is a two-part process. First, it involves professors leading with differentiated teaching techniques and students' responses involving actions initiated by thinking processes. Thinking consists of cognitive activity involving an emotional response (Slavin, 2012). Professors evoke emotional responses with empathetic behaviors that help create a nurturing and collaborative learning environment. Students feel the sensitivity of their professors and reciprocate, usually by not only following course requirements but also increasing their motivation to learn through self-directed activities.

Professors and students construct affective interest that builds community in a symbiotic and systematic manner based on the relationships between professors and students mediated by effective communication. For example, Mazer (2013) found that professors who had clarity, immediacy, and personalized behaviors (e.g. proximity, eye contact, and warm vocalizations) would "energize students, stimulate emotional interest, and engage students so that they pay more attention to course content and learn more" (p. 93).

Constructivism and Student Engagement

Constructivist learning theory posits that the student constructs meaning and that knowledge is not passively received but constructed through active mental processes about subjective experiences (Boghossian, 2006; Glasersfeld, 1990; Riegler, 2012). Pardjono (2016) offers a condensed definition of constructivism as experiential learning that leads to active

inquiry, noting that learning is a behavior change. Professors who understand constructivism get to know their students, are sympathetic and empathetic in their communication of ideas with students and take note of the dynamics of what students experience as they construct meaning. The sensitivity of professors is a catalyst in the symbiotic relationship between professors and students. It helps mediate and negotiate the process of communication, which facilitates student engagement (Borg et al., 2016).

The ability of professors to instruct students relies on creating an effective learning environment (community) that promotes interaction and active learning, which possesses an emotional element—affect. Interaction is necessary for students to learn and is part of the social component of the constructivist theory that postulates that learning happens through students interacting with their peers through cooperative learning, project-based learning, and discovery (Vygotsky, 1978). Another sort of cooperative learning is interaction with another knowledgeable person, also known as Vygotsky's cognitive apprenticeship (Slavin, 2018), which defines the professor as a facilitator of knowledge and a main principle of the professor-student relationship (Skerry et al., 2013).

Student Learning Experiences

Student learning experiences vary in higher education. Service-learning capstone project enhances several related skills, including working in teams and interpersonal skills (Gardner, 1983). In a study of graduate students' perceptions of the best learning experiences in an online program, students revealed that professor's commitment to student learning was due to the allowance of creativity, inquiry, and community-based activities that increased their ability for critical thinking and problem-solving (Holzweiss et al., 2014). Student engagement also means their interactivity with the content of their coursework that comes from the various activities that

help students create meaning. The variety of activities is particularly helpful because students have a variety of learning styles. In a mixed-methods study, Sullivan et al. (2013) found that students were most satisfied with their professors when professors accommodated their learning preferences and had a student-centered teaching philosophy. It is the professor's skill at teaching adults with a student-centered philosophy which is also part of Mezirow's Transformational Learning Theory (as cited in Merriam et al., 2012), that focuses on social change that comes from "personal reflection and dialogue with others," (p.293).

Student Needs

Students are partial to teachers utilizing teaching methods emphasizing individual needs. Literature suggests some Hispanic and FGCSs come to higher education ill-prepared and require more support. In a study of 3,445 FGCSs at an HSI, Silvas et al. (2017) indicated that since retention is a high priority in higher education, there is a need to find out what predictors might uncover the factors that would increase retention rates. Data analyses showed that student retention and success depended on pre-college variables such as ranking percentile, ACT/SAT scores, and admission status. FGCSs are twice as likely to not complete college as their peers (Westbrook & Scott, 2012).

Hispanic Serving Institutions

Enrollment increases in higher education are driven by an increase in Hispanic student numbers, indicating the states' and nation's demographic shifts. With this increase in enrollment comes the need for service to the students, as the name HSI implies. Unfortunately, HSIs are primarily focused on Hispanic enrolling and are not necessarily Hispanic serving, producing inequitable outcomes for Hispanic students (Contreras et al., 2008). A study of 88 Hispanic students cites a lack of courses that are culturally and linguistically relevant (Garcia 2016).

Ample literature shows that student identity is important to consider and develop within curricula (Banks, 2010; Ladson-Billings, 2014; Onorato & Musoba, 2015).

Pathways and Support

Pathways, support, and mentorship are vital components lacking in HSIs (Contreras Aguirre et al., 2020; Garcia et al., 2019). A study of 198 graduate students at an HSI found that student success required institutional resources, social capital, and motivational factors like a sense of personal achievement, peer support, supportive faculty, and mentorship (Tran et al., 2016). That same study indicated Hispanic students were likelier to use writing support services than non-Latinx peers. Garcia and Ramirez (2018) found ways to serve students with social capital that empowers students and develop structures and policy that meets the needs of minority students (Coleman, 1988). Faculty, counselors, and support staff are called on as mentors to provide the social capital to help students develop the self-efficacy and grit required to persevere in academic, personal, and career development (Tovar, 2015; Santos & Reigadas, 2002).

Problem With Diversity

A lack of diversity in the faculty and leadership in higher education impedes the service of Hispanic students (Contreras 2018). As it follows, social capital points to the value of meaningful relationships that form the basis of mentorship and cultural responsiveness. Significant relationships have communication and language at their core. Issues of miscommunication occur because of more complex race relations. Students and teachers are seen as linguistically inferior or deficient, adding to the already eroded landscape in teacher-student relationships (Rodriguez & Reis, 2012). In contrast, pre-service teachers' studies show that

translanguaging (the use of different languages together) as a practice and pedagogical intervention produces positive outcomes for teachers and students (Musanti & Alma, 2017).

In HSIs, relationship building through mentorship and teaching is ultimately about successful interaction between students, faculty, and support staff (Brown et al., 2020). Lack of diversity in institutions is marked by relation strain due to various societal problems, such as language differences and racism (Garriott et al., 2019). With student identity connected to the college experience (Arana et al., 2011), HSIs are responsible for creating an environment where students feel welcome and supported. A longitudinal study of 30 undergraduates at three HSIs explored how students with varying ethnic backgrounds understood the support received and found summarily that faculty mentors' interaction was critical to meaningful engagement of culturally responsive principles (Ginsberg et al., 2017). It is through the creation of spaces where students in HSIs feel comfortable and supported that learning happens.

First Generation College Students

Most FGCSs at HSIs are from low socio-economic backgrounds, do not have encouragement from family to attend college, and need mentorship and support to persist and succeed in college (Pascarella & Terenzini, 2005; Stewart et al., 2015; Wood, 2012).

FGCSs have unique challenges and needs. Davis (2012) contends that first-generation status as an important category may or may not relate to socioeconomic, immigrant, race, or gender categories. Schmidt & Akande (2011) recommends that awareness of individual needs and cultures is vital in addressing FGCSs.

A grounded theory study found that FGCSs that persist show resilience and have some common factors that motivated them to attend college, like a love of reading, that they were considered strange or different, and were determined to have a better life (Blackwell & Pinder

2014. In addition, FGCS's awareness and understanding of their socio-political status may inform teachers to leverage their prior learning (Castillo-Montoya, 2017). Like HSI students, academic mentoring and social capital facilitated by higher education faculty, administrators, and policymakers with rigorous accountability can meet the needs of FGCSs (Almeida et al., 2021). There are programs in the United States addressing the unique needs of FGCSs with developmental supports (modularized, compressed, contextualized, and corequisite courses), including

Summary

The common themes in the literature about higher education instruction lean toward constructivist assumptions as precursors to positive outcomes. There are positive outcomes associated with professors that use constructivist pedagogy that favors an effective professor-student relationship, which helps motivate students through the creation of positive learning environments and allows for freedom of choice, active inquiry, and creativity. Professors who use a constructivist learning paradigm also use problem-based activities that engage students in higher-order thinking. All these tenets combined help solidify meaning-making and self-direction. For this study, it is important to recognize that there is some overlap in several of these constructivist tenets, and they will need to be categorized. Although the structure of higher education is typically more traditionalist and objectivist (teacher and subject-centered), there is evidence of professors becoming more student-centered.

The constructivist learning theory purports that knowledge is a construct of the individual, that learning is social and cooperative, and that an effect is involved stemming from choice and autonomy that leads to self-direction. According to the literature, professors who are student-centered are successful in their teaching with positive outcomes for their students.

However, some evidence in the literature discusses the problems associated with teaching, including less rigor and less time spent teaching and with students, as well as less rigor in graded assignments.

Most of the research about student perceptions has been about teaching competence, meeting the needs of diverse students, course content, professor qualities as a person, and persistence to complete coursework and graduate without distinguishing between faculty levels (Pavlina et. al, 2011).

Chapter 3: Methodology

Research Design

This survey study aims to explore the factor structure of a modified version of the PALS instrument with students at a 4-year Hispanic Serving Institution to capture their perception of the instruction they are receiving. Capturing student perception of instruction received involves examining the latent factors extracted from the Modified Principles of Adult Learning Scale (MPALS). A survey method is preferred for this research as it is an expeditious manner of data collection with a rapid turnaround (Creswell, 2018). In this section, the specific methods and procedures used to answer the study's research questions will be reviewed and explained.

Participants

The population sample is a convenience sample of undergraduate and graduate students from the College of Education and Human Development at a four-year state-funded HSI. The sample population is a good sample because it represents the population I teach at this institution. At the time of data collection, there were 1,597 students in the college. There were 1,342 undergraduate and 255 graduate students. A letter of invitation to participate in the survey was sent first to the Dean of the College, who then disseminated the letter to the faculty (See Appendix C). The letter included a link to the survey via Qualtrics. Faculty then had the option to invite their students to complete the survey. Students had the opportunity to complete the survey, which yielded 338 respondents.

PALS Instrument

This study employed a quantitative survey design to explore a modified PALS factor structure (Conti, 1985). The PALS instrument is a teacher self-assessment instrument. Forty-four survey questions and responses are measured on a 6-point Likert scale: 1 = Never; 2 = Almost

never; 3 = Seldom; 4 = Often; 5 = Almost always; 6 = Always. Conti (1985) originally designed the survey as a teacher self-assessment to examine the relationship between teaching style and adult student learning.

PALS is divided into seven factors or sub-scales containing elements of teacher-centered and student-centered teaching practices. Factor 1, Student-Centered Activities; Factor 2, Personalizing Instruction; Factor 3, Relating to Experience; Factor 4, Assessing Student Needs; Factor 5, Climate Building; Factor 6, Participating in the Learning Process; and Factor 7, Flexibility for Personal Development (Conti, 1985, p. 11). A higher score on PALS indicates a student-centered teaching approach, while a low score indicates a teacher-centered approach (Galbraith, 1998). In subsequent studies, the instrument was explored and found reliable, and construct, content, and criterion-related validity were defined (McCollin, 2000). After pilot testing the instrument, Cronbach's alpha was used to test the internal reliability of PALS, yielding a score of .89 (McCollin, 2000). (See Table 1.) Sample items from this instrument include: "I allow students to participate in developing the criteria for evaluating their performance in class" and "I stick to the instructional objectives that I write at the beginning of a program."

Table 1

The Reliability of the PALS Instrument as Measured by Cronbach's Alpha

Scale	Number of Items	Reliability
Principals of Adult Learning Scale	44	0.89

Procedures

This study used MPALS, a modified version of PALS. The modified survey consists of a 44-item questionnaire that measures student perceptions about instruction and the teaching behaviors of their teachers. After doing an exploratory factor analysis, the MPALS survey measured the perception of students about their professors' teaching styles at an HSI. The MPALS measures the perception of students about their professors' instruction on a 6-point Likert scale: 1 = Never; 2 = Almost never; 3 = Seldom; 4 = Often; 5 = Almost always; 6 = Always. Because this MPALS instrument is new, it is necessary to conduct an exploratory factor analysis to identify the latent constructs (factors) that are correlated and that underlie the domain of interest inherent in this modified instrument (Field, 2013).

Modification of the Instrument

It was necessary to change the language from the teacher's perspective to that of the student in the MPALS. For example, a PALS item that originally stated, "I provide my students with real-world examples," was changed to "My teacher provides real-world examples." This modification also meant that the instrument would need to be analyzed to explore its factor structure and preliminary analysis of its validity and reliability.

Data Collection

Data collection was conducted electronically via Qualtrics. Individual participants were anonymous, with only an assigned number for referencing. Great care was taken not to create a power imbalance between faculty and students (Creswell, 2012).

Purpose of Study

This survey study aims to explore the factors of a modified survey instrument (MPALS) used to examine student perceptions of instruction at a comprehensive HSI in South Texas. For

this study, teaching styles (behaviors) are either traditional-objectivist (teacher-centered), or constructivist (student-centered). As seen in the literature, professors using constructivist teaching principles are generally perceived to be more student-centered (Cornelius-White, 2007).

Theoretical Framework

The theoretical perspective of this study is constructivist learning theory and how the professors in higher education define it through teaching. The study "follows from a test of theory with the research question and hypothesis follow from the relationship among the variables in the theory" (Creswell, 2018, p.137). A constructivist worldview holds that truth and reality are variable and subjective, constructed by the individual with multiple meanings, and socially dependent (Creswell, 2014; Denzin & Lincoln, 2000; Johnson & Christensen, 2012). It follows that an individual's experience is their own and integral to the most basic tenets of constructivist philosophy.

It is also important to understand that teaching may have differences depending on the teacher's epistemological position (Schraw & Olafson, 2002). Teacher's worldview impacts roles within the constructivist learning theory. Creswell (2018), citing Mertens (2010), Crotty (1998), and others, define the constructivist worldview as subjective, individually determined understandings called "subjective meanings" (p. 8). Although the constructivist worldview ideally fits the philosophy of qualitative researchers in their activities that lead them to understand and interpret phenomena, it is important to note that one's worldview or philosophy leads individuals to action (Guba & Lincoln, 1989).

Research Questions

1. Do the results of an exploratory factor analysis of the MPALS instrument support the proposed purpose (i.e., validity)?

2. Does the MPALS measure designated constructs of constructivist learning theory previously reported for the PALS on which it was based?

Data Collection Procedures

The MPALS was delivered to the participants electronically through Qualtrics. This method of data collection has a "rapid turnaround in data collection" (Creswell, 2018, p. 149) to facilitate and expedite the study.

Role of Researcher

As a researcher, it is important to recognize the possibility of researcher bias. Critical self-reflection (reflexivity) is necessary for awareness and control of discrimination and to keep interpretive validity in portraying the meaning given by participants (Creswell, 2014; Johnson & Christensen, 2012).

Study Site

The site is a south Texas comprehensive HSI university offering 49 undergraduate and graduate degree programs. In addition, 77% of students are Hispanic, and 70% of TAMU-SA students self-identify as first-generation college students.

Sampling and Recruitment

The proper Institutional Review Board application for the study was submitted and approved. The survey is a 44-item questionnaire called Modified Principles of Adult Learning Scale (MPALS). The author of the original scale, the PALS, was contacted to obtain permission to modify PALS for use by students. (See Appendix D)

Sample

I used convenience sampling due to the proximity of students I teach and the fit to the purpose of this study. Anonymity is protected because I cannot see the students' names, and only

a number was assigned to each completed survey. Adequate sample size or, more precisely, sample power is of primary concern when designing a study with sample sizes of 300 as a standard recommendation for a stable factor solution (Field, 2013; Tabachnick & Fidell, 2013).

Procedures

Statistical Analysis

Using a non-experimental research design, I explored the MPALS instrument and examined what latent variables (factors) emerged when using exploratory factor analysis. Exploratory factor analysis is useful as a preliminary statistical analysis tool as it "provides a tool for consolidating variables and for generating hypotheses about underlying processes," which are the building blocks of theory building (Tabachnick & Fidell, 2013, p. 614). This is important for this study because the MPALS is a new instrument to be used by students to describe the instruction they are receiving.

Survey data were uploaded to Statistical Package for the Social Sciences (SPSS) v27 after screening data for missing data and outliers. Respondents with greater than 50% of the survey left blank were not included for further analysis.

Descriptive Statistics

The sample selection from the comprehensive HSI was asked about their age, gender, ethnicity, generation of college attendee, classification, and level of educator preparation. Descriptive statistical analyses were conducted to identify the mean, median, and range for all survey items to ensure no anomalies in the data. Once this was confirmed, a correlation on the R-matrix was run to check for multicollinearity in the data set. I first scanned for correlations above .3 with variables that have a small number of correlations above this value. Then I scanned the R-matrix and looked for any correlation coefficients greater than .9 (Fields, 2013). I also ran

exploratory factor analysis, which is an important statistical tool for exploring and analyzing the structure of the MPALS (Fields 2013). There is no need to check the data for normality as the exploratory factor analysis testing is descriptive and used to summarize relationships between the found factors (Tabachnick & Fidell, 2013, p. 618).

These analyses intended to yield an understanding of the structure of the MPALS relative to instruction, specifically from the student's viewpoint. The original survey instrument from which the MPALS derived measured seven constructs (presented in Table 2) related to instruction with scoring parameters that would identify two polar teaching behaviors, student-centered and teacher/subject-centered teaching.

A Varimax rotation with Kaiser normalization was chosen because there is little relationship expected between some factors and some linearity with others. This idea comes from the original PALS instrument measures two contrasting teaching styles: teacher-centered and student-centered. There are variables within the original factor structure that are colinear.

Exploratory Factor Analysis

In this study, exploratory factor analysis procedures sought to determine what factors emerged from the MPALS and to examine those factors to see what students believe about their instruction.

Steps for Exploratory Factor Analysis. Kaiser-Meyer Olkin's measure of sampling adequacy indicates the patterns of correlations to validate sample size. A value close to 1 indicates patterns are compact, and the factor analysis should yield distinct and reliable factors (Field, 2013, p. 684). Bartlett's test of sphericity shows the significance of correlations between variables and whether they are significantly different from zero, which is important if the sample size is small (Tabachnick & Fidell, 2013).

Table 2

Scoring of the PALS Instrument

Construct	Number of Items	Range of Possible Scores
Factor 1: Student-centered Activities	12	0-60
Factor 2: Personalizing Instruction	9	0-45
Factor 3: Relating to Experience	6	0-30
Factor 4: Assessing Student Needs	4	0-20
Factor 5: Climate Building	4	0-20
Factor 6: Participating in the Learning Process	4	0-20
Factor 7: Flexibility for Personal Development	5	0-25

Principal components analysis for factor extraction and an orthogonal rotation was run because there were uncorrelated factors. The rotation used in SPSS was Varimax with Kaiser Normalization. Its goal is to maximize the variance of factor loadings by making high loadings higher and low ones lower for each factor (Tabachnick & Fidell, 2013, p. 625). In addition, Cronbach's alpha was run for the whole instrument and each factor to test for reliability.

Preliminary Instrument Validation

Reliability

Next, an analysis was conducted to identify Cronbach's alpha level of reliability for each of the three factors within this instrument. According to Hulin et al. (2001), a Cronbach's alpha level of .8 or higher is considered very good.

Nomological Validity

Cronbach and Meehl (1955) maintained that it was necessary to have a nomological network with at least two constructs, one or more theoretical propositions, and operational definitions that allow each construct to be measured empirically. The theoretical framework for

this study is constructivism, and the meanings of the constructs were drawn from the original PALS instrument, which serves as a benchmark for the MPALS instrument.

Convergent Validity

Another way to measure the validity of an instrument is to examine its convergent validity. According to Stevens (1992), one establishes convergent validity by examining the factor loadings for each item within a specific factor. It is recommended that all items should load above .400 within each factor.

Discriminant Validity

The exploratory factor analysis process with Varimax rotation identifies latent constructs of the new survey instrument. This process had not been carried out before with this instrument. It is important not to overestimate the strengths of the relationships or lack thereof between constructs to avoid Type II errors (Field, 2013). Discriminant validity considers that a latent variable shows more variance in the observed variables than other variables within the conceptual framework (Farrel & Rudd, 2009). I searched items and clusters to see if they measure something unique by ensuring there are no dual loadings for items across factors. I deleted any items that dual-loaded.

Researcher Perspective

My perspective leans toward constructivist worldviews and learning theories, resulting in a favorable attitude toward constructivist teaching and learning. I am aware of this fact and tried not to let this influence my analysis, discussion, and future research and practice recommendations. Researcher bias is minimal since this study explores the factor structure of an instrument previously used as a teacher self-assessment and herein issued to students to evaluate their instruction by teachers at this university.

Anticipated Ethical Issues

I anticipated that no ethical issues would be involved in this study as I obtained the institution's correct Institutional Review Board approval and permissions before any formal research. I accepted that I was a guest in the institution and would request minimal assistance in the preliminary work of the study, which involves electronic mail and the notice in the institution's learning management system.

Limitations

This study is limited because it measures students' perceptions at one public HSI in south central Texas. Participants for this study are limited because most respondents are of one ethnicity. Results may be different for participants of other ethnicities. This study collected data at only one point, which may have implications for the replication of the study.

Conclusion

This chapter described the process for data collection and analysis in the execution of this study. First, the original survey instrument and the steps taken to modify it for use by students were explained. Next, the sampling measures, recruitment of participants, and the disclosure of how the data would be collected and analyzed were reviewed. Finally, exploratory factor analysis procedures were discussed as a plan for the data analysis to establish the validity of the MPALS instrument.

Chapter 4: Results

This chapter reports the results from the exploratory factor analysis procedures applied to the MPLAS used to identify the latent variables when given to a sample population ($N = 178$). The Kaiser-Meyer Olkin measure of sampling adequacy indicated a value of .918, showing the sampling is adequate for interpreting the exploratory factor analysis procedures (Field, 2013; Klein & Dabney, 2013).

A minimum sample size of 160 is needed for survey validation if each factor has either four or more items with factor loadings above .6 or factors with ten or more items with factor loadings above .4 (Guadagnol & Velicer, 1988). This study has 178 participants and meets the factor loading requirements identified by Guadagnol and Velicer (1988) (see Table 3). Thus, the current research meets the minimum size requirements for survey validation.

Kaiser-Meyer Olkin Measure and Bartlett's Test

It is important to ensure sampling size adequacy. Thus, Kaiser-Meyer Olkin's measure of sampling adequacy was run, the results of which indicated a sampling adequacy value of 0.918, which was acceptable, and Bartlett's test of sphericity, which was significant ($p = .000$), showing the sample size was adequate for this study.

This survey was designed to measure the various learning preferences students possess. However, it is important to acknowledge that many other factors also impact student learning preference, such as institution, location, demographics, and so forth. The purpose of this study was to provide an exploratory factor analysis demonstrating this new instrument's initial validity and reliability.

Table 3

Rotated Component Matrix

Item	Component							
	1	2	3	4	5	6	7	8
1	0.277	0.18	0.645	0.313	0.005	0.122	0.071	0.102
2	0.183	0.394	0.673	0.046	0.134	0.114	-0.047	0.162
3	0.392	0.019	0.316	0.166	0.167	0.191	0.599	0.018
4	0.26	0.18	0.704	0.102	0.047	0.093	0.253	-0.08
5	0.555	0.053	0.533	0.136	0.187	0.035	0.159	-0.116
6	0.321	0.174	0.463	0.034	0.387	0.193	0.246	-0.262
7	0.394	0.122	0.096	0.036	0.722	0.144	0.101	0.042
8	0.65	0.085	0.364	0.104	0.247	-0.076	0.187	-0.207
9	0.19	0.29	0.186	0.153	0.755	0.087	0.03	-0.014
10	0.47	0.011	0.43	0.25	0.347	0.084	-0.001	0.156
11	0.495	0.165	0.562	0.291	0.199	-0.066	-0.146	-0.068
12	0.422	0.093	0.534	0.354	0.302	-0.198	0.055	0.027
13	0.214	0.43	0.591	0.271	0.098	-0.151	0.003	-0.113
14	0.472	0.161	0.482	0.375	0.317	-0.102	-0.163	0.11
15	0.406	0.309	0.49	0.341	0.046	-0.227	-0.055	0.014
16	-0.042	0.714	0.185	0.162	0.09	0.158	-0.082	-0.096
17	0.557	0.131	0.387	0.278	0.247	-0.293	0.058	0.195
18	0.681	0.018	0.011	0.22	0.377	-0.046	0.042	-0.162
19	0.224	0.678	0.07	-0.028	0.171	0.041	0.018	-0.403
20	0.601	0.359	0.15	0.117	0.239	0.095	-0.188	-0.141
21	0.483	0.486	0.289	0.221	0.114	0.077	-0.255	-0.202
22	0.781	0.098	0.206	0.163	0.043	0.098	0.041	0.014
23	0.697	0.127	0.188	0.008	0.134	0.046	0.211	-0.055
24	0.646	0.275	0.348	0.266	0.033	-0.012	0.189	0.078
25	0.716	0.192	0.365	0.23	0.045	0.034	0.095	-0.024
26	0.636	0.133	0.107	0.168	0.375	0.038	-0.173	0.084
27	0.172	0.608	0.21	-0.016	0.285	0.112	0.07	0.43
28	0.581	0.391	0.018	-0.035	0.077	-0.108	0.34	0.244
29	0.186	0.793	0.107	0.134	0.051	0.063	0.06	0.118
30	0.092	0.797	0.155	-0.058	0.124	-0.049	-0.118	0.039
31	0.706	0.185	0.244	0.224	0.034	0.052	0.045	0.119
32	0.6	0.197	0.33	0.388	0.049	0.013	0.151	0.248
33	0.157	0.717	0.041	0.047	0.072	0.081	0.049	0.281
34	0.544	0.059	0.121	0.626	0.066	0.161	0.002	-0.202
35	0.427	0.2	0.439	0.468	-0.024	0.156	0.076	0.11

Item	Component							
	1	2	3	4	5	6	7	8
36	0.44	0.492	0.224	0.334	-0.215	0.152	-0.019	-0.157
37	0.13	0.198	0.09	0.085	0.214	0.789	0.094	0.01
38	0.039	0.497	0.242	0.471	0.105	0.017	0.268	0.02
39	0.36	0.204	0.242	0.72	0.174	0.076	0.012	0.086
40	0.111	0.557	0.435	0.292	0.01	0.008	0.173	-0.138
41	0.087	0.661	0.121	0.363	-0.023	-0.196	0.264	-0.207
42	0.231	0.492	0.166	0.486	0.075	-0.399	0.294	-0.054
43	0.654	-0.011	0.218	0.457	0.201	0.048	0.019	0.04
44	0.353	0.143	0.327	0.724	0.101	-0.044	0.007	-0.03

Note. Extraction Method: Principal Component Analysis; Rotation Method: Varimax with Kaiser Normalization; Rotation converged in 18 iterations.

Statistical Analysis

The survey was disseminated through the Qualtrics online survey tool. Results were downloaded into an Excel spreadsheet and subsequently uploaded into SPSS Version 23 for statistical analysis. Initially, 338 individuals responded to the survey. However, the researcher only used surveys with greater than 50% completion, resulting in 160 respondents being removed. This removal resulted in the retention of 178 respondents.

Demographic Statistics

The total participants were 178 students from the College of Education and Human Development at an HSI in south Texas. The sample was composed of more females (n = 128) or (71.9%) than males (n = 15) or (8.4%). 19.1% of respondents chose to identify their gender as other (see Table 4). Most of the participants were Hispanic, (n = 112) or (62.9%), with the majority of the sample classified as seniors (n = 99) or (55.6%). Most participants were between the ages of 18 and 35 (n = 126), or (70.8%), and (n = 100) or (56.2%) of the sample were FGCSs. 125 of the respondents were full-time students (70.2%), and 80 (44.9%) were in the educator preparation program within this university (Table 4).

Table 4

Sociodemographic Characteristics of Participants at Baseline

	Full sample	
	n	%
Gender		
Female	128	71.9
Male	15	8.4
Prefer not to answer	1	0.6
Other	34	19.1
Ethnicity		
Asian	2	1.1
Black/African Amer	9	5.1
Hispanic/Latino/a	112	62.9
White	18	10.1
Other	2	1.1
Classification		
Graduate	21	11.8
Senior	99	55.6
Junior	47	26.4
Sophomore	9	5.1
No answer	2	1.1
Age		
18-24	55	30.9
25-35	71	39.9
36-50	43	24.2
51-99	9	5.1
First Gen College		
Yes	100	56.2
No	78	43.8
Part/Full Time		
Full-time	125	70.2
Part-time	52	29.2
No answer	1	0.6
Educator Prep Prog		
Yes	80	44.9
No	98	55.1
EPP Level		
Clinical Teaching	10	5.6
Field Residency I	36	20.2
Field Residency II	17	9.6
Other	115	64.6

Note: $N = 178$

Correlational Analysis

I ran a correlational analysis using SPSS software version 23 to determine the relationship between variables. I scanned the R-matrix to check for multicollinearity in the data set. This is important in survey design because there should be a strong relationship between some items designed to measure the same factor; however, if too many things measure the same factor, the survey would be considered redundant. Conversely, the survey would be considered inadequate if there are not enough items measuring a similar concept within a factor. I scanned the results to look for correlations below .3, and above .9. Fields (2013) indicates that any relationship below .3 is considered weak, and any relationship above .9 is considered particularly strong. The results of this analysis suggest that there were a sufficient number of items related to each other and a sufficient number of items that were distinct from one another to make it likely that this survey would yield a multifactor instrument. Thus, no items were deleted before conducting the exploratory factor analysis.

Exploratory Factor Analysis

I next conducted an exploratory factor analysis using principal components analysis with Varimax rotation and Kaiser Normalization. The rationale for this is that the principal components analysis for factor extraction and orthogonal rotation is more suited to the *a priori* idea that this new instrument has distinct factors. The rotation used in SPSS was Varimax with Kaiser Normalization, whose goal is to maximize the variance of factor loadings (Tabachnick & Fidell, 2013, p. 625).

Factor Interpretability

The Rotated Component Matrix

In examining the rotated component matrix, I chose only items that demonstrated loadings of .400 or higher and selected factors with greater than four items per factor for further analysis. According to Yong and Pearce (2013), only items with communalities of .400 or higher are selected for each factor.

These criteria are subjective; however, researchers should retain clear and strong loadings with one factor and small loadings with other factors (Matsunaga, 2010). Statements from the MPALS instrument were read out loud to identify the common theme within each factor and named accordingly.

Scree Plot

Another way to identify the number of factors within a survey is to analyze the scree plot, which determines the number of factors with Eigenvalues greater than 1 (Kaiser, 1960). As indicated in Figure 1, three factors meet this criterion.

Thus, an analysis of the rotated component matrix and the scree plot noted above suggested three dimensions of teaching behaviors found in the MPALS instrument. While SPSS provides a mathematical analysis of the number of factors, naming the factors is up to the researcher.

Labeling of Factors

According to Tabachnik (2013), it is incumbent upon the researcher to examine all of the items within a specific factor and determine what phrase best encapsulates these items. Thus, I examined items by factor and determined the following factors: Factor 1, Student-Centered; Factor 2, Subject-Centered; and Factor 3 Teacher-Centered.

These procedures yielded a three-factor 36-item instrument loaded as shown in Table 5, Table 6, and Table 7.

The original instrument was a 44-item instrument. However, eight items were removed due to demonstrating factor loadings below .400 or dual loadings across multiple factors, as noted in Tables 5, 6, and 7.

Figure 1

Scree Plot Results

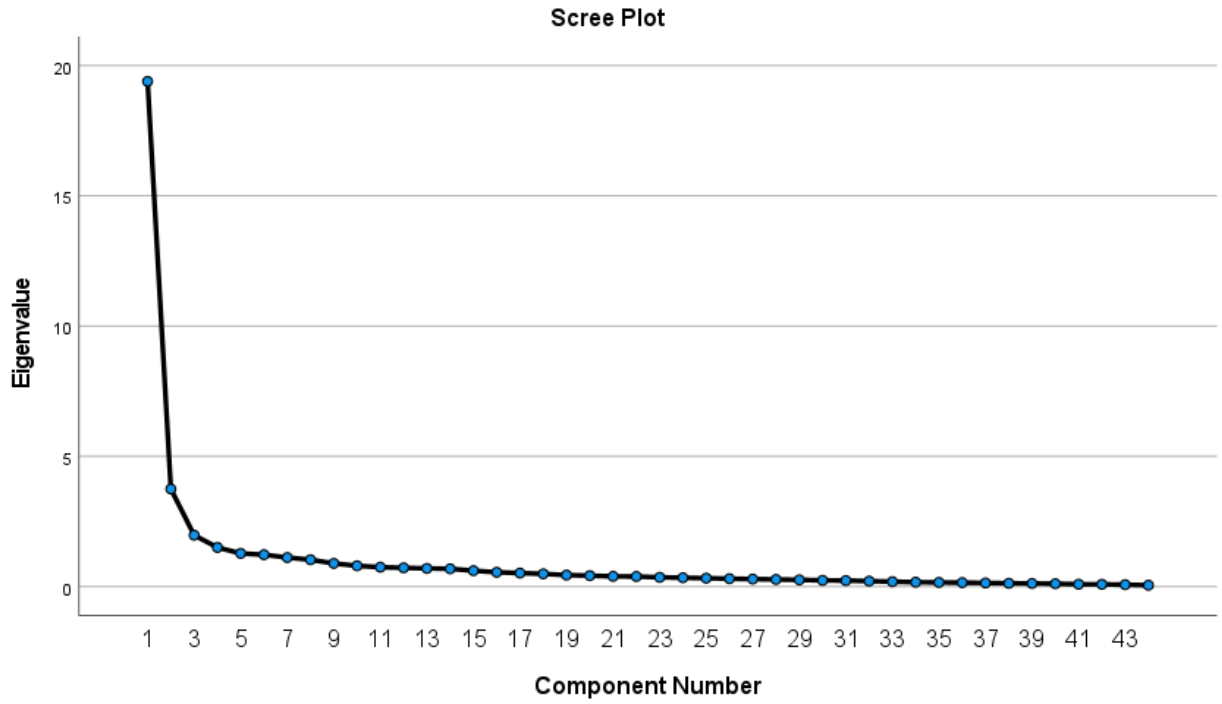

Table 5

Results From a Factor Analysis of the MPALS Questionnaire—Factor 1

MPALS Factor 1: Student Centered	Factor loading		
	1	2	3
5. My teacher helps students diagnose the gaps between their goals and their present level of performance.	.555*	.053	.533
8. My teacher participates in the informal counseling of students.	.650*	.085	.364
10. My teacher arranges the classroom so that it is easy for students to interact.	.470*	.011	.430
17. My teacher uses different techniques depending on the students being taught.	.557*	.131	.387
18. My teacher encourages dialogue among students.	.681*	.180	.110
20. My teacher utilizes the many competencies that most adults already possess to achieve educational objectives.	.601*	.359	.150
22. My teacher accepts errors as a natural part of the learning process.	.781*	.098	.206
23. My teacher has individual conferences to help students identify their educational needs.	.697*	.127	.188
24. My teacher lets each student work at his/her own rate regardless of the amount of time it takes him/her to learn a new concept.	.646*	.127	.188
25. My teacher helps students develop short-range as well as long-range objectives.	.716*	.275	.348
26. My teacher maintains a well-disciplined classroom to reduce interference to learning.	.636*	.192	.365
28. My teacher allows students to take periodic breaks during class.	.581*	.133	.107
31. My teacher plans activities that will encourage each student's growth from dependence on others to greater independence.	.706*	.391	.018
32. My teacher gears instructional objectives to match the individual abilities and needs of the students.	.600*	.185	.244
43. My teacher helps students relate new learning to their prior experiences.	.654*	.197	.330

Note. $N = 178$. The extraction method was principal component analysis with an oblique (Varimax with Kaiser Normalization) rotation.

*Factor loadings greater than .40.

Table 6

Results From a Factor Analysis of the MPALS Questionnaire—Factor 2

MPALS Factor 2: Subject Centered	Factor loading		
	1	2	3
16. My teacher uses one basic teaching method because he/she has found that most adults have a similar style of learning.	−.042	.714*	.185
19. My teacher uses written tests to assess the degree of academic growth rather than to indicate new directions for learning.	.224	.678*	.070
21. My teacher uses what history has proven that adults need to learn as his/her chief criteria for planning learning episodes.	.483	.486*	.289
27 My teacher avoids discussion of controversial subjects that involve value judgments.	.172	.608*	.210
29. My teacher uses methods that foster quiet, productive desk work.	.186	.793*	.107
30. My teacher uses tests as my chief method of evaluating students.	.092	.797*	.155
33. My teacher avoids issues that relate to the student's concept of himself/herself.	.157	.717*	.041
36. My teacher has students identify their own problems that need to be solved.	.440	.492*	.224
38. My teacher uses materials that were originally designed for students in elementary and secondary schools.	.039	.497*	.242
40. My teacher measures a student's long term educational growth by comparing his/her total achievement in class to his/her expected performance as measured by national norms from standardized tests.	.111	.557*	.435
41. My teacher encourages competition among students.	.087	.661*	.121
42. My teacher uses different materials with different students.	.231	.492*	.166

Note. N = 178. The extraction method was principal component analysis with an oblique (Varimax with Kaiser Normalization) rotation.

*Factor loadings greater than .40.

Table 7

Results From a Factor Analysis of the MPALS Questionnaire—Factor 3

MPALS Factor 3: Teacher Centered	Factor loading		
	1	2	3
1. My teacher allows students to participate in developing the criteria for evaluating their performance in class.	.277	.180	.645*
2. My teacher uses disciplinary action when it is needed.	.183	.394	.673*
4. My teacher encourages students to adopt middle class values.	.260	.180	.704*
11. My teacher determines the educational objectives for each of my students.	.495	.165	.562*
12. My teacher plans units which differ widely as possible from students' socio-economic backgrounds.	.422	.093	.534*
13. My teacher gets a student to motivate himself/herself by confronting him/her in the presence of classmates during group discussions.	.214	.430	.591*
14. My teacher plans learning episodes to take into account my students' prior experiences.	.472	.161	.482*
15. My teacher allows students to participate in making decisions about the topics that will be covered in class.	.406	.309	.490*
1. My teacher allows students to participate in developing the criteria for evaluating their performance in class.	.277	.180	.645*
2. My teacher uses disciplinary action when it is needed.	.183	.394	.673*
4. My teacher encourages students to adopt middle class values.	.260	.180	.704*
11. My teacher determines the educational objectives for each of my students.	.495	.165	.562*

Note. $N = 178$. The extraction method was principal component analysis with an oblique (Varimax with Kaiser Normalization) rotation.

*Factor loadings greater than .40.

Correlational Analysis of Factors

After identifying the three factors, I ran the correlational analysis to measure the strength of the relationship between the factors. According to Ratner (2009), a Pearson product-moment score of -1 indicates a perfect linear relationship, a score of +1 indicates a perfect positive linear relationship, scores between 0 to 0.3 or 0 to -0.3 indicate a weak relationship, scores between 0.3 and 0.7 or -0.3 to -0.7 indicate a moderate relationship. Scores between .7 and 1 or -.7 to -1 indicate a strong linear relationship.

As seen in Table 8, the relationship between the three variables in this study are all moderately strong. The relationship between student-centered and subject-centered is -.471, indicating a moderately strong negative relationship between these two factors. Similarly, the relationship between student-centered and teacher-centered is -.557, again indicating a moderately strong negative relationship. Finally, the relationship between subject-centered and teacher-centered is .450 indicating a moderately strong positive relationship between these two variables.

Table 8

Correlations Among Extracted Factors After Varimax Rotation

Factor	1	2	3
Student centered (F1)		-.471**	-.557**
Subject centered (F2)	-.471**		.450**
Teacher centered (F3)	-.557**	.450**	

** Correlation is significant at the 0.01 level (2-tailed).

Descriptive Statistics

Following the correlational analyses of the factors, descriptive statistics were run to check for anomalies that might be present due to data entry errors. The instrument utilized a 1 through 6 Likert scale. As demonstrated in Table 9, responses fell within this range, indicating that no anomalies were present in the data.

Table 9

Descriptive Statistics

Factor	Minimum	Maximum	Mean	Std. Deviation	Variance
Student-Centered	1.53	5.67	4.4453	0.84521	0.714
Subject-Centered	1.67	5.17	3.1979	0.73476	0.54
Teacher-Centered	1.67	4.78	3.2634	0.52415	0.275

Validity

The following areas of validity have been included due to preliminary statistical analysis of the data in this study.

Nomological Validity

For this study, the theoretical framework was Constructivist Learning Theory, and the definitions of the constructs were drawn from the original PALS instrument, which serves as a benchmark for the MPALS instrument. There is value in comparing what the original instrument measured and found relative to the new instrument's factor structure. The three factors that emerged from the MPALS instrument reflect the theoretical framework and constructs from the original PALS instrument. Thus this study demonstrates strong nomological validity for the new MPALS instrument.

Convergent Validity

Another way to measure the validity of an instrument is to examine its convergent validity. According to Stevens (1992) convergent validity is established by examining the factor loadings for each item within a specific factor, and all items should be above .400 within each factor. This is demonstrated in Tables 5, 6, and 7 where all factor loadings were above .400, thus establishing the convergent validity of the new instrument. Also, there is a difference in the factor loadings as they are not dual loaded, therefore measuring distinctive constructs.

Discriminant Validity

The use of the exploratory factor analysis process with Varimax orthogonal rotation was chosen to identify latent constructs of this new survey instrument. This process had not been carried out before with this instrument. Discriminant validity considers that a latent variable shows more variance in the observed variables than other variables within the conceptual framework (Farrel & Rudd, 2009). Tables 5, 6, and 7 show items loaded distinctly within the three factors of the MPALS instrument.

Model Strength

It is useful to analyze the Eigenvalues for each factor and cumulatively for all factors to measure strength of the model. Kaiser (1960) notes that only factors with Eigenvalues greater than one should be retained. Within this study, three factors demonstrated Eigenvalues over Kaiser's criterion of 1. Table 10 indicates an Eigenvalue of 19.19 for factor 1, 3.723 for factor 2, and 2.043 for factor 3. These three factors account for 56.7% of the cumulative variance within the model.

Table 10

Total Variance Explained by Rotated Factors

	Factor 1	Factor 2	Factor 3
Eigenvalue	19.19	3.723	2.043
Cumulative variance explained	43.613	52.075	56.718

Note. Extraction method: principal component analysis.

Reliability

Next, an analysis was conducted to identify Cronbach's Alpha level of reliability for each of the three factors within this instrument. According to Hulin et al. (2001), a Cronbach's alpha level of .8 or higher is considered very good. As can be seen in Table 11, the student-centered factor consisted of 15 items (α = .947), the subject-centered factor consisted of 12 items (α = .914), and the teacher-centered factor consisted of 9 items (α = .912). This analysis shows all three factors as highly reliable subscales. SPSS Reliability Analysis results indicated the instrument as a whole has a Cronbach's alpha reliability of .963.

Table 11

Cronbach's Alphas for the Three Factors of the MPALS

Factor	No. items	Cronbach's alpha
Student-centered	15	0.947
Subject-centered	12	0.914
Teacher-centered	9	0.912

Results Summary

Three factors emerged from this preliminary data analysis of the MPALS.

An existing tool was modified and adapted for use with students. The three factors are indicators of the latent constructs underlying responses to the instrument for this sample.

The three factors from MPALS indicate that students see their instruction as student-centered, subject-centered, and teacher-centered.

Research Questions and Hypotheses Findings

1. Research Question (1): Do the results of an exploratory factor analysis of the MPALS instrument support the proposed purpose (i.e., validity)?

Three factors emerged from the implementation of the MPALS that explained 57% of the data variance and entitled student-centered, subject-centered, and teacher-centered.

2. Research Question (2): Does the MPALS measure designated constructs of Constructivist learning theory previously reported for the PALS on which it was based?

MPALS found three of the seven constructs originally measured by the original PALS instrument when used with students in the College of Education at a South Texas HSI.

Chapter 5: Discussion

This chapter will review the methodology, research design, discuss the contributions of the MPALS instrument to the extant literature, and examine the implications this survey may yield relative to the quality of the instruction at an HSI. This discussion may present some ideas and questions that may help faculty, administrators, and students themselves begin to understand what could possibly improve teaching and learning. This chapter will also consider the limitations of this study and ponder recommendations for future research. This study was conducted within the College of Education at a south Texas HSI. This study aimed to explore and examine the factor structure of a modified survey tool designed to measure teaching behaviors based on Constructivist Learning Theory. It is important to note that upon future confirmatory research, these preliminary findings may lead to useful means of exploring and comparing student and instructor perceptions of instructor behavior and instructional experience.

Methodology and Research Design

It was vital to research the latent content of the MPALS due to its foundation of Constructivist Learning Theory, its potential applicability to instructional decision making and improvement of impact on students from diverse backgrounds. Originally designed as a self-report measure, it was clear the tool had potential to be useful for examining the perceptions of students. Descriptive research by way of this survey is a first step in examining the attitudes and characteristics of a situation or phenomena that merits examination (Johnson & Christensen, 2012). The literature supports the idea that students are able to identify and define their impressions of the instruction they receive. To a degree, this is one reason students' ratings pertaining to instruction with Student Evaluations of Teaching (SET) are pervasive and used at most institutions as an essential component of evaluation of instruction and instructors (Clayson,

2022; Chávez, & Mitchell, 2020). Thus, this study assumed students would be capable and offer an important perspective regarding the evaluation of the instruction they receive.

The differences in teaching behaviors that are either student or teacher/subject centered, as reported in the literature vary from teacher to teacher and institution to institution (Serin, 2018; Tiruneh et al., 2014) and there is a little literature related to the impact of teaching styles on student learning at HSI's (Banks & Dohy, 2019). The results of this study therefore, are likely to be informative to multiple stakeholders, including students, teachers, administrators, and the public in general. It became evident that it was important to reveal what students at a newly designated HSI think and feel about the instruction they receive. At this time, this research would be best conducted through a survey instrument designed to measure students' definition of the quality or type of instruction they are receiving. Unfortunately, a careful review of the literature suggested no such survey yet existed. Thus, the current study was conducted to address this gap in the literature.

Proposed Purpose of MPALS

Exploring student's perception of instruction at this South Texas HSI would require that more in-depth questions be asked in order for students to distinguish teaching behaviors. MPALS asks questions that are representative of different teaching behaviors that are in a wider range than a typical SET. After conducting an exploratory factor analysis, it was found that the MPALS tool measures three constructs of teaching behaviors from the student's perspective. These factors are (a) student-centered, (b) subject-centered, and (c) teacher-centered. This preliminary examination provides some evidence of its utility as a measure of how students perceive instruction.

Reviewing the three factors of the MPALS with this population, however, gives some indication of the quality of the instruction when examined in view of Constructivist Learning Theory. This is important in order to relate the findings to the idea of examining the quality of instruction students receive, especially for this population of predominantly Hispanic students at this Hispanic Serving Institution.

Preliminary Validity and Reliability

This research is the first study to examine the factor structure of a new survey instrument designed to measure the perception of students about the quality of the instruction they are receiving. The exploratory factor analysis of this instrument results identified three factors that combined to explain 57% of the variance of the data. These factors are (1) Student-centered, (2) Subject-centered, and (3) Teacher-centered. At this time, the MPALS instrument is valid and reliable within this population which is predominantly female and Hispanic. Therefore, the external validity of this instrument is limited and therefore the findings here are somewhat limited. However, the content validity of the MPALS is strong when considering that it measures what students perceive as quality of instruction based on constructivist learning theory which proposes that learning occurs from student-centered instruction which is a desirable outcome. SPSS Reliability Analysis results indicated the instrument as a whole has a Cronbach's alpha reliability of .963. Each factor demonstrated high reliability with a Cronbach's alpha level above .9. MPALS was found to have some reliable preliminary scores for the three factors, each containing a Cronbach's alpha over .9.

Research Questions Discussion

A preliminary finding of the exploratory factor analysis indicated that there were three factors that showed that the instrument is useful for this sample and possibly other populations of

HSIs. With this sample comprised of a majority of Hispanic students, the analysis of the three factors that emerged from the implementation of the MPALS may lead to a better understanding of what they need in relation to their learning.

Research Question 1

Do the results of an exploratory factor analysis of the MPALS instrument support the proposed purpose (i.e., validity)? Coming to an understanding of how students perceive their instruction necessitated the examining of the clustering of items in the survey that are based on Constructivist learning theory which describes student-centered activity as an ideal concept in learning. That is, the various perspectives students have about the instruction were shown as items that were about instructional approaches that involve allowing for students to be more in charge of their own learning and coming to the understanding of concepts on their own. This was evident when examining the items with the highest loadings that were part of the student-centered factor (Table 5).

Research Question 2

Does the MPALS measure designated constructs of constructivist learning theory previously reported for the PALS on which it was based? MPALS found three of the seven constructs originally measured by the original PALS instrument when used with students in the College of Education at a South Texas Hispanic Serving Institution.

It is vital to consider the correlations of the three factors found and the implications thereof. The student-centered factor is inversely related to subject, and teacher centered instruction, whereas subject and teacher instruction are positively correlated. This shows that students essentially defined the instruction received as either student-centered instruction or subject/teacher centered instruction. The literature shows that student-centered instruction is a

defining component of Constructivist learning theory and a desirable outcome for students in most instances. For Hispanic students the needs for student-centered instruction may be more applicable and more efficacious in view of the history of limited educational opportunities for this group. Exploring the student-centered concepts can lead to the questions about student needs in this area. Some items in the student-centered factor have implications about teacher and student interaction that led students to take freedoms in their learning.

Contributions

Factor analysis suggests the MPALS instrument measures three constructs of teaching behavior from the student's perspective. Thus, the MPALS instrument provides an important, new, and different way to measure how students perceive their instruction that after more research may lead to conclusions about student learning and relative instructor behaviors. The MPALS instrument can aid researchers as a preliminary tool to begin research and discussion of what is important for individual students and for groups. The individual items from MPALS can be examined for continued research into what is best practice for Hispanic and minority students as well other marginalized groups. Current study findings suggest that use of this instrument as a measure of student perceptions relating to these constructs (indicated factors) may be appropriate and informative to both instructors and others concerned with program and course quality especially regarding the student centeredness of instruction. Teachers may use this survey tool to find new theories and perspectives with their respective populations. Since MPALS contains items of constructivist learning theory and traditional instructional approaches, its use compared to performance assessments may bring new and useful knowledge for specific and particular groups of various backgrounds. This is useful for teacher formative assessment, their own self-assessment, and for students to learn about why they make certain decisions in their learning.

Implications

For Students

This study has at its root, the conceptual model of constructivism, which puts the onus of learning on the individual student thereby further focusing researcher attention on the student perspective. Exploring the factors of this survey instrument led to the finding that there are three constructs of instruction to examine. These are student-centered teacher-centered, and subject-centered instruction. The logical question that follows would be to ask why do students respond to certain questions the way they do. It is important to note that this study was conducted with students in a college of education, many of whom aspire to be teachers. Thus, there are two layers of learning for these students. First, they can gain more insight into their own opinions of teaching and learning as students. Second, these students may learn how they will teach as future educators. This exploration may give students ideas for reflection on their philosophy of education. Students may benefit from knowing what is affecting their learning and how they can improve their study habits and responsibilities.

For Teachers

While this study will not directly benefit all participants, the results may help develop and define student success interventions and identify barriers to success for current and future college students. Faculty could benefit from utilizing this instrument and analyzing student responses to measure student perceptions of their preferred teaching and learning styles. They will also be able to use this instrument help them make curriculum adjustments and better serve their students. Upon examination of the results of MPALS administration, faculty could use these results to improve their teaching and strengthen relationships with students.

For Administrators

Administrators and educators may predict student success by matching student preferences and their teacher's teaching approach. This may be particularly important for HSIs and institutions with a high percentage of FGCSs. The instrument may also be modified for use by administrators themselves as a self-assessment tool to inform their leadership. Educators are leaders who should be striving to improve their craft.

Limitations

This study is limited in terms of both regionality and study design, as the sample may not be representative of populations in other universities, other regions of the United States, or internationally. This study is also limited in its design. First, this study was designed to measure the factor structure, validity, and reliability of a new survey instrument, the MPALS. This study was not designed to analyze student responses or examine the implications of those responses for teaching and learning. A third limitation is that this study was intended solely as a quantitative measure of student perceptions. Thus, student explanations for their preferences are not revealed in this study.

Recommendations for Future Research

Thus, the next step in this research should be to replicate this study with a larger sample size and a variety of regions of the United States or internationally. Such replication will allow for Confirmatory Factor Analysis (CFA) to be conducted. This will enable researchers to explore the factor structure of MPALS with a wide variety of student populations. Once the CFA has been undertaken, the results can be utilized to inform and refine teaching and learning at specific institutions based on their respective populations' unique learning preferences. Students from

diverse backgrounds may have different learning preferences, which will be revealed by completing this survey.

This is in contrast to the original PALS instrument of which MPALS was derived which measured seven constructs as an instructor self-assessment—one of them being student-centered instruction. It is important to note this as future research will involve the comparison of these two instruments to give more insight into the quality of instruction in various populations.

Implications for the Quality of Instruction and HSIs

The findings from this study have implications that suggest that there are some differences in the quality of instruction received at this South Texas Hispanic Serving Institution. The three factors in this instrument show that there are student-centered instructional practices as well as teacher and subject centered practices in operation at this HSI. Students were asked to think about an individual instructor they recently took as they contemplated their responses. It is possible that instructors may have incorporated more than one method of instruction. There are also implications for future iterations of the MPALS because it shows the utility of using multiple items to assess the constructs that students perceive their instruction to meet. In addition, since MPALS utilizes a multiple-item approach, future educators and researchers can incorporate structural equation modeling techniques to investigate the three factors found in PALS to examine academic achievement, retention, teacher effectiveness, and the needs of students.

Influence on Hispanic Students

This group of students were subjected to and influenced by this study to think more in-depth about their own treatment in their coursework. Thus, given this survey provided an opportunity for students to evaluate their instructor's effectiveness, as well as reflect on how the

instructor's behaviors impacted them. This idea is testable and the findings may be used for professional development and for students to become more aware of their own performance relative to the various teaching behaviors. This was shown in the factor loadings of the MPALS, as the students distinguished teaching into student-centered, and teacher/subject-centered instruction. Items on the MPALS with the highest loadings were items that indicated positive student/teacher interactions like instructor accepting errors as a natural part of the learning process, help with developing short and long-range goals, and activities that encourage greater independence. Other items on the MPALS that loaded higher were instructors use of desk work, using tests as the chief method of evaluating students, and using one basic teaching method.

Difference of Interpretation

It is possible that that teachers and students might understand the concepts of teacher/subject-centered and student-centered instruction differently. It may be that students and instructors have preferences that are based on their own previous expectation for what is believed to be good quality instruction. It is possible that instructors may believe that students at this HSI require a traditionalistic positivistic approach to instruction that is based on the historical treatment of minorities in schools that is strictly teacher/subject centered instruction. It is also possible that students prefer this treatment and consider this instruction good quality instruction. So it may be that students when presented with questions in MPALS regarding teacher/subject-centered instruction were influenced to respond positively to this grouping of questions.

There is a possibility that students responded favorably when presented with the questions about student-centered instruction based on their impressions of the instructors themselves. This implicit bias for well-liked instructors could be a possible confounding variable

that is difficult to measure in this type of survey. Nevertheless, these ideas are present and serve to raise questions about the interpretation of conceptual understanding for teachers and students.

Questions Raised

The differences in perceptions by students and instructors may be for some obvious reasons that include but are not limited to basic philosophical beliefs. It is safe to say that although this is an HSI, there are various ethnic and cultural differences that influence decisions that may not be conducive to effective teaching and learning. Instructors and students might have questions about content and teaching practices that do not meet the needs of diverse learners.

While many instructors are trained in instruction, there are many who are not and are experts in content, with both having strengths and limitations in their instruction (Zarei, & Mohammadi 2022). How would students and instructors reconcile the differences in perception of instruction? Why do students perceive instruction that is teacher and subject-centered good quality, and some perceive student-centered instruction to be better? What model of instruction might fit student preference at this HSI and other minority serving institutions? What possible factors could be in operation that affect motivation in instruction and learning when presented with various teaching behaviors?

Future Research

It would be important for future researchers to build on existing constructivist learning theory by conducting follow-up qualitative interviews with survey participants to understand why or how they prefer to learn in various and specific ways. Further research into institutional policy, teacher level, teacher intervention, and others can be studied using a regression model to explain the relationships between independent variables and the larger contextual dependent variables, i.e., student performance and institutional performance. It would follow that a

researcher can control for definitions of the constructs (multiple regression) to determine how well the constructs predict performance because of each construct's nature and the purpose of each by students and teachers. The MPALS contains many potential mediating variables that can be included in a path analysis or structural equation modeling.

Conducting a mixed methods study including both quantitative (path analysis) and qualitative (student interviews) may yield results that would further refine the theoretical model of how specific groups of students prefer to be taught and prefer to learn. This may be particularly important for building informed theoretical models of teaching and learning at HSIs.

Needs, Presentation, and Publication

This study is a first step in finding what is meaningful for students and meeting their needs. The instrument shows promise in order to provide some basis for further studies that may inform the appropriate and concerned educators. These findings would most appropriately be presented at conferences of HSIs and minority serving institutions exactly like the one where this study was conducted. It is also important to note that this preliminary research and upcoming research should be presented to relevant faculty at the present institution where the instrument was piloted. It follows that they have a stake in knowing how their students feel about the instruction as well as the presentation of an opportunity for reflection of their own attitudes towards student needs. It is vital to understand that student perception of the quality of instruction they receive should be taken into account, especially the concerns of a historically marginalized group of people like Hispanics and other minority groups.

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Appendices

Appendix A: Principles of Adult Learning Scale (PALS)

Developed by Gary J. Conti

DIRECTIONS

The following survey contains several things that a teacher of adults might do in a classroom. You may personally find some of them desirable and find others undesirable. For each item please respond to the way you **most frequently practice** the action described in the item. Your choices are *Always*, *Almost Always*, *Often*, *Seldom*, *Almost Never*, and *Never*. If the item **does not apply** to you, circle number 5 for never.

Always	***Almost Always***	***Often***	***Seldom***	***Almost Never***	***Never***
A	**AA**	**O**	**S**	**AN**	**N**

Question/Item	Response Category	Value
1. I allow students to participate in developing the criteria for evaluating their performance in class.	A AA O S AN N	
2. I use disciplinary action when it is needed.	A AA O S AN N	
3. I allow older students more time to complete assignments when they need it.	A AA O S AN N	
4. I encourage students to adopt middle class values.	A AA O S AN N	
5. I help students diagnose the gaps between their goals and their present level of performance.	A AA O S AN N	
6. I provide knowledge rather than serve as a resource person.	A AA O S AN N	
7. I stick to the instructional objectives that I write at the beginning of a program.	A AA O S AN N	
8. I participate in the informal counseling of students.	A AA O S AN N	
9. I use lecturing as the best method for presenting my subject material to adult students.	A AA O S AN N	
10. I arrange the classroom so that it is easy for students to interact.	A AA O S AN N	
11. I determine the educational objectives for each of my students.	A AA O S AN N	
12. I plan units which differ widely as possible from my students' socio-economic backgrounds.	A AA O S AN N	
13. I get a student to motivate himself/herself by confronting him/her in the presence of classmates during group discussions.	A AA O S AN N	
14. I plan learning episodes to take into account my students' prior experiences.	A AA O S AN N	
15. I allow students to participate in making decisions about the topics that will be covered in class.	A AA O S AN N	
16. I use one basic teaching method because I have found that most adults have a similar style of learning.	A AA O S AN N	
17. I use different techniques depending on the students being taught.	A AA O S AN N	

Question/Item	Response Category	Value
18. I encourage dialogue among my students.	A AA O S AN N	
19. I use written tests to assess the degree of academic growth rather than to indicate new directions for learning.	A AA O S AN N	
20. I utilize the many competencies that most adults already possess to achieve educational objectives.	A AA O S AN N	
21. I use what history has proven that adults need to learn as my chief criteria for planning learning episodes.	A AA O S AN N	
22. I accept errors as a natural part of the learning process.	A AA O S AN N	
23. I have individual conferences to help students identify their educational needs.	A AA O S AN N	
24. I let each student work at his/her own rate regardless of the amount of time it takes him/her to learn a new concept.	A AA O S AN N	
25. I help my students develop short-range as well as long-range objectives.	A AA O S AN N	
26. I maintain a well disciplined classroom to reduce interference to learning.	A AA O S AN N	
27. I avoid discussion of controversial subjects that involve value judgments.	A AA O S AN N	
28. I allow my students to take periodic breaks during class.	A AA O S AN N	
29. I use methods that foster quiet, productive desk work.	A AA O S AN N	
30. I use tests as my chief method of evaluating students.	A AA O S AN N	
31. I plan activities that will encourage each student's growth from dependence on others to greater independence.	A AA O S AN N	
32. I gear my instructional objectives to match the individual abilities and needs of the students.	A AA O S AN N	
33. I avoid issues that relate to the student's concept of himself/herself.	A AA O S AN N	
34. I encourage my students to ask questions about the nature of their society.	A AA O S AN N	
35. I allow a student's motives for participating in continuing education to be a major determinant in the planning of learning objectives.	A AA O S AN N	
36. I have my students identify their own problems that need to be solved.	A AA O S AN N	
37. I give all my students in my class the same assignment on a given topic.	A AA O S AN N	
38. I use materials that were originally designed for students in elementary and secondary schools.	A AA O S AN N	
39. I organize adult learning episodes according to the problems that my students encounter in everyday life.	A AA O S AN N	

Question/Item	Response Category	Value
40. I measure a student's long term educational growth by comparing his/her total achievement in class to his/her expected performance as measured by national norms from standardized tests.	A AA O S AN N	
41. I encourage competition among my students.	A AA O S AN N	
42. I use different materials with different students.	A AA O S AN N	
43. I help students relate new learning to their prior experiences.	A AA O S AN N	
44. I teach units about problems of everyday living.	A AA O S AN N	

Always	*Almost Always*	*Often*	*Seldom*	*Almost Never*	*Never*
A	**AA**	**O**	**S**	**AN**	**N**

Scoring the Principles of Adult Learning Scale (PALS)

Positive Questions
Question numbers 1, 3, 5, 8, 10, 14, 15, 17, 18, 20, 22, 23, 24, 25, 28, 31, 32, 34, 35, 36, 39, 42, 43, and 44 are positive items. For positive questions, assign the following values: Always=5, Almost Always=4, Often=3, Seldom=2, Almost Never=1, and Never=0.

Negative Questions
Question numbers 2, 4, 6, 7, 9, 11, 12, 13, 16, 19, 21, 26, 27, 29, 30, 33, 37, 38, 40, and 41 are negative items. For negative questions, assign the following values: Always=0, Almost Always=1, Often=2, Seldom=3, Almost Never=4, and Never=5.

Missing Questions
Omitted questions are assigned a neutral value of 2.5.

Factor 1: Learner-Centered Activities

Question #	2	4	11	12	13	16	19	21	29	30	38	40	Total Score
Score													

Factor 2: Personalizing Instruction

Question #	3	9	17	24	32	35	37	41	42	Total Score
Score										

Factor 3: Relating to Experience

Question #	14	31	34	39	43	44	Total Score

Score							

Factor 4: Assessing Student Needs

Question #	5	8	23	25	Total Score
Score					

Factor 5: Climate Building

Question #	18	20	22	28	Total Score
Score					

Factor 6: Participation in the Learning Process

Question #	1	10	15	36	Total Score
Score					

Factor 7: Flexibility for Personal Development

Question #	6	7	26	27	33	Total Score
Score						

Computing and Interpreting Your Scores
Factor scores are calculated by summing the value of the responses for each item/question in the factor. Compare your factor score values to their respective means (see table below). If your score is equal to or greater than each respective mean, then this suggests that such factors are indicative of your teaching style. From such factors, you will then begin to identify what strategies you use to be consistent with your philosophy (from the Philosophy of Adult Education Inventory, PAEI). Those scores that are less than the mean indicate possible areas for improving a more learner-centered approach to teaching.

An individual's total score on the instrument is calculated by summing the value of each of the seven factors (see table below). Scores between 0-145 indicate your style is “teacher-centered.” Scores between 146-220 indicate your style as being “learner-centered.”

For a complete description of PALS and each of the seven factors, see Conti, G.J. (1998). Identifying Your Teaching Style (Ch. 4). In M.W. Galbraith (Ed.), *Adult Learning Methods* (2nd ed., pp. 73-84). Malabar, FL: Krieger Publishing Company.

Factor	Mean	Standard Deviation	Your Score
1	38	8.3	
2	31	6.8	
3	21	4.9	
4	14	3.6	
5	16	3.0	

6	13	3.5	
7	13	3.9	
TOTAL	146	20	

Appendix B: Modified Principles of Adult Learning Scale (MPALS)

DIRECTIONS

The following survey contains several things that a teacher of adults might do in a classroom. You may personally find some of them desirable and find others undesirable. For each item please respond to the way your instructor **most frequently practices** the action described in the item. Your choices are *Always*, *Almost Always*, *Often*, *Seldom*, *Almost Never*, and *Never*. If the item **does not apply** to you, circle never.

Always	***Almost Always***	***Often***	***Seldom***	***Almost Never***	***Never***
A	**AA**	**O**	**S**	**AN**	**N**

Question/Item Response Category	
1. My instructor allows students to participate in developing the criteria for evaluating their performance in class. O S AN N	A AA
2. My instructor uses disciplinary action when it is needed. O S AN N	A AA
3. My instructor allows older students more time to complete assignments when they need it. O S AN N	A AA
4. My instructor encourages students to adopt middle class values. O S AN N	A AA
5. My instructor helps students diagnose the gaps between their goals and their present level of performance. O S AN N	A AA
6. My instructor provides knowledge rather than serve as a resource person. O S AN N	A AA
7. My instructor sticks to the instructional objectives that he/she writes at the beginning of a program. O S AN N	A AA
8. My instructor participates in the informal counseling of students. O S AN N	A AA
9. My instructor uses lecturing as the best method for presenting subject material to adult students. O S AN N	A AA
10. My instructor arranges the classroom so that it is easy for students to interact. O S AN N	A AA
11. My instructor determines the educational objectives for each of my students. O S AN N	A AA
12. My instructor plans units which differ widely as possible from students' socio-economic backgrounds. O S AN N	A AA
13. My instructor gets a student to motivate himself/herself by confronting him/her in the presence of classmates during group discussions. O S AN N	A AA

14. My instructor plans learning episodes to take into account my students' prior experiences. O S AN N	A AA
15. My instructor allows students to participate in making decisions about the topics that will be covered in class. O S AN N	A AA
16. My instructor uses one basic teaching method because he/she has found that most adults have a similar style of learning. O S AN N	A AA
17. My instructor uses different techniques depending on the students being taught. O S AN N	A AA
18. My instructor encourages dialogue among students. O S AN N	A AA
19. My instructor uses written tests to assess the degree of academic growth rather than to indicate new directions for learning. O S AN N	A AA
20. My instructor utilizes the many competencies that most adults already possess to achieve educational objectives. O S AN N	A AA
21. My instructor uses what history has proven that adults need to learn as his/her chief criteria for planning learning episodes. O S AN N	A AA
22. My instructor accepts errors as a natural part of the learning process. O S AN N	A AA
23. My instructor has individual conferences to help students identify their educational needs. O S AN N	A AA
24. My instructor lets each student work at his/her own rate regardless of the amount of time it takes him/her to learn a new concept. O S AN N	A AA

Question/Item Response Category	
25. My instructor helps students develop short-range as well as long-range objectives. O S AN N	A AA
26. My instructor maintains a well-disciplined classroom to reduce interference to learning. O S AN N	A AA
27. My instructor avoids discussion of controversial subjects that involve value judgments. O S AN N	A AA
28. My instructor allows students to take periodic breaks during class. O S AN N	A AA
29. My instructor uses methods that foster quiet, productive desk work. O S AN N	A AA

30. My instructor uses tests as my chief method of evaluating students. O S AN N	A AA
31. My instructor plans activities that will encourage each student's growth from dependence on others to greater independence. O S AN N	A AA
32. My instructor gears instructional objectives to match the individual abilities and needs of the students. O S AN N	A AA
33. My instructor avoids issues that relate to the student's concept of himself/herself. O S AN N	A AA
34. My instructor encourages my students to ask questions about the nature of their society. O S AN N	A AA
35. My instructor allows a student's motives for participating in continuing education to be a major determinant in the planning of learning objectives. O S AN N	A AA
36. My instructor has students identify their own problems that need to be solved. O S AN N	A AA
37. My instructor gives all students in my class the same assignment on a given topic. O S AN N	A AA
38. My instructor uses materials that were originally designed for students in elementary and secondary schools. O S AN N	A AA
39. My instructor organizes adult learning episodes according to the problems that students encounter in everyday life. O S AN N	A AA
40. My instructor measures a student's long term educational growth by comparing his/her total achievement in class to his/her expected performance as measured by national norms from standardized tests. O S AN N	A AA
41. My instructor encourages competition among students. O S AN N	A AA
42. My instructor uses different materials with different students. O S AN N	A AA
43. My instructor helps students relate new learning to their prior experiences. O S AN N	A AA
44. My instructor teaches units about problems of everyday living. O S AN N	A AA

Appendix C: Assistance Letter

Greetings Everyone,

Our very own, Armando Tejeda, is working on his dissertation research. I am writing to request that you provide him some assistance in collecting data with the students in your classes. Mr. Tejeda has I IRB approval from TAMUSA (IRB # 2020-59) and would like you to post an announcement in your online courses requesting that students complete his survey. It would be great if you could go the extra mile and also encourage your students to participate. I am attaching Mr. Tejeda's message to you and the suggested post for your classes

Let's do everything we can to help Armando finish his doctoral research!

Carl

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Appendix D: PALS Use Permission Letter

Re: PALS
Linda D. Conti <ldconti@earthlink.net>
Thu 9/21/2017 10:28 PM
To: Armando Tejeda <Armando.Tejeda@tamusa.edu>;
I am Gary's wife, Linda. Gary has always wanted people to use his instruments freely and has posted them on our website. Gary is unable to email you at this time so he has asked me to send this note to you.

Gary has also asked me to relay this message to you:

A "student version" of the Principles of Adult Learning Scale does not exist. Several years ago I sent materials to a student who was working on a student version. Her final product was somewhat different from PALS. Her final product may be hard to find because she planned to put her name on it rather than use a content-related name like PALS does. I don't know of any research in which this instrument was used.

As you work with modifying the items in PALS to get a student perspective, remember that the key issues in the construction of an instrument are validity and reliability. For validity, you initial concerns will be with construct validity and content validity. For construct validity which deals with the theory underlying the instrument, you can assume the validity from PALS; that is, the concepts and constructs in the items have already been established for PALS. However, when you change the focus of the items from that of the teacher to that of the students, then you will have to very be concerned with content validity; that is, is the item a fair representation of the overall concept. This is where your biggest challenge is going to be.

As you work on a student version, please keep in mind that you are shifting the focus of PALS. PALS is designed to measure the "teaching style" of the instructor in relationship to the adult education literature. That is, it is asking the teacher to report the frequency with which one consistently applies the adult learning principles in one's practice. This is an internal reflection process. However, when you switch to a student version, you will be asking the students about their perceptions of what their teachers are doing. This is a completely different process than what the teachers are doing when they complete PALS. Thus, while the content of the items for both PALS and your version may be very similar, the point of view that they will be eliciting will be very different. Keeping this in mind will make your research task a lot easier and more fun.

Good luck in your research. In order for me to do more thinking about your research, please let me know where you are working on your doctorate and what kind of students you will be using to pilot the modified version of PALS.

--Gary

From: Armando Tejeda
Sent: Wednesday, September 20, 2017 1:51 PM

To: GJConti@conti-creations.com
Subject: PALS

Hello Dr. Conti
My name is Armando Tejeda and I am a doctoral student. I am writing to ask your permission if I can modify your PALS survey to administer to students. I am aware that it may have been done, I just have not been able to locate the student version of PALS.

I have great admiration and respect for your work.
I hope to hear from you.
Respectfully,
Armando Tejeda