

CULTURALLY SENSITIVE, TECHNOLOGY-ENHANCED MENTAL HEALTH
SCREENING IN INTEGRATED PRIMARY CARE

by

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As members of the DNP Project Committee, we certify that we have read the DNP Project prepared by Barbara K. Salway-Jensen entitled “Culturally Sensitive, Technology-Enhanced Mental Health Screening in Integrated Primary Care” and recommend that it be accepted as fulfilling the DNP Project requirement for the Degree of Doctor of Nursing Practice.

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Final approval and acceptance of this DNP Project is contingent upon the candidate’s submission of the final copies of the DNP Project to the Graduate College.

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DEDICATION

This DNP project is dedicated to the loving memory of American Indian youths whose lives ended far too soon; American Indian elders who survived being stripped of their childhoods, language and culture; and American Indian veterans who served our country with honor and pride.

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ABSTRACT

The integration of primary care and mental health care is a requirement of the Patient Protection and Affordable Care Act of 2010 and has challenged primary care providers to address gaps in the quality of care provided for patients with mental health issues. Vulnerable populations, such as the American Indian people experience gaps in quality health care, especially communication gaps and language barriers. This quality improvement project used a survey design to explore the potential for primary care providers to adopt a culturally sensitive electronic mental health, screening tool to bridge communication gaps and language barriers. Primary care providers recruited from the Northern Arizona University (NAU) Campus Health Services clinic evaluated the concept of a touch screen iPad technology to implement the Patient Health Questionnaire-9 (PHQ-9), which screens for depression using audio options in English and in the Navajo language to accommodate American Indian patients. A PowerPoint overview of the iPad technology was sent via email to the NAU providers and included; the PHQ-9 screening results, which are to be immediately accessible in the patient's electronic health record along with a screening report. The screening report included the PHQ-9 depression score, interpretation of the score, best treatment choices, and a graph for monitoring patient progress. This survey results concluded providers perceive the iPad technology for mental health screening to be useful in their integrated primary care clinic. A modified Technology Acceptance Model (Davis, 1989) was used to evaluate the providers' perception of the *iPad Technology*, and the University of Arizona's Qualtrics survey system provided data analysis of the survey results.

CHAPTER I: INTRODUCTION

This chapter will discuss the background of Integrated Primary Care (IPC) and the challenges and gaps that affect the quality of care for patients whose complex medical problems include a mental health diagnoses. Opportunities identified will assist Primary Care Providers (PCPs) with closing these gaps and challenges and include mental health screening tools and iPad technology. The significance of these tools in health care, advanced practice nursing, and vulnerable populations such as the American Indian population are discussed and identified at-risk groups in the American Indian population are presented. These vulnerable groups experience having both medical diagnoses and psychiatric diagnoses, increasing the complexity of their health care needs and placing them at greater risk for diminished or reduced health care quality. The discussion will focus on the communication gaps and language barriers in integrated primary, the project purpose, aims, and objectives are presented and relevant stakeholders for the project population are listed. The study question this project seeks to answer is presented and the chapter narrows the focus discussion to the Navajo. The Navajo people and their language are the vulnerable population example in which to explore the potential usability of a culturally sensitive, technology-enhanced mental health, screening tool to improve quality patient care and assess depression.

Integrated Primary Care

Primary care and mental health care services have always been separate, but in an effort to provide health care to more people and to provide better mental health care within the United States health care system, the Patient Protection and Affordable Care Act (ACA) of 2010 combined the two to become one service (United States Senate Democrats, 2010). The combined

service is called integrated primary care, and within the ACA's provisions, the Centers for Medicare and Medicaid Services (CMS) offers incentives such as reimbursement for integrating these services as well as costly penalties for failure to integrate them (CMS, 2016; Lathrop, 2014; Pearlman, 2013). The goals of expanding primary care to include mental health services are to improve patient care and health care delivery and to establish an accessible and all-inclusive point of care for patients who would benefit from both primary and mental health services in one visit. The integration of services will improve patient outcomes and reduce health care costs (Kuramoto, 2014). However, patients who qualify to receive services under the ACA tend to have more complex medical problems, thereby creating challenges and gaps in the quality of care they receive.

Defined Challenges

The major challenges in the delivery of integrated primary care is the provision of safe care to the increasing numbers of qualified ACA patients who seek help from Primary Care Providers (PCPs). The PCPs who have taken on the task have stepped forward and have expressed the need for changes such as a need for increased patient appointment times to gather larger amounts of important patient information and for more training in mental health disorders (Rodriguez et al., 2014). These challenges include decision-making including; diagnosis, and choosing the right treatments while monitoring and managing these patients safely. The ACA has called attention to the complexity of these needs and is recommending the use of integrated primary care delivery models; to ensure success, such a change would require modifications to traditional primary care delivery models (Peters, 2014).

Defined Gaps

In addition to the challenges of gathering more detailed patient information to make the right decision for these complex patients, PCPs have pointed out that gaps in quality patient care are also created by provider shortages, lack of access to mental health specialists and services, lack of funding for mental health resources, and communication gaps or language barriers between providers and patients (Chen, Mehrotra, & Auerbach, 2014; Cohan & Brown, 2010; James et al., 2014; Smith, 2012). These challenges and gaps in patient care have always existed, but they are further clarified with the recommendations outlined in the ACA which emphasize the need to address the poor quality of patient care provided to the medically complex integrated primary care patients.

Even though the ACA has exposed these challenges and gaps in expanding primary care, studies have shown that primary care settings are the ideal places to integrate complex patients' primary and mental health needs. Approximately 75% of all primary care patients experience some psychosocial issue and choose to address it with their PCPs instead of with a referral for mental health services (Kuramoto, 2014; Rodriguez, 2014). Other studies have revealed that 50% of mental health illnesses are currently being treated in the primary care setting and that 70% of all antidepressants are prescribed by PCPs in these settings (Krist et al., 2011; Loeb et al., 2012; Peters, 2014; Petterson et al., 2012). Prior to the ACA, primary care patients with chronic medical issues received all of their care in the primary care setting and were twice as likely as they are today to have coexisting mental health issues; however, over half were never diagnosed with any specific mental health disorder (Kuramoto, 2014; Cohan & Brown, 2010).

Vulnerable Populations at High Risk

In an effort to provide health care specifically to vulnerable populations, the ACA strongly supports preventive health care by expanding primary care services through Medicare and Medicaid. Expanding these services improves health care delivery to vulnerable populations and targets disproportionate health disparities leading to high healthcare costs. The ACA has attempted to target and decrease health disparities in vulnerable populations, but despite these efforts, many risk factors continue to exist (Samuels, 2015). Vulnerable populations that are at highest risk of provider challenges and gaps in quality patient care include American Indians. Samuels (2015) reports on health disparities that have been studied for this group include a high incidence of suicide in young adults; chronic illnesses such as diabetes, obesity, alcoholism, and heart disease; and mental health issues such as depression and dementia. This combination of health concerns (both mental and chronic physical illnesses) is a growing challenge among this population, and according to Goins (2010), these concerns will be very costly.

Problem Statement

The problem statement for this project can be stated as follows: The integration of primary care and mental health care is a requirement of the Patient Protection and Affordable Care Act of 2010, which has challenged primary care providers to address gaps in providing high-quality care for patients with mental health issues and for vulnerable populations such as American Indians, who experience challenges such as communication gaps and language barriers.

Opportunities Identified

The expansion of primary care to include mental health care and a prevention strategy as a component of care is a recommendation by the ACA. Prevention strategies include improved mental health care through early intervention and treatment. In addition, opportunities using innovative technology have been identified to improve the way in which primary care patients are screened, diagnosed, and treated for mental health disorders. Using mental health screening tools and new technology like the iPad to assist PCPs in detecting and preventing illnesses through early screening and efficient assessments is evidence based and working to improve patient outcomes (Bartels et al., 2015; Howell et al., 2016; Lathrop et al., 2014; Shaw et al., 2014).

Mental Health Screening Tools

Effective and early screening supports the ACA's expanded assessment recommendations and can address existing gaps in integrated primary care. Early mental health screening leads to early treatment, which leads to better patient outcomes and recovery; this in turn reduces health care costs, resulting in a more efficient health care system. The Meaningful Use stages of the Health Information Technology for Economic and Clinical Health (HITECH) Act of 2009 initiated changes and directed research toward the development of new models of care to identify improved assessment methods, including technological risk-screening tools (Coghan & Brown, 2010). For example, in a study involving electronic screening for mental health in a rural primary care clinic, staff nurses were called upon to implement a mental health assessment instrument during the regular office triage process. The completed results were then provided to the doctors. The staff participants in this study accepted the use of the screening

instrument because they felt the instrument fit into the clinic routine and did not create additional work for them. The ease of fitting into a clinical routine is an important factor in the acceptance of new technology in health care settings. Studies show that “there is strength and promise of technology in providing increased access to health care services by augmenting existing services, not replacing them” (American Nurses Association, 2011; as cited by Farrell et al., 2011, pp. 2-3). Improved screening and prevention have been a foundational element of the Healthy People objectives, which are improving the way health care is delivered successfully (U.S. Department of Health and Human Services [USDHHS], 2015).

Studies have shown that patients most often seek help from primary care providers for physical discomfort rather than for emotional discomfort; however, evidence connects the two, thus showing that mental illnesses affect every aspect of patients’ lives and cannot be ignored (Vasan et al., 2014). Using technology to screen for mental and physical health conditions in primary care enhances overall patient health outcomes. Beck (2000) used an electronic questionnaire in a study of fibromyalgia patients, and the questionnaire was able to identify those with mental health disorders through an early screening. The early screening resulted in earlier interventions, which included education and psychotherapy; the post intervention questionnaire showed that women who received these early interventions improved their functioning (Beck, 2000). The conclusion is that the tools that allow for early screening of mental health symptoms in the primary care setting can result in earlier treatment and better outcomes.

Health care is a team effort, and support from multiple team members is necessary for the successful implementation of these screening tools in an IPC setting. In a semi-structure qualitative study, Ahmad et al. (2012), provides a background discussion about patient

complexity and co-morbidity that has brought on the innovative thinking to use interactive high risk tool that can assist in healthcare with collecting large amounts of patient information to aid in managing complex patient health issues (p. 2). The study examined several studies that used interactive high-risk assessment tools to assist in the care of patients in different settings. The study discussed, “under-detected partner violence in routine medical visits despite increased prevalence due to barriers like patient embarrassment, lack of knowledge and patient- provider time constraints” (p. 3). In an effort to gather information on what makes the best high-risk assessment tool, the study collected input from participants that included physicians, nurses, social workers, and administrators. Findings indicated, “an eHealth tool or an interactive high-risk assessment tool improved several keys aspects of provider-patient communications, namely patient disclosure and provider detection of partner violence and compromised mental health” (p. 2) and that high-risk assessment and screening tools help remove patient–provider communication barriers.

iPad Technology

Mental health screening tools have traditionally been implemented and documented with pen and paper, but are often affected by a patient’s reading and writing levels, and limited health literacy. In addition, the limited patient appointment times and the need to gather more medical history and health information for complex diagnoses and treatments have led to skipped assessments. Using iPad technology as a screening assessment tool could be a solution to these literacy issues and time constraints, as well as the burden of paper-and-pen screening. With advancing technology and the required implementation of electronic medical records, more and more screening tools are offering technological options; for instance, iPads have become an

effective method to communicate and evaluate health symptoms that are obtained during the triage period (just prior to being seen by a medical provider).

The technology of the iPad has also become an important medical resource for both providers and their patients to access information and self-educate about health care. In the iPad's first year, Apple reported that there were 9,000 apps available in its "medicine" category and 15,000 in its "wellness" category (Marceglia, 2012). Acceptance of this technology is obviously represented by the growth in the number of health care apps, which leads to a deduction that paper-and-pen medical forms will likely be quickly replaced with iPads and other handheld technological tools.

Users have concerns about the security of using these devices and want reassurances regarding the privacy of their personal and medical information (Howell, 2015). Security and privacy in this area continue to progress as security issues are addressed (Anderson et al., 2013). Tablet type devices are becoming more reliable and accepted as methods that can assist in delivering health care patients and medical facilities, including remote ones (Anderson et al., 2013). This allows for advanced and varied methods of communication between medical providers and their patients and increased autonomy when patients prefer self-management at home, even with remote provider access. For example, technology-based interventions and tools for the self-management of chronic illness have been successful in assisting with patients' plans of care and in increasing patient compliance and self-efficacy (Knight & Shea, 2013).

The iPad is a portable and easy to use as a communication technology device and has a positive impact on health care costs. The increased regulations required by the ACA, meaningful use, and the HITECH Act have promoted the study of devices like the iPad as a platform for

accessing screenings, assessments, and patients' electronic health records (EHRs). For example, Howell (2015) developed software to replace the assessments that were required prior to treatment with iPad assessments as part of a weeklong, case-controlled trial. The paper to the iPad were compared in terms of consultation time, and the results found the iPad reduced time by five minutes for specific surgery consultation such as one for breast surgery; furthermore, general surgery consultations were found to be 30-40% shorter for all patients except for those over 70 years of age.

Significance to Health Care

Combining technology and mental health screening is significant to health care because both promote early detection, improve health assessment and treatment, decrease health care costs, and improve patient outcomes. Research has shown that there is a connection between increases in certain medical services such as emergency room visits, repeat visits to primary care, repeat hospitalizations, and prescription drug use among patients who have not been treated for their mental illnesses (American Psychology Association, 2016; Strosahl, 2002). Kaiser Permanente studied patients with mental health disorders who were receiving care and treatment, finding that those who were treated showed better physical health and used fewer health services (Strosahl, 2002). The study revealed “a 78% decrease in length of hospital stays, a 67% decrease in frequency of hospitalizations, a 49% decrease in number of prescriptions received, a 47% decrease in physician office visits, and a 45% decrease in emergency room visits” (Strosahl, 2002, p. 2).

Most importantly, mental health assessment screenings make a difference in early detection and early treatment, and they are significant to both primary and secondary prevention

and intervention and prevention is the ACA's central strategy. Many of the ACA's provisions are specific to improving coverage for mental health services, and insurance plans have to provide services relevant to mental health care, with depression screening as a priority (USDHHS, 2010). The economic benefits of the integration of primary care and mental health are reflected at both the federal and state levels. In one example at the federal level, the availability of integrated services to assist with mental health issues offsets the cost of expensive inpatient care. The Civilian Health and Medical Program of the Uniformed Services increased its outpatient psychiatric care funding from \$81 to \$103 million between 1989 and 1991; the result was a savings of \$200 million due to a reduction in psychiatric hospitalizations (Strosahl, 2002, p. 2).

Significance to Advanced Practice Nursing

Technology and mental health screening are significant to advanced practice nursing and will be used as tools for providing quality care. Advanced training has prepared this group with skills in patient care, leadership, research, policy, and technology, so advanced practice nurses can provide quality care and assist in promoting health care needs. Technology and screening tools have been a part of that training and the resulting skill set. The ACA expanded primary care and opened health care up to millions of people who would otherwise not have it. The advanced practice nurses who have advanced training in clinical practice for direct patient care will "fill in gaps where there are provider shortages, and use their leadership skills for policy changes to contribute to patient care as part of an interdisciplinary team" (Lanthrop, 2014, p. 5). In addition, the American Association of Colleges of Nursing's (2016) *Essentials of Doctoral Education for Advanced Nursing Practice* can be used to prepare advanced practice nurses who have earned Doctor of Nursing Practice (DNP) degrees to work with doctors and provide quality patient care

and resolve the challenges and gaps that PCPs face in the integrated primary care setting. In addition, the ACA has also provided a platform for DNPs to practice and implement evidence-based research, allowing trained DNPs to make use of innovative information technology to contribute to improvements in health care delivery (Pearlman, 2013).

Significance to Vulnerable Populations

Technology and electronic mental health screening are significant to vulnerable populations and such innovative tools will provide access to health care in areas where limited resources prevent other options while providing a two-way communication resource that can bridge communication gaps between provider and patient. In addition, technology and translated mental health screening tools can accommodate a vulnerable population whose primary language is not English. Both technology and translated tools will assist PCPs in the management of their increasingly complex patient workloads (Cangelosi et al., 2014; Chang et al., 2012; Chaudhuri et al., 2013; McCray, 2005; Ryan et al., 2003). Vulnerable and underserved populations such as the American Indian population experience IPC challenges and gaps in receiving quality health care due to their health disparities in terms of chronic illness and mental health issues, their isolated locations, and their limited access to health care services. According to the USDHHS (2013), American Indian population areas had shortages of 5,800 primary care health professionals and 3,700 mental health professionals (Gallego, 2014). Weil (2015) predicted increased shortages of 46,000 to 90,400 physicians by 2025, including specialty physicians such as psychiatrists. Of those providers who serve American Indian people, approximately half of the reported 1,000 physician jobs are for PCPs, and “as of July, 2009, 21% of those physician positions were vacant” (Burnett, 2009). In addition, funding for mental health services among vulnerable

populations such as the American Indians has suffered cuts (as it has in the rest of the country). In one example, “10 of the 12 Indian Health Service areas budget cuts were directed at mental health programs, even though mental health was the number one health problem affecting American Indian people” (Sarchi et al., 2008, p. 6). In addition, only 7% of the Indian Health Service budget is set aside for mental health, which equates to two to four psychiatrists per 100,000 patients (Sarchi et al., 2008)

Identified Vulnerable Population: American Indians

Approximately 3.3 million American Indians belong to more than 560 federally recognized tribes and live in 35 states, using a combination of Indian Health Services and Urban Health Care Services for American Indians as their healthcare options (U.S. Department of Health and Human Services, 2014b; Cano, 2016; Gone & Trimble, 2011; Indian Health Services, 2015). Although health services are provided for the American Indian population, studies show that this group has the poorest health outcomes of any ethnic group, with death rates 10 times those of other Americans in all age groups (Indian Health Services, 2015). This costly problem reaches across the lifespan of all American Indian people, but youths are the most at-risk group for all tribes (Herne, 2014).

American Indian youths make up 42% of the native population under the age of 24 in many remote areas; this group has been dealing with a public health crisis due to high rates of suicide for decades (Klein, 2015; White House Office of the Press Secretary, 2015). We know that the mental health issues that lead to suicide are treatable, yet, in 2015 alone, on the Pine Ridge Reservation in South Dakota, over 100 teens attempted suicide, and nine youths aged 12 to 15 completed suicide; there were no reports of drugs or alcohol being to blame (Landry,

2015). Additionally, “From 2009-2010, the Navajo Nation lost six children to suicide, the Mescalero Apache Nation lost six children to suicide, and the Standing Rock Lakota Reservations of the Dakotas lost 11 children to suicide” (Hummingbird, 2011, p. 111). These are just a few of the young lives lost over the past decade. On February 3, 2016, the Senate Indian Affairs Committee gathered in Washington, D.C., to speak about the substandard care provided at Indian Health Facilities in the Great Plains. In an effort to speak for those who suffer and have no voice, William Bear Shield, a council representative of the Rosebud Sioux tribe, made a plea to focus on the American Indian children, “who live in the most poverty-stricken communities in America, where suicide is the second-leading cause of death among youth 15 to 24 years of age” (Bear Shield, 2016). His statements are backed by national reports showing suicide rates in this group as being 10 times the national average, with some tribes reporting that as many as 64% of all suicides occur within this age group; in addition American Indian males commit suicide at two to four times the rates of AI females or youths from other racial groups (Bender, 2015; Centers for Disease Control [CDC], 2015; Dorgan, 2010; Hummingbird, 2011; IHS, 2015; Klein, 2015; Tingey, 2014; White House Office of the Press Secretary, 2015). Studies have shown this group lives in extreme poverty, has high rates of substance abuse and self-medicating behaviors, both of which put the youth in this group at higher risk for suicide and other risk factors such as depression, substance abuse, violence, and losses from attempting or witnessing suicide (Fox, 2005; National Institute of Mental Health, 2014).

Many efforts are being made to find solutions due to the increased awareness in this high-risk group of AI youth. *The Huffington Post* and the United National Indian Tribal Youth worked together to gain a better understanding of the lives of the youth in these areas, finding that the

youth who participated in the study had strong optimism and hope for their futures (Klein, 2015). President Obama initiated the Generation Indigenous in 2014; this program is focused on removing barriers and providing opportunities for American Indian youth (White House Office of the Press Secretary, 2015). In addition, those in the medical field are asking for the development of American Indian-specific suicide-risk models to help gain an understanding of the pathways that lead to suicidal behavior in hopes of finding a culturally applicable prevention (Tingey, 2014). The ACA and its expansion in primary care may save many of these young lives—especially for those who have mental health needs. Effective and innovative screening tools allow patients to verbalize their mental health needs when words fail them.

The ACA's prevention strategy can use technology and mental health screening tools to increase communication. Next, this paper will focus on the integrated primary care gaps (such as communication gaps and language barriers) among American Indians by discussing the challenges and gaps in communication and health literacy in this population and by using language to address cultural sensitivity with an evidence-based mental health screening instrument.

Identified Integrated Primary Care Gaps for American Indians

Communication gaps and language barriers

The challenges and gaps in quality patient care are connected, and this DNP project will present iPad technology as a tool that will address language barriers and communication gaps between providers and American Indian patients. As mentioned earlier, the four gaps in the integrated primary care settings are provider shortages, lack of access to mental health specialists and services, lack of funding for mental health resources, and communication gaps or language

barriers between providers and patients (Smith, 2012). The focus of this project's tool is communication gaps and language barriers, and the project will target communication between a vulnerable American Indian population (the Navajo) and its PCPs at an integrated primary care practice located at the University of Arizona Campus Health Services clinic. This location was chosen because it provides health care for the large number of Navajo students at the University and to its close proximity to the Navajo Nation and other American Indian reservations.

Effective health care involves patients participating with their providers in all health care decisions to build a relationship of understanding and clear communication. Assessment tools that assist with communication will build trust and respect between the Navajo patients and their providers, as "effective communication is essential for delivering quality patient care and building patient-doctor relationships with compassion and shared respect" (Teutsch, 2003, p. 1115). The American Psychology Association (2016) and its health care experts share that, "primary care which includes mental health screenings and treatments, and takes into account a patient's language and cultural background will address mental health care disparities among ethnic minorities, according to psychologists, physicians and other health care experts" (p. 1). The PCPs' communication and interpersonal skills are very important; Fong (2010) described these skills as crucial to the PCPs' interpersonal relationships with patients, as these skills encourage an exchange of information and ensure that the patient is included in the decision-making process. Skills that promote interpersonal relationships are very important when delivering culturally sensitive treatments to diverse and/or vulnerable populations.

Many patients do not comprehend their illnesses and do not have the vocabulary to explain what is happening to them; therefore, the PCP's most important goal is to use

communication as a part of a therapeutic approach to treatment and recovery (Ghafoori et al., 2014). Alternative methods to minimize language barriers for vulnerable populations such as the Navajo need to be developed; iPad technology has the potential to improve communication between providers and patients. The National Institute of Mental Health (2015) reported (through an initiative entitled, “Reducing the Burden of Suicide Among American Indian Youth”) that there is a need for “research to identify appropriate application of technology to extend mental health human resources” (Roca, 2015). The use of iPad technology is certainly an extension of mental health human resources. Culturally sensitive screenings can decrease language barriers, and technology can provide the platform upon which such screenings are presented. Language is culturally sensitive and specific to each tribe, so without a health care system that accommodates different languages, screening results can be misleading, causing a lack understanding for both the patient and the provider. Every language’s words reflect a culture’s unique practices, rituals, and beliefs. Thus, cultural beliefs about health can be lost when the meanings behind words are transformed within a culture or language.

For example, the Dine (Navajo) tribe, follow a wellness concept known as Dine Hózhó, which “speaks to the whole person, including body, mind, environment and community” (Kahn-John, 2010, p. 114). When translated into English, the concept is lost, as single English words are not adequate to describe its meaning, leading to misunderstandings regarding the meaning of wellness among the Navajo. These errors in translating meaning between cultures result in misunderstandings regarding illness, as Kahn-John (2010) explains: “to fully understand Hózhó requires an extensive understanding of the traditional Navajo way of living” (p. 115). The importance of accurate translation and communication between cultures is emphasized as a

significant element of effective and culturally sensitive health care delivery, which in turn enhances the quality and effectiveness of the health care delivered (Kahn-John 2010).

Another example is expressed during the orientation for new employees at the Whiteriver Indian Hospital on the Fort Apache Indian Reservation in Arizona. All new personnel working with the Apache Indian people in this community are required to attend an hour-long presentation by a tribal elder or other employee; this presentation focuses on the phrase, “I feel somehow.” Many Apache patients on the Fort Apache Indian Reservation use this phrase to express to their health care provider that something is wrong with their health. The providers feel frustration at having to decipher the meaning of the phrase and work around an assessment of a patient who may display no eye contact (out of respect) and who may engage in limited verbal exchanges and have low health literacy. Phrases such as “I feel somehow” need translation; words that both the providers and the Apache patients understand can be used to communicate health needs.

Historically, the American Indian populations were prohibited or shamed for participating in their native cultural practices or using their native language. Times have changed, and recognition of the importance of American Indian cultures and languages has increased among American Indian tribes. Tribes such as the Navajo have made strong revitalization efforts in an effort to preserve and promote their language and culture. The Navajo have culturally immersive education programs specifically for their children and youth; these include submersion in classrooms where only the Navajo language is spoken. Community involvement programs such as adult cultural and language classes are also a common occurrence. This movement has made an impression, and the current objectives for the health care services of

both the IHS and the Healthy People initiative now involve cultural competencies such as linguistics education (USDHHS, 2015).

Health literacy

Low health literacy also limits effective communication, and screening tools that do not compensate for this will fail to assist PCPs in bridging communication gaps and overcoming challenges. In addition to language, low health literacy is another important component of communication within health care settings across the United States and particularly within the American Indian population. The ability to read is mistakenly connected to having health literacy; however, additional skills are needed, including knowledge of how to access the health care system and find providers, the ability to share one's medical history, mathematical computation knowledge, and the ability to follow directions for prescribed medications and treatments (Sorensen, 2012).

The ACA (2010) defined health literacy as “the degree to which an individual has the capacity to obtain, communicate, process and understand basic health information and services to make appropriate health decisions” (§ Title V; CDC, 2016). Health literacy is also a continued priority for meeting the objectives of Healthy People 2020, and the Office of Disease Prevention and Health Promotion (USDHHS, 2010) has reported that “limited health literacy affects people of every age, race, income and education level, but specifically the impact of limited health literacy disproportionately affects lower socioeconomic and minority groups” (p. 1; Healthy People 2020, 2016; USDHHS, 2016).

The results of a 2006 study by the United States Department of Education found that 36% of adults, or 90 million people, struggle with low health literacy; this results in an inability to

understand and use medical information given to them (e.g., through instructions on medications) and in a need for repeated demonstrations to manage their own care (Boodman, 2011). Low health literacy negatively affects many aspects of self-care such as the management of chronic illnesses, and it is “disproportionately burdensome on vulnerable populations such as American Indians” (Indian Health Service White Paper on Health Literacy, 2009, p. 2). For example, self-care and the management of chronic illnesses are both important skills used in diabetes management for this population. To manage diabetes, patients require the ability to understand basic instructions to calculate their insulin dose and read their glucose levels.

In vulnerable populations such as American Indians, health literacy affects the population at every age. According to the Education Trust (2011), American Indian students showed a lesser degree of improvement in academic achievement in the years 2009–2011; 18% of American Indian fourth graders were proficient in reading, compared to 42% of Caucasian fourth graders. These numbers continued in both math and comprehension throughout middle school, as shown in the scores for eighth graders, and when these students reached high school, less than 70% of them graduated; only 39% began college after graduation, compared to 62% of Caucasian students (Covert, 2013; Education Trust, 2011).

Lack of education and decreased health literacy both increase the risk of communication gaps between American Indians and their providers. Shared decision-making between patients and their providers is important, and low health literacy impairs the ability of American Indians to fully and confidently participate in decisions pertaining to their diagnoses, treatments, plans of care, and outcomes (La Vallie et al., 2012). Reported statistics among 12th-grade American Indian students show that many score below proficient in reading, compared to Caucasians

(Indian Health Service, White Paper on Health Literacy, 2009). Many individuals who are illiterate are ashamed, and this shame causes American Indian patients to hide their literacy needs. They will often remain silent during a medical assessment or treatment even if they do not fully understand the recommendations or information that their PCPs provide. Thus, communication gaps and language issues are among the greatest health literacy barriers to quality patient care and outcomes (CDC, 2016; USDHHS, 2014a).

Cultural sensitivity

This project's tool will incorporate cultural sensitivity into the assessment through the use of an American Indian language (Navajo). The iPad technology will enhance culturally sensitive communication between PCPs and their Navajo patients through that language. Studies have shown that communication and patient care can be improved when providers have a clear understanding of their patients' needs and the patients can clearly communicate their needs using a language they understand. An effective, culturally sensitive screening tool (such as the iPad used in this project) allows for a two-way conversation to guarantee understanding and meet these needs. The overall North American Indian culture is diverse, with more than 550 tribes; despite the high diversity of American Indian tribes in this country, research has shown that language and translation can be used to provide successful health care to this vulnerable population (Gonzales, 2012; Nishita, 2013).

Translation systems such as CryraCom, LanguageLine, and SpeakEasy are examples of technology that can be used to promote effective communication with patients from different cultural backgrounds by using their own languages and phrases (Crycom Language Services, 2016). Although it would be helpful to have these translation services in all health care settings

to assist patients in need, they are not always available in the integrated primary care practices that serve the diverse American Indian people. For example, in many Navajo clinic settings, translation services are limited and interpreter services are not available. Therefore, it is often necessary to use a human interpreter. In many situations, these interpreters might include other Navajo people, such as nursing assistants, who work in the Indian Health Service settings. There have also been emergency situations when other employees such as janitors have been used as translators. Some Navajo facilities that have an increased need hire full-time interpreters for clinical settings, but even then, the interpreter may not be available 24 hours a day. There are concerns for the welfare of these patients and for the communication of their needs. The Health Insurance Portability and Accountability Act (HIPAA) guidelines are called into question when a janitor must act as an interpreter (Roel, 2006). In addition, although the Civil Rights Act of 1964 mandated that hospitals provide oral interpretations, medical translation was not included in this order (Garcia-Castello, 2007; USDHHS, 2003).

This project's iPad assessment tool addresses the language barrier in mental health screening of Navajo patients through translation of the PHQ-9 screening instrument into the Navajo language. Through an audio option, Navajo patients will be able to hear the nine questions translated in their own language and will then choose the best answers based on their mental health experiences. Pfizer provided guidelines for translating the PHQ-9 based on its research; these guidelines will aid in making the process more valid and reliable (Pfizer, 2016). Garcia-Castillo (2007) shared that medical translation is much more than just converting one language to another: When done correctly, it can improve quality of care for those who have limited English proficiency. This project assessment tool will include oblique translation

techniques, which are used when words or meanings in one language cannot be translated into another language without changing the meaning; a direct translation technique called calque, which takes the English version of the PHQ-9 and translates it into an American Indian version; and a literal (word-for-word) translation of the PHQ-9 (Bosco, 2016).

Vulnerable Population Example: The Navajo

American Indians speak over 200 indigenous languages, and approximately 280,000 American Indian people in the United States speak a language other than English at home (U.S. Census Bureau, 2010; APPENDIX D). From north to south, many American Indians use their native language on a daily basis. For example, in Alaska, more than half of Alaskan natives speak either Inuit or Yup'ik, and in the Southwest, it has been reported that the dominant language is Navajo, which is reported to be the most widely spoken American Indian language (Lee, 2014). The Navajo are the largest tribe in the United States, and their home is in Utah, Arizona, and New Mexico (Joe, 2016).

The Navajo are the vulnerable population example for this project and the Navajo language will be discussed as the culturally sensitive adaptation to this project's tool. The Navajo language is important to the strong cultural identity of the Navajo Nation and this is visible through active community linguistic programs (Joe, 2016). It has been reported that a large percent of tribal members speak the Navajo language daily with fluency, and the Navajo Nation continually works hard to revitalize and promote the Navajo culture with tribal members of all ages. In 2011, 68% of the residents of the Navajo Nation Reservation who were five years or older spoke a language other than English at home, and currently, the Navajo Nation in Arizona has a Navajo language immersion program for students in kindergarten through eighth

grade (U.S. Department of Health and Human Services, 2014b). Another report estimates that of the estimated 260,000 Navajo people, 170,000 speak the language at home; the Navajo Nation has established education programs to support the language's existence and use (U.S. Census Bureau, 2010 – Appendix D). The language support is important and shall remain the foundation to this culture. These people and the language are also a part of our nation's worldly pride. The famous "code talkers" were bilingual Navajo-speaking Marines who volunteered their services to transmit messages by phone and radio during World War II. Even the conversations back then acknowledged that the Navajo soldiers had to work to translate the English language into their Navajo words and phrases. In a letter to enlist the "Navaho" Indians, the Commanding General at Camp Elliott (in San Diego, California) stated, "Messages were transmitted and received almost verbatim, but the Indians do not have some terms in their dialect, and it was necessary to give them time to 'improvise' words" (Jevic, 2001). A divide remains between many Navajo and English words.

The project survey will take place at Northern Arizona University (NAU) in Flagstaff, Arizona. The university reports that their students represent more than 94 separate tribes, with Navajo students representing 44% of those statistics (NAU, 2016). In addition, the 2015-2016 school year statistics showed the NAU's student population count includes 741 Navajo students (Figure 6). The university's location is close to many of the Navajo lands, and it is one of the largest universities in which large numbers of Navajo students use medical services other than Indian Health Services. This idea behind this project is to combine the technology of the iPad, the evidence-based mental health screening instrument PHQ, and the Navajo language to address

the primary care–provider challenges and exposed gaps in quality patient care in integrated primary care settings serving Navajo patients.

Funding and Support

Medical services provided to the American Indian people by Indian Health Services worked with an annual budget of \$6.4 billion for 2016, which was increased by \$48 million, or increased by 8%, from the 2015 budget (USDHHS, 2016). This increase in funding targeted health disparities among this population and the focus has been on behavioral health services for American Indian youth. Other priorities in this funding source include the Generation Indigenous Initiative which provides opportunities and bettering the lives of American Indian youth (White House Office of the Press Secretary, 2015). The extra funding assists in closing gaps in services by developing community outreach programs, such as those that provide suicide support and address substance abuse prevention (Sperling, 2015). In addition, the budget supports American Indian language instruction and education, with \$3 million committed to support the Community Native Language Coordination Initiative and assists communities with tribal Head Start and child-care centers in recognizing cultural practices that promote American Indian language acquisition and usage (USDHHS, 2016). Communities that qualify include Arizona’s Navajo Nation, which has actively implemented programs for its children, adults, and elders and focuses on the preservation and promotion of cultural knowledge, practices, and the Navajo language (USDHHS, 2016).

Purpose, Aims and Objectives

There is a communication gap between PCPs and their American Indian patients that often results in poor quality or nonexistent mental health screening. This lack of mental health

screening in a population at the highest risk for mental health problems is problematic. In this project, a mental health screening tool and cultural sensitivity adaption is combined with iPad technology to address a gap observed at NAU Campus Health Services. The **purpose** of this quality-improvement project is to explore the potential for PCPs to adopt a culturally sensitive electronic mental health, screening tool in iPad technology that can bridge communication gaps and language barriers. Specific **aims** for this project included the following two items:

1. Determine PCP perception of *Usability* (perceived usefulness and perceived ease of use) influence of the *iPad technology* toward *Outcome* and
2. Determine PCP *Attitude* (behavior intention and acceptance) influence toward the use of *iPad technology* toward *Outcome*.

The **objective** of this project was to explore PCPs' perception to adopt a culturally sensitive mental health screening tool (administered on an iPad) prior to their patients' appointments to bridge the gap in communication about mental health.

Stakeholders

The stakeholders of this project were much broader than only the users of the technology; the groups was divided into primary and secondary stakeholders. The primary stakeholders included primary care patients, PCPs, and other primary care staff, who assisted patients with using the culturally sensitive iPad technology. The secondary stakeholders included American Indian communities and families, American Indian tribal health-administration agencies, Medicare, Medicaid, policy makers, state and federal funding agencies, and U.S. taxpayers, who contributed to funding the programs that provided IPC and mental health services in these

isolated areas. In an effort to evaluate this tool's feasibility, the first step in this project was to obtain feedback from PCPs who use the tool.

Study Question

How do PCPs perceive the potential usability and acceptability of a culturally sensitive mental health screening tool (administered on an iPad) prior to their patient's appointment as a mechanism to improve mental health assessment?

Summary

In summary, an increasing number of patients with complex medical and mental health disorders are now eligible to receive services in an integrated health care setting under the provisions of the ACA (2010). The complexity of these patients has created challenges and exposed gaps in patient care, and PCPs have stepped forward to voice their concerns and ask for help in finding solutions. Opportunities have been identified through studies using evidence-based mental health screening instruments such as the PHQ-9 and technology devices such as the iPad. Both have been shown to be an efficient and effective method in assisting PCPs and improving the quality of integrated patient health care. Combining the two is significant to health care through preventive approaches and has been shown to decrease health care costs, support the utilization of advanced practice nursing to fill shortages, and serve vulnerable populations at the point of care. This project used the PHQ-9 and iPad technology with software to add a culturally sensitive adaptation of the American Indian language (Navajo) as an audio option to test for depression and minimize communication gaps and language barriers. The immediate results of the screening are found in the patient's medical record prior to the patient's appointment.

CHAPTER II: FRAMEWORK AND LITERATURE REVIEW

This chapter includes an overview of the Technology Acceptance Model (TAM) as the theoretical framework for this project. Modifications to the original model (Figure 1) accommodated this project's mental health screening tool (Figure 2). This chapter also provided a review of literature retrieved from the University of Arizona's Arizona Health Sciences Library involving studies connected to IPC, mental health screening tools, iPad technology in health care, the PHQ-9 instrument for depression, and language service and communication technology.

Theoretical Framework: Technology Acceptance Model (TAM)

The theoretical framework used for this project is the Technology Acceptance Model (TAM) (Davis, 1989). The TAM (Figure 1) guides the evaluation of the perceived usefulness and perceived ease of using this mental health screening tool and the outcome of its end use if the iPad technology were to be implemented at the NAU Campus Health Services clinic. If the end use of this mental health, screening tool is acceptable to the surveyed providers, a path to begin developing the software is the next step. When a new technology is implemented, the TAM helps to provide steps that decrease barriers to proper use and improve the quality and safety in healthcare. However, research has shown that if the end users of a new technology cannot clearly see how new technology will help them personally in their job or how it fits into their work routine, there will be a costly lesson to learn, and the technology isn't used properly or effectively (Holden, 2010).

Concepts and Definitions

The TAM has been modified for this project in Figure 2. The terms used to describe the modified TAM components include the following: *iPad technology* (the mental health screening

instrument; Patient Health Questionnaire-9, PHQ-9) and a culturally sensitive adaptation (audio translation of the PHQ-9 questions in an American Indian language, Navajo). The *iPad technology* which influences the *Usability* (perceived usefulness and perceived ease of use), which influences *Attitude* (behavior intention and acceptance), and this cascade of influences a result in a likely *Outcome* (potential for providers to adopt or not adopt an iPad with a culturally sensitive mental health screening tool).

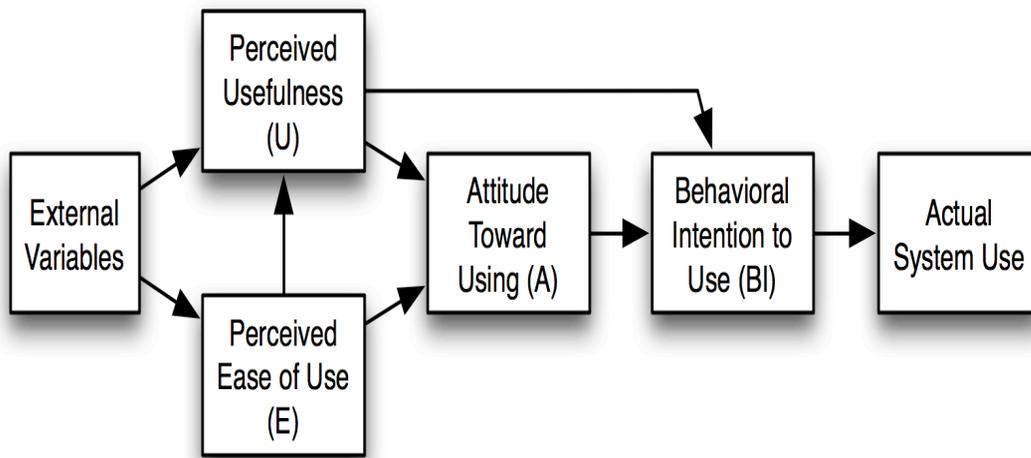


FIGURE 1. Technology Acceptance Model (TAM; Davis, 1989)

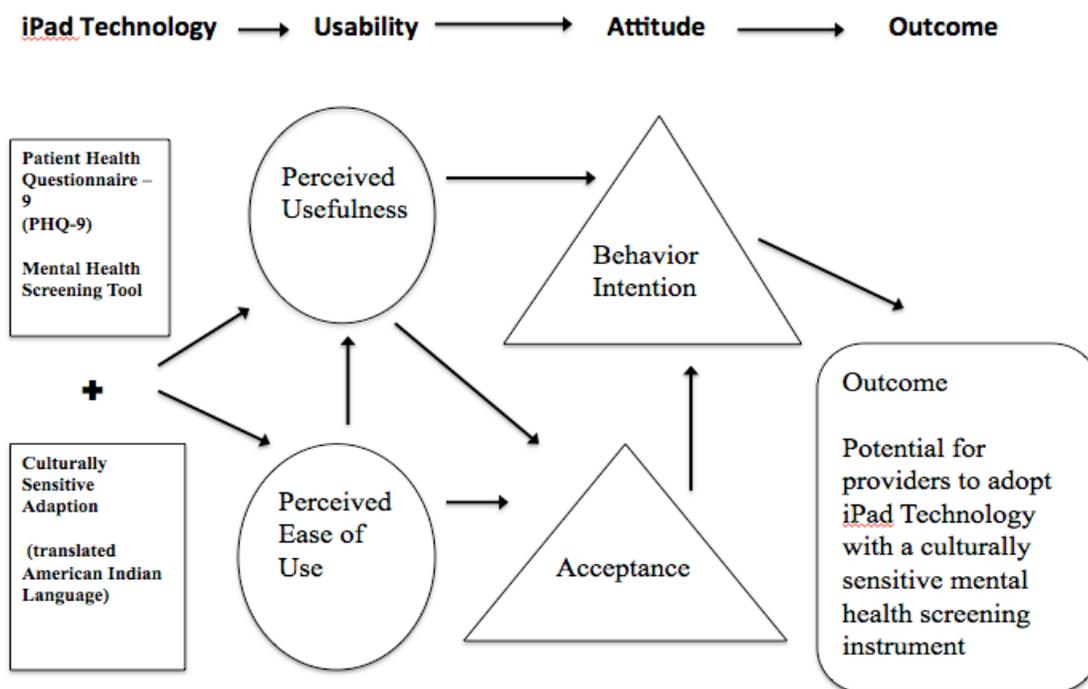


FIGURE 2. Modified TAM Project Model

Literature Review

Integrated Primary Care

Primary care practices have been identified and chosen as the best clinical setting for mental health assessments. The literature review indicated there are many reasons for this, and “the long-term relationships primary care providers (PCP)s have with their patients” is one of the main reasons (Peters, 2014, as cited by Krist, 2014, p. 2). Additionally, primary care settings are ideal settings for mental health assessment and treatments because this is the health care setting used most by patients who are seeking help with their mental health concerns. For these reasons, and with research to back this information, the Patient Protection and Affordable Care Act of 2010 IPC to include mental health services. This seemed to be a well thought-out solution, but as the increased number of qualified ACA patients began presenting to IPC settings with chronic

illnesses and coexisting mental health issues, it became obvious to the PCPs treating them that challenges were becoming too dangerous and that the exposed gaps in quality patient care had become a safety concern (Krist, 2014). The increased patient load forced PCPs to speak up about the challenges they faced as medical professionals, and they indicated that they are not prepared for the complexity of IPC patients (Saillant, 2015).

There are two schools of thought in the medical field about how to solve the challenges and gaps that PCPs face. The first school of thought is to address the challenges and close the gaps by filling any provider shortages and increasing funding for specialists and mental health services. When the Association of American Medical Colleges projected a shortage of 30,000 primary care physicians by 2015 and 66,000 by 2025, the response was to increase medical school acceptance rates, assist with loan repayment programs, recruit medical doctors from other countries by offering guaranteed extended visas called J-1 visa waivers, and increase Medicaid reimbursement funds. Physicians who serve rural underserved populations pushed for the increased use of technology (Weldon, 2008, p. 2) to address existing challenges. In addition, other solutions included recruiting more mental health specialists and nonmedical professionals with mental health education and experience, increasing funding for training, and recruiting more nurse practitioners and physician assistants, and using reimbursement funds as incentives (Chen, 2014; Cohan, 2010; Weil, 2014; Weldon, 2008).

The second school of thought is to solve the challenges and gaps in patient care by using current resources more effectively through newer models of care and a call for more innovative technology ideas and tools, including mental health screening tools, and using communication

technology implemented at the point of care more efficiently and effectively in IPC settings (Farley, 2015; James, 2014; Petterson, 2012).

Regardless of the route that works, Peters (2015) reports that “primary care practices are willing to implement behavioral and mental health assessments as required by the Affordable Care Act, but lack the resources to do so effectively, and if they implement the assessments, the high number of health risks identified will likely stretch many practices beyond treatment capacity” (p. 1). Additional research shows that “approximately 43% to 60% of treatment for mental illness occurs in primary care, while 17-20% are treated in specialty mental health settings and studies show that primary care providers prescribe more than half of all antidepressants used (Loeb, 2012). Most PCPs acknowledge these concerns and admit to having limited knowledge and skills in assessing mental illnesses in complex patients and report, “treating patients with mental illness is often operating beyond their scope of training” (Smith, 2012). IPC can be successful, and there is an opportunity for technology to play an important role in this success. The place to begin to offer solutions to improving the IPC services may be by introducing new evidenced-based instruments and assessment tools.

Mental Health Screening Tools

Evidence suggests that the use of mental health screening tools and technology such as the iPad, are innovative, valid, and reliable mechanisms for early screening and improving IPC assessments to increase the quality of patient care and outcomes. It is well known that technology use is growing rapidly in health care and that the new rules and laws to protect, store, and share patient information are of top priority. According to Carroll (2011), technology-enhanced health screening is the best solution as an effective tool to assist PCPs in addressing the

gaps in mental health screening and assessments. In addition, research has shown that technology is quickly progressing and improving and will lead the path to “a more efficient and thorough means of assessing patient’s complex risk profiles and electronic health technologies (eHealth) such as interactive computer assisted health risk assessments, which aim to improve provider-patient information sharing and communication in meaningful ways” (Ahmad et al., 2012, p. 2).

According to Farvolden (2003), “People suffering from major depressive or anxiety disorder are often encountered in the primary setting but most remain either untreated or inadequately treated and current data suggest general practitioners fail to diagnose up to half of cases of major depressive disorder or anxiety” (p. 5). The study reported, “There is a need for screening tools that will help physicians and other professional in primary care recognize and adequately treat major depressive disorder and anxiety disorders” (p. 6). In this study, a Web-Based Depression and Anxiety (WB-DAT) screening instrument was compared to the Structured Clinical Interview from Diagnostic and Statistical Manual of Mental Disorders, fourth edition (DSM-IV) Axis I Disorders (SCID0I/P) (p. 2). There were 193 participants who self-screened for depression and anxiety using an Internet screening test. The results between the two instruments were compared and shown; the sensitivity (0.71-0.95) and specificity (0.87-0.97) for the major diagnostic categories assessed using the WB-DAT screening tool range was good (p. 5). Specifically, the internet tool for identifying patients with mental disorders was found to be accurate and reliable as a tool for assessing patients for major depressive and anxiety disorders (Farvodal 2003, p. 14). The internet based self-assessment could be printed and taken to the patient’s provider to open a discussion about recovery.

Incorporating innovative technology to assist in IPC includes studies that have found mental illnesses to affect every aspect of a patient's life. In a parallel-group, randomized, controlled superiority trial (RCT) with a qualitative descriptive component study by Kingston (2014), it was found that "routine, standardized screening significantly improves detection of mental health problems and without early screening and treatment, and found that 50% to 70% of women with prenatal anxiety or depression symptoms will experience persistent symptoms through their child's early years with enduring effects on their children's development and mental health" (p. 2). Kingston's study concluded, "e-screening in routine prenatal care improve the women's mental health through access to early screening and treatment" (p 11).

In addition, Shedler, Beck, and Bensen (2000) implemented the electronic questionnaire, the Quick Psycho Diagnostics Panel (QPD), as a screening tool that assesses for several psychiatric disorders and found it to be successful and evaluated its validity compared to the Structured Clinical Interview for DSM-IV (SCID and evaluated convergent validity by correlating QPD panel scores with established mental health measures). The Shedler QPD panel has also shown its ability as a valid mental health assessment tool that can be used for the increasing health care needs in multiple health care settings. The QPD panel has been extensively researched as an assistant tool to qualified health care providers and can also be used in a wide range of the population.

The tool's utility was evaluated through a physician and patient satisfaction survey and resulted in major depression sensitivity and specificity at 81% and 96%, while other disorders showed that the sensitivities ranged from 90% to 97% (Shedler, Beck, & Bensen 2000, p. 619). In conclusion, the QPD panel was reported to be a valid mental health assessment tool to

diagnose a range of common psychiatric disorders and is practical for use in primary care (Shedler, Beck, & Bensen 2000, p. 614).

iPad Technology

In addition, interactive technology-enhanced tools such as iPads have become the choice in medical resources to assist medical professionals in the delivery of health services and the collection and transfer of medical information. These devices have the ability to meet multiple purposes in the medical field and are being used by both doctors and their patients. In an essay entitled, “How Might the iPad Change Healthcare?” Marceglia et al. (2012) described the potential for iPads to support medical professionals with health promotion and disease prevention in multiple ways, including self-management, communication, and education. Reyes (2016) describes 3D4Medical apps that now allow medical professionals to use 3D technology in which the user is able to visually move through the human body for anatomical animations that can be used for patient education. These types of opportunities are growing with the use of iPad technology.

The literature has shown many uses for the iPad and how it benefits patients in the medical profession. For example, there is an iPad FaceTime app that has been used in 46 cases for bonding when babies are not able to go home with the mother at birth, and the app has also been a positive experience for the infants’ doctors when communicating with the family about the plan of care (Hutcheson et al., 2015). In another study, residents in a radiology setting were asked for their opinion on the usage of an iPad as a tool for education and clinical practice, and the majority of the 38 residents incorporated the iPad as an education tool as a result of the study (Berkowitz, 2014).

However, not all studies were positive about the technology and iPads. A technology-based early intervention for social communication skills in preschool children under the age of six used an app and an iPad to engage autistic children, but there was no significant difference in the outcome according to a post-intervention parent report (Fletcher-Watson et al., 2015). In another study using the iPad at the bedside to engage patients in their care, seven of 10 “senior” doctors and 180 out of 525 patients reported that the bedside was not the most appropriate place for information sharing or patient engagement (Baysari, 2014). However, Baysari (2014) reported that the doctors were not observed using the iPad as intended for the study.

Patient Health Questionnaire–9 (PHQ-9)

The PHQ-9 was the first choice of screening to use for this project because of its evidence-based support in assessing patients from diverse cultural populations (Lin, 2014). In addition, its ability to assess severity of depression is also important to the vulnerable American Indian population (Moriarty, 2015). This screening instrument is known for its accuracy; evidence-based status, including validity and reliability; and the brief time it takes to complete, which accommodates a busy, IPC setting (Wittkamp, 2009). PHQ-9 testing is used worldwide and with a variety of cultures and populations, with translations completed in over 80 languages and psychometric properties that address items specific to the *Diagnostic and Statistical Manual of Mental Disorders (DSM-5)* criteria for depression (Pfizer, 2016; see also American Psychological Association [APA], 2016).

In a study assessing the psychometric properties of the PHQ-9 and the Hospital Anxiety and Depression Scale (HADS), the PHQ-9 followed the severity of depression more closely; in the sample ($n = 1,063$ at baseline and $n = 544$ at the end of treatment), it was determined that

74% of the subjects would have been prescribed an antidepressant, versus 37% using the HADS assessment (Cameron, 2007). Pfizer (2016) reported that PHQ scores equal to or greater than 10 had a sensitivity of 88% and a specificity of 88% for major depression, and PHQ-9 scores of 5, 10, 15, and 20 represent mild, moderate, moderately severe, and severe depression, respectively (Kroenke, Spitzer, & Williams, 2001; Pfizer, 2016). Evidence-based assessment instruments are important as screening tools, and it is important to recognize that the diagnostic validity of the PHQ-9 was established in studies involving eight primary care and seven obstetrical clinics, with a total of 6,000 patients (Kroenke et al., 2001). The PHQ-9 can be used as a “multipurpose instrument for screening, diagnosing, monitoring and measuring depression,” which is important when no referrals to specialized services are available (Kroenke et al., 2001, para. 1).

Language Services and Communication Technology

Technology has opened communication connections across continents, and many sources around the world share information at the touch of a button in seconds. Words can be translated into dozens of languages with free online translation services, such as Google Translate, Words Lens, and Waygo, and visual translation apps that are capable of recognizing and translating languages, such as Chinese, Japanese, and Korean. These apps have become so sophisticated that some have no need for the Internet and can translate by pointing a phone at the written word (Waygo, 2016). In an article about translation technology, Google reports that “travel is now possible anywhere in the world without language barriers” with wearable apps such as UniSpeech for Google Glass that can assist in translation on request (Dredge, 2014, p. 1). The question then is not whether technology can help bridge the communication gap and language barrier between providers and patients; it is how to prepare so that technology can be used as

soon as the opportunity becomes available in every IPC setting. Technology is the tool with which to close many of the gaps we have discussed, and it may assist in meeting the goals of Healthy People 2020 to eliminate mental health disparities by 2020 in many of the underserved populations of American Indian people. Within the many American Indian communities, there are progressive changes, and although some communities are still working on digital transformations, some are moving forward quickly. For example, the Navajo Indian Language app by Lance Etcitty, designed for both the iPhone and iPad, sells for \$0.99 (Googleplay, 2016).

Summary

In summary, this literature review demonstrated that primary care is an ideal clinical setting in which to provide assessments for mental health and the ideal setting to address the PCP challenges and gaps that hinder the delivery of quality patient care. This review concludes that Integrated Primary Care settings provide the opportunity to reach the largest numbers of vulnerable and chronically ill patients with mental health comorbidities, including the American Indian population. In addition, research indicates the opportunity to decrease health disparities must occur with early screening and early detection, leading to early treatment and recovery when possible, thereby decreasing health care costs through decreased mortality and morbidity. The literature also supports the importance of prevention methods, including screening instruments with proven validity and reliability.

CHAPTER III: METHODS

This chapter presents methods and describes the survey design used for this project. The chapter discussion will also include the sample size and setting descriptions, ethical considerations, guidelines followed for the protection of human subjects, evaluation methods, and data analysis. The chapter provides a description of the methodology used to answer the project's study question and provides examples of the screening report components as will appear in the patient's health record.

Project Survey Design

Description of Sample and Setting

In an effort to address the communication gap between primary care providers and American Indian patients, it is important to get feedback that will improve medical care from those providers in integrated primary care settings. Recruitment of Primary care providers (PCPs) from Northern Arizona University (NAU) Campus Health Services was gained through the Director of Medical Services. Provider feedback on this project's proposed iPad technology is important to its future impact on this practice. The selection process for the PCPs was based on the following criteria; (a) must be a medical doctor, nurse practitioner, or physician assistant; (b) must work within the NAU Campus Health Services clinic and provide health care for patients at NAU; and (c) must agree to the online consent form and its information to voluntarily participate in this online survey.

The TAM (Davis, 1989) was used to guide the development of the Survey Design questions and a Likert scale was used for evaluation. The survey Web address was sent to the clinic's director in an e-mail containing an introductory PowerPoint to the iPad technology for

the providers to view prior to taking the survey and the director then dispersed the email, online consent and Power Point of the project concept. The PowerPoint explained the use of *iPad Technology* to screen for depression using the Patient Health Questionnaire-9 (PHQ-9) plus the use of a culturally sensitive adaptation using a language translation option in Navajo for the PHQ-9). The PowerPoint showed examples of the screening report that would be available to the providers immediately after the screening in the patient's electronic patient record. An example report included; the screening score (Figure 1), an interpretation of the screening score (Figure 2), the recommended treatment (Figure 3), and a progression graph (Figure 4), which would follow the patient's progress so the provider could see improvements or a decline in the patient's mental health.

After viewing the PowerPoint and acknowledging the online consent form (Appendix B), the providers evaluated the *iPad Technology* for mental health screening at NAU Campus Health Services clinic through a survey questionnaire. The survey took approximately five minutes, and the participating providers could complete the survey online using a Web link to the University of Arizona's Qualtrics software. All providers who completed the questionnaire were anonymous.

Northern Arizona University Campus Health Services

The NAU Campus Health Services clinic is located in Flagstaff, Arizona and reports student population of 29,000 students and faculty of 4,500 (NAU, 2016). The University website reported its student population was affiliated with over 94 separate tribes from across the United States, including several tribal entities of the Navajo people who live in close proximity to the campus (NAU, 2016). NAU's Native American student population breakdown

PATIENT CHART	
Patient Name: Joyce S	
Patient Identification #: 123 45 6789	
Date of screening: 1-18-2016	
Patient Health Questionnaire-9 Results: 22	
Recommended Diagnosis: Severe Major Depression	
DSM-5 Criteria:	
Recommended Treatment:	
(1) Antidepressant medication: Begin with one SSRI and evaluate within two weeks	
(2) Psychotherapy	

FIGURE 3. Patient Health Questionnaire-9 Score Report Example.

PHQ-9 Score	Possible Diagnosis	Treatment Recommendations
5 - 9	Minimum signs and symptoms*	Education Supportive - counseling
10 - 14	Minor Depression* Dysthymia* Major Depression (Mild)	Psychotherapy or Antidepressant and psychotherapy
15 - 19	Major Depression (Moderate – Severe)	Antidepressant and psychotherapy
More than 20	Major Depression (Severe)	Antidepressant and psychotherapy
*assess length of time – for immediate treatment		

FIGURE 4. Patient Health Questionnaire-9 Scores and Treatment Options Example (Pfizer, 1999).

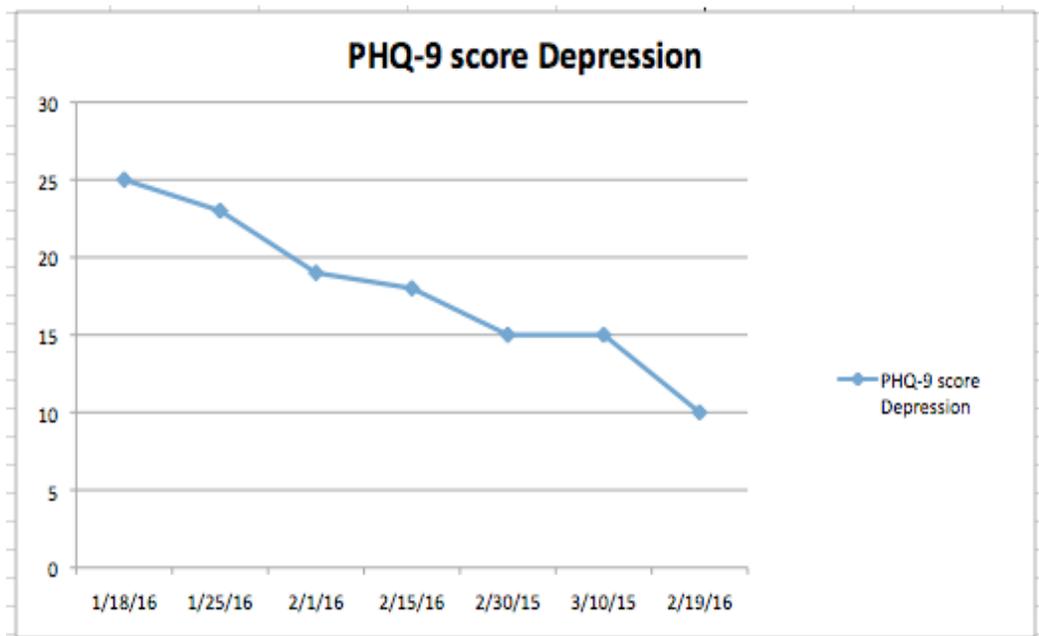


FIGURE 5. Patient Progress Graph Example.

showed many represented tribes, but the Navajo tribe accounted for the largest number, with a student headcount of 721 in NAU's *Fact Book for 2015-2016*, and of the top five tribal affiliations attending NAU, the Navajo tribe accounts for 44% (Figure 6; Northern Arizona University, 2016). The NAU medical services website (NAU, 2016), promote wellness on campus and provide a number of medical services and resources to the university community, including urgent care, chronic care, psychiatric mental health, nutrition, massage, nursing services, allergy clinic, and physical therapy. The NAU website (2016) has online services to schedule an appointment, complete health history forms, view lab results, send and receive secure messages, complete visit questionnaires, and request prescription renewals. The providers who agreed to take the project survey will gain access through an online connection located on the NAU Campus Health Services clinic building located on the campus.

Ethical Considerations and Institutional Review Board Requirements

Ethical considerations are important for the vulnerable and underserved Navajo population, but no patients were contacted or approached for this project. All procedures for human subject protection were followed and an approved Institutional Review Board (IRB) was obtained from the University of Arizona, and project site approval was obtained through the Northern Arizona University IRB committee.

Methods of Evaluation

Data Collection Tools

Survey Design: Modified technology acceptance model questionnaire. The Survey Design used (Appendix C) was adapted from the original TAM (Davis, 1989) and a Likert scale was used. The scale was as follows: 1 (*strongly disagree*) to 5 (*strongly agree*) to evaluate this project's *iPad technology* (PHQ-9 plus the culturally sensitive adaptations). The descriptive study survey included a total of 38 questions divided into four sections. The first set of questions include eight questions involving demographic information about the providers: gender, age, education, professional license description, experience, specialty, years of work with American Indians, and the primary language spoken by the provider (Appendix E). The next two sections evaluated *Usability* and consisted of 14 questions about the Perceived Usefulness of the *iPad technology* (Appendix F) and 14 questions about the Perceived Ease of Use of the *iPad technology* (Appendix G). The last section consisted of two questions asking about *Attitude* (acceptance and behavior intent) (Appendix H). The completed survey utilized descriptive statistics to view an agreement or disagreement among the survey participants for a likely *Outcome* (the provider end use of the iPad technology.)

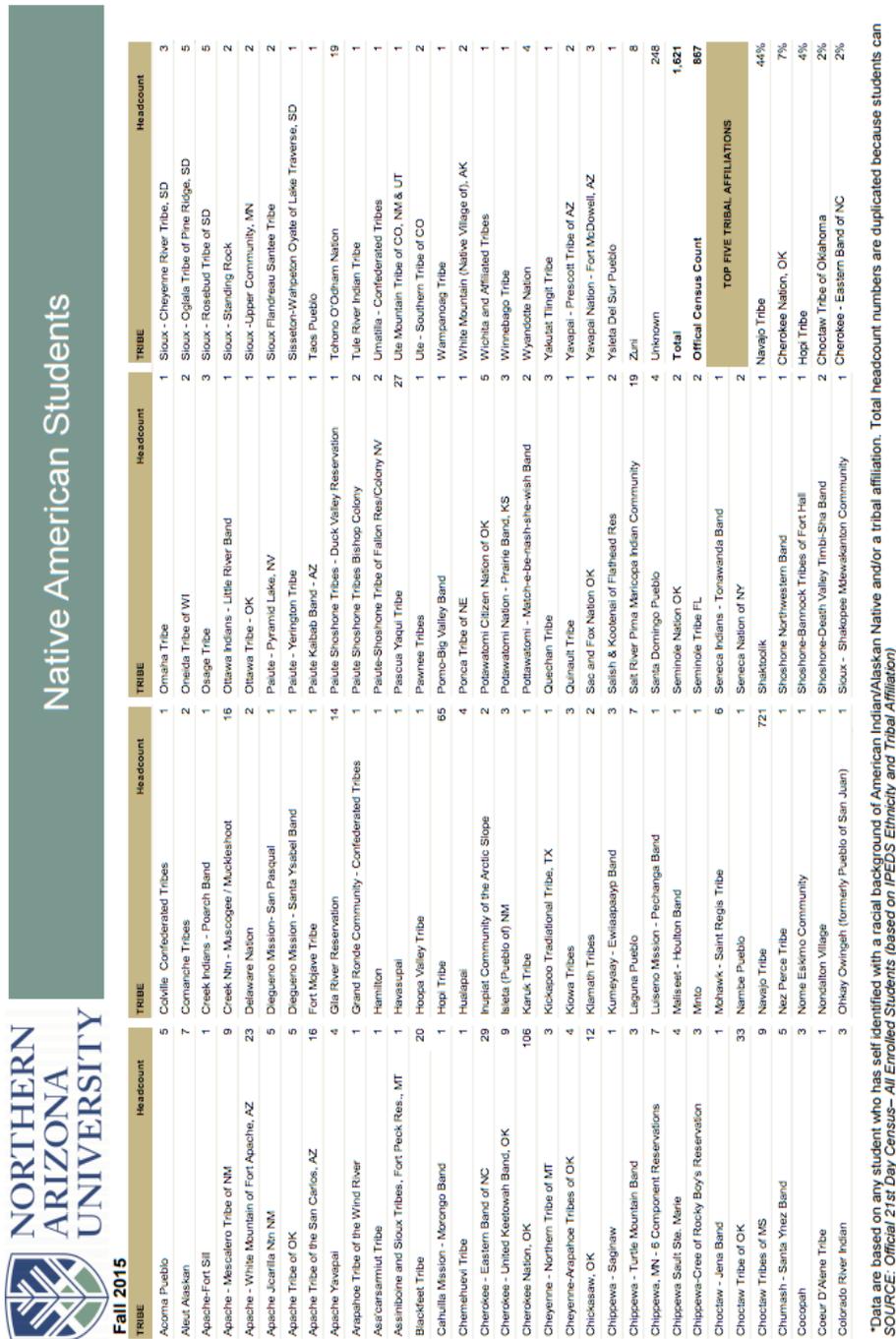


FIGURE 6. Northern Arizona University Native American Student Population, 2015-2016 (Northern Arizona University, 2016).

Qualtrics

The questionnaire was available on Qualtrics and used a Web-based software program that assists University of Arizona students with developing and analyzing surveys. Qualtrics is HIPAA compliant, and the data are stored on secure servers. Other features favorable to this program include its ability to be used on a PC or Mac, with no preferred browser, and its compatibility with Internet Explorer, Firefox, Safari, and Chrome (University of Arizona & Qualtrics, 2016).

Data Analysis

Statistical analysis included measurements of central tendency to evaluate survey results of data collected by the University of Arizona Qualtrics. The results explored the likelihood for the NAU Campus Health Services clinic PCPs to adopt *iPad Technology* as a culturally sensitive mental health, screening tool to bridge the gap in communication about mental health in their clinic setting that serves Navajo patients.

Summary

In summary, this project explored the valuable input of PCPs whose patients include Navajo patients at NAU Campus Health Services in Flagstaff, Arizona. The project comprised a survey/questionnaire adapted from the original TAM (Davis, 1989) and was dispersed to nine primary care providers at the clinic. The survey was sent to the providers anonymously in a PowerPoint through an e-mail sent to their director. The PowerPoint explained how iPad technology and using an evidence-based mental health screening instrument could assist the PCPs in their jobs to make a correct diagnosis, chose recommended treatments, and manage patient signs and symptoms over time, without taking more of the patient appointment time.

Patient progress graphs showing improvement or decline were presented also. The PowerPoint explained how the screening could be implemented by office staff, with results available to the PCP prior to seeing their patient, so that their valuable time would be spent using their expertise to diagnose and treat versus asking screening questions. Similar to reviewing lab work, vital signs, or chief complaint in the patient's chart, the PCP would then be able to quickly move ahead to making decisions regarding treatment and recovery for their patients. Finally, but most importantly, the ethical considerations for this project population were discussed, explaining that no patients or their health information were used or exposed in this project, and IRB approvals were obtained and followed as directed by the University of Arizona and Northern Arizona University.

CHAPTER IV: RESULTS

This chapter presents the collected data and results of the research project survey. The survey results are reviewed and discussed in relationship to the framework used for this project, its aims, and the evidence available. The chapter concludes with the impact of the results on practice, strengths and limitations, dissemination and future implications for practice, and conclusion based on the data collected.

Project Results

iPad Technology

The modified technology acceptance model for this project utilized other terms to describe its components, such as *iPad technology* (PHQ-9 with a translated, culturally sensitive adaption—Navajo language), *Usability* (perceived usefulness and perceived ease of use), and *Attitude* (behavior intention and acceptance), and the model proposed a relationship between the components that are likely to lead to an *outcome* (end use of the new technology; Figure 2). This project's framework followed the technology acceptance model and the components were aligned to the original model. However, this study did not consider any sort of predictions such as a regression. Instead, I utilized descriptive statistics to explore agreement among the NAU Campus Health Services clinic providers concerning the likelihood of this project *Outcome* (potential for providers to adopt iPad technology).

Demographic Information

This descriptive study took place at NAU Campus Health Services clinic, where there are nine primary care providers who share the responsibility of providing health care to the NAU student population and their families. Six out of the nine providers chose to take the survey,

which began with eight demographic questions (Appendix E). The providers were asked to choose the answer that best described their gender, age range, professional license, years of education, years of experience, specialty, years of experience working with American Indians, and whether English was their primary language. The results are shown in Table 1.

TABLE 1. *Participant Demographic Questions from Qualtrics.*

<i>Question</i>	<i>Number</i>	<i>Percentage</i>
What is your gender?		
Male	1	16.67%
Female	5	83.33%
What is your age range?		
35+	1	16.67%
45+	5	83.33%
Which describes your license?		
Medical Doctor	3	50%
Nurse Practitioner	3	50%
How many years of education?		
4+	1	16.67%
8+	5	83.33%
How many years of experience?		
10+	6	100%
What is your specialty?		
General Practice	6	100%
Years of experience working with American Indians		
1 to 3	1	16.67%
4 to 7	1	16.67%
10+	4	66.67%
Is English your primary language?		
Yes	6	100%
No	0	0%
Total participants	6	100%

Usability

Usability was evaluated through questions about perceived usefulness and perceived ease of use of the *iPad technology*. There were 14 questions addressing each component, and the

questions were separated into two sets (Appendix F & Appendix G). The project survey used the following Likert scale: 1 = *strongly disagree*, 2 = *disagree*, 3 = *do not know*, 4 = *agree*, and 5 = *strongly agree*.

Perceived usefulness mode

The first component of *usability* included 14 questions focused on the perceived usefulness of the tool (Appendix F). All 14 questions regarding perceived usefulness were based in the positive and, therefore, did not require adjustment to complete an analysis. The results are summarized below in Table 2. The most common answer (mode) for each question is shown, and the value of the mode in Table 2 corresponds to the Likert scale used for this project; which was, 4 = agree. It is also significant to note that a level of uncertainty among those surveyed is represented with the mode 3, which represents the answer of *do not know* on the Likert scale used for this project.

TABLE 2. *Summary of Perceived Usefulness Survey Results (n=6)*

Question	Type	Min.	Max.	Mean	SD	Mode
1	positive	1	5	3.17	1.34	4
2	positive	2	4	3.17	0.9	4
3	positive	1	5	3.17	1.34	4
4	positive	1	5	3.5	1.26	4
5	positive	1	4	3	1.15	4
6	positive	1	4	2.83	1.07	3,4
7	positive	1	4	2.83	1.07	3,4
8	positive	1	4	3	1	3
9	positive	2	5	3.5	0.96	3,4
10	positive	2	4	3	0.82	2,3,4
11	positive	1	5	3.17	1.34	4
12	positive	2	4	3	0.82	2,3,4
13	positive	2	5	3	1.15	2
14	positive	1	4	3	1	3

Mode = 4

A mode of 3 was provided for seven questions, including five questions that resulted in bimodal (two modes) and tri-modal (three modes) responses.

Perceived ease of use mode

The next 14 questions in the survey were focused on the second component of *Usability* (perceived ease of use). The survey results were reverse coded to align the negative-type questions with the positive-type questions. In all, eight of the 14 questions needed to be reverse coded, as shown in Table 3. The minimum and maximum values of the eight negative-type questions were adjusted: The answers associated with a 1 were adjusted to a 5, and the answers associated with a 2 were adjusted to a 4. The mean value was recalculated to provide the adjusted mean. The mode value reflects the adjustments.

TABLE 3. *Summary of Perceived Ease of Use Survey Results (n=6)*

Question	Type	Min.	Max.	Mean	SD	Mode
1	recoded	4	5	4.67	0.47	5
2	recoded	2	5	4.33	1.11	5
3	recoded	3	5	4.33	0.75	5
4	recoded	4	5	4.83	0.37	5
5	recoded	4	5	4.67	0.47	5
6	positive	1	4	3	1.15	4
7	recoded	4	5	4.5	0.5	4,5
8	positive	2	4	3.33	0.75	4
9	recoded	3	5	2	0.58	4
10	recoded	3	5	4.33	0.75	5
11	positive	2	5	4	1	4
12	positive	2	5	3.67	1.25	4,5
13	positive	2	5	3.67	1.25	4
14	positive	2	5	4	1	4

Mode = 4,5

The most common response (mode) to each of the 14 questions was determined and is shown in the Table 3. The result was bimodal (two modes). This analysis reflects that the six medical providers who were surveyed responded with; 4 = *agree*, 5 = *strongly agree*, based on the Likert scale used for this project. These results show that the *iPad technology* had a perceived ease of use and the providers did not view it as additional work to their routine.

Attitude

The survey included two final questions that asked the providers to share: (a) whether this *iPad technology* would be an acceptable technology to use at the Northern Arizona University Campus Health Services; and, (b) if the provider would want to use the *iPad technology* as part of their practice if it were available for regular use at the Northern Arizona University Campus Health Services. The answer choices for the first question were *pass* or *fail*, and the answer choices for the second question were *yes* or *no*. The survey results have been summarized in Table 4 and the original Qualtrics questions are located in Appendix G.

TABLE 4. *Summary of Attitude Item Results.*

<i>Question</i>	<i>Descriptive Statistics</i>		<i>Study Participants (N = 6)</i>	
	<i>Frequency</i>		<i>Percentage</i>	
1. Please grade (pass or fail) whether the iPad technology is an acceptable technology to use at the Northern Arizona University Campus Health Services.	Pass		66.67%	
	Fail		33.33%	
2. If the iPad technology was available for regular use at Northern Arizona University Campus Health Services, would you want use it as part of your practice?	Yes		83.33%	
	No		16.67%	

Composite Mean/Standard Deviation

The two questions reflect the results of the providers' perceived usefulness and perceived ease of use of the *iPad technology*, and the responses confirm that the majority of the participants had a favorable *Attitude* (Behavior intention and Acceptance).

The composite mean scores can be found in Table 5. The average of the mean scores in the Perceived Usefulness construct was 3.1, and the average of the mean scores in the Perceived Ease of Use construct was 4. However, it is important to look at each question one by one and view the standard deviation for each to get a closer look at the spread of the answer and whether there are outliers and how closely the variance of each set of answers in the group are clumped together. This tells us whether the data is expected or warrants further investigation, and whether there is statistical significant. For example, the standard deviation in the Perceived Ease of Use showed less dispersion, which reflects the group's agreement in their answers. In the Perceived Usefulness, the standard deviation showed more dispersion indicating less agreement among the group's answer choices.

TABLE 5. *Composite Mean Scores.*

	Composite mean scores
Perceived Usefulness	3.1
Perceived Ease of Use	4

Summary

In summary, this project survey was based on TAM (Davis, 1989) with some modifications to the components. Relationships among the components were examined to see if the NAU Campus Health Services clinic providers perceived usefulness and ease of use with this

iPad Technology (PHQ-9 and a culturally sensitive adaption of translated Navajo language) as an acceptable mental health screening tool for their integrated primary care setting. The model's initial composites (survey questions asking about perceived usefulness) were the survey constructs that influenced the model's second composites (survey questions asking about perceived ease of use). The providers' *Attitude* (behavior intent and acceptance) reflects a relationship between the components of the model. The cascade of influences is responsible for determining the *Outcome* (end use of the technology) with this type of iPad technology. Two beliefs about the iPad technology are important: first, the belief that perceived usefulness describes the degree to which a user thinks a tool (in this case, technology) would improve their job performance, and second, the belief that perceived ease of use is the degree of effort it will require of the user if the tool (technology) is adopted. The data collected and the statistical analysis of the survey show the providers agree or strongly agree that the *iPad Technology* is an acceptable screening tool for their clinic. Therefore, the purpose, aims, and objective of the project were achieved; the modified TAM indicated that this culturally sensitive, electronic mental health screening tool for integrated primary care was perceived as useful by these providers and that its ease of use would fit into their NAU Campus Health Services clinic setting without adding to their workload.

CHAPTER V: DISCUSSION

This chapter will discuss the survey results in relationship to the project framework, aims, and evidence. What impact on practice can be expected from these results will be discussed and the strengths and limitations of the study will be examined. How the project information can and will be disseminated as well as what this means for future practice will be explored and the chapter will end with summarize and discuss the conclusion of the project survey.

Relationship of Results to Framework and Aims

The relationship of the statistical results to the chosen TAM framework for this project reflects how the project condition or *iPad technology* (PHQ-9 implemented on an iPad with a culturally sensitive adaption of Navajo language) is relevant to influencing the components of the model's *Usability* (perceived usefulness and perceived ease of use). It is evident that the statistical results of these components positively influenced the providers' *Attitude* (acceptance and behavior intention) and is likely to positively affect the project *Outcome* (end use of this project's technology).

In addition, the statistical results show agreement among the providers who took the survey that they would be likely to adopt iPad technology with a culturally sensitive electronic mental health-screening tool to use at the Northern Arizona University Campus Health Services clinic if it were available to them. This shows the relationship of the survey results to the specific aims for the project and determines: (a) the PCPs' perception of *Usability* (Perceived Usefulness and Perceived Ease of Use) influence of the *iPad Technology* toward the *Outcome* and (b) the PCPs' *Attitude* (behavior intention and acceptance) influence toward the use of *iPad technology* toward *Outcome*.

Relationship of Results to Other Evidence

TAM (Davis, 1989) has been shown to save time and money for organizations that seek to implement new technology. According to the results of this project survey when new technology is understood and its use agreed to before it is implemented, there is a greater possibility for it to improve quality and safety in health care. Holden, (2010) reports that when end users of new technology are not able to clearly see how the technology will help them personally in their job (perceived use) but can only see the new technology as additional work to their routine (perceived ease of use), “they will reject it, misuse it, abandon it, or work around its presence, at a costly lesson to the organization” (p. 159).

Using an iPad seems to be effective and efficient for the time-constrained patient–provider interaction when used as a screening tool. Private business has shown the success of mental health screening and technology—for example, with Digital Diagnostic, which has been in business for over a decade, with successful use of screening tools implemented using technology. The company uses a variety of mental health screening tools, including the Quick Psycho Diagnostics (QPD) Panel. QPD is used to assess for several psychiatric disorders that are usually not included in patient assessments that involve chronic illnesses (Shedler, 2000). The company has published its studies involving the Structured Clinical Interview for DSM-IV (SCID) and its correlation with the QPD scores and has reported that mental health measures and sensitivity examined at pretreatment and post treatment resulted in depression sensitivity and specificity at 81% and 96%, respectively (Shedler, 2000, p. 619)

Impact of Results on Practice

Advancing technology is affecting every aspect of health care, and with progressive mental health care, there will only be more growth. This *iPad Technology* will assist in meeting ACA requirements for primary care settings to integrate mental health into their settings and will accommodate added responsibilities left to the PCPs. The technology will be used to gather increased amount of important patient information and safely store it, and provide evidence based screening, which aids the provider in making complex decisions about diagnosis and treatment of the increasing ACA qualified patient load.

The impact of this study using *iPad Technology* in an IPC setting like NAU Campus Health Services clinic is indicative of provider knowledge and interest to be involved in and at the forefront of that growth. The impact of these results will serve to enlighten the clinic management and providers of NAU that this technology is available to them and that it is welcome by the majority of survey participants. The clinic manager was sent a thank you for allowing the survey to take place along with the results. Her response included a thank you for choosing the clinic and a comment that she found the survey report to have “surprising but encouraging results” (Julie Ryan, personal communication, September 21, 2016).

The current practice of the NAU Campus Health Services clinic is to use a pen and paper instrument to screen for depression and the providers currently uses the PHQ-2 at this time. With the history of health disparities and mental health concerns among the American Indians, including the Navajo, the presentation of gaps in language and communication, there is room for change. Requirements of the ACA to increase technology in integrated primary care or soon to be integrated primary care practices will require change and this project shows there is a positive

Attitude (acceptance and behavior intent) among these providers to make that change without resistance.

Strengths and Limitations

Strengths of this project study include the NAU Campus Health Services clinic setting, where effort is placed on forward thinking and innovative technology. In addition, the providers who participated in this survey are a strength with their years of education, specialty working in primary care and their 10 plus years of experience working with American Indians makes their input valuable. This clinic setting serves a large number of Navajo patients and their families, who would benefit from the culturally sensitive adaptation to the mental health screening instrument and this study provides a realistic, easy to implement and innovative health technology intervention that addresses the language barriers and gaps that exist.

Limitations in this study included not being able to provide the actual tool for the providers to touch, use and experience and although the small sample size was also a limitation, the study outcome represented the majority of providers in the clinic. The advanced ages of the providers may have also placed limitations on their experiences of using technology and therefore influence their opinion of using new technology. All were within the descriptive years of being considered “digital immigrants”, meaning computers were introduced into their lives at a later age, and thus, they had to learn and adjust to the existence of technology (Tapscott, 2016). There are studies showing mixed opinions on the use of technology and in a study that lasted one year, five PCPs who were given iPads and asked to evaluate the use of the devices as a part of their medical resource tools. The overall reviews of the five providers were good, but there were some who felt it made no difference in the care of patients (Anderson, et.al, 2013). After one

year of daily use, the PCP opinions were evaluated through a questionnaire modified from the original TAM (Davis, 1989) survey, and four of the five providers showed increased satisfaction in using it to retrieve medical information, apps like Euphrates, and to review radiology films and lab results; however, one provider reported its only use was for patient education (Anderson et al., 2013).

Dissemination and Future Implications for Practice

Dissemination of this project information has been shared with Northern Arizona University Campus Health Services clinic staff and administration through a power point showing Qualtrics data analysis (APPENDIX E, F, G, H). In addition, the project information was presented at the 2016 Western Institute of Nursing's 49th Annual Communicating Nursing Research Conference held in Anaheim, California. The Conference was a networking event of sharing with researchers, educators and students from around the nation. Future implications for practice include increased health care communication, improved mental health screening, and assessments in integrated primary care settings to accommodate diverse populations and their culturally sensitive needs. The ACA and its provisions have been altered more than 24 times by Congress (McDonough, 2016) and the key changes that have been made revolve around healthcare costs and saving money. Early screening, early treatment and recovery are still the focus in solutions and the preventive strategies of the ACA are still moving the healthcare system toward improved quality patient care. Technology now impacts every aspect of healthcare and this *iPad Technology* and the future implications for practice will be a catalyst in connecting patients and their providers in conversations that begin with evidence based screenings that save provider and patient time and effort, which will result in helping many more

in need and increasing the quality of healthcare in this country. This culturally sensitive assessment tool may expand and may further be developed into mobile apps that may be used to assess more widely in select populations. The creative use of technology is far reaching, especially when considering it's use via mobile devices.

Summary

In summary, this descriptive study's survey results show that a majority of the providers at Northern Arizona University Campus Health Services clinic perceived this project's proposed *iPad Technology* as an acceptable method to screen for mental health and perceived the iPad and the translated PHQ-9 with audio options as beneficial to their patients and useful to their jobs. They also perceived the *iPad Technology* as an easy fit into the routine of their clinic, and if the technology were available to them, the majority would use it to bridge communication gaps and decrease language barriers with patients. The survey results show the providers did not view the technology as being an extra burden in their workloads or an interruption to their routine clinic process.

Project Conclusion

The purpose of this quality improvement project was to explore the potential for PCPs working in IPCs to adopt a culturally sensitive electronic mental health. After assessing a need for mental health screenings in Navajo patients, a bridge for communication gaps and language barriers was planned. The *iPad technology* was identified as a device that could be developed into a culturally sensitive mental health, screening tool for Navajos. The plan for developing and evaluating the tool was designed. Usability and attitudes toward the culturally mental health screening tool delivered by iPad technology was evaluated by PCPs who provide care for

Navajos at the Northern Arizona Campus Health Services clinic in Flagstaff Arizona. The positive survey results that found the tool easy to use and acceptable provided the evidence to consider further actions towards further development of a translated mental health, screening tool for patient testing.

APPENDIX A:
PATIENT HEALTH QUESTIONNAIRE-9

PATIENT HEALTH QUESTIONNAIRE (PHQ-9)

NAME: _____ DATE: _____

Over the last 2 weeks, how often have you been bothered by any of the following problems?

(use "✓" to indicate your answer)

	Not at all	Several days	More than half the days	Nearly every day
1. Little interest or pleasure in doing things	0	1	2	3
2. Feeling down, depressed, or hopeless	0	1	2	3
3. Trouble falling or staying asleep, or sleeping too much	0	1	2	3
4. Feeling tired or having little energy	0	1	2	3
5. Poor appetite or overeating	0	1	2	3
6. Feeling bad about yourself—or that you are a failure or have let yourself or your family down	0	1	2	3
7. Trouble concentrating on things, such as reading the newspaper or watching television	0	1	2	3
8. Moving or speaking so slowly that other people could have noticed. Or the opposite—being so fidgety or restless that you have been moving around a lot more than usual	0	1	2	3
9. Thoughts that you would be better off dead, or of hurting yourself	0	1	2	3

add columns + +

(Health care professional: For interpretation of TOTAL, please refer to accompanying scoring card). TOTAL:

10. If you checked off any problems, how difficult have these problems made it for you to do your work, take care of things at home, or get along with other people?	Not difficult at all	_____
	Somewhat difficult	_____
	Very difficult	_____
	Extremely difficult	_____

APPENDIX B:
ONLINE SURVEY CONSENT

CONSENT ONLINE SURVEY

Dear Provider,

You are being invited to participate in a student project survey entitled, **Culturally Sensitive, Technology-Enhanced Mental Health Screening in Integrated Primary Care**. This project is being conducted by **Barbara K Salway-Jensen, MSN, RN**, a DNP candidate from the University of Arizona in Tucson, Arizona.

There is a communication gap between primary care providers and American Indian patients, and this gap often results in a lack of mental health screening that can be detrimental to the patient. In this project, a mental health screening tool and culturally sensitive adaption will be combined within iPad technology to address this gap for Navajo patients seen at Northern Arizona University Campus Health Services. Although this tool has not yet been developed, a PowerPoint explaining the tool and its cultural aspect of using a language translation option for Navajo patients is attached to this e-mail for providers' viewing. The **purpose** of this quality improvement project is to explore the potential for primary care providers to adopt a culturally sensitive electronic mental health screening tool through iPad technology.

If you agree to take part in this project, after viewing the PowerPoint you will be asked to complete an online survey about your perception of the usability and acceptability of this type of iPad technology to implement mental health screening. The iPad technology will consist of the Patient Health Questionnaire-9 (PHQ-9) with an added culturally sensitive adaption involving language and would be implemented as part of the initial doctor visit information gathered by the office staff prior to the patient seeing the provider. The iPad technology will implement the PHQ-9, **written in English**, but will have audio options that allow the patient to use earphones to have the questions read in **English or translated to the Navajo language**. Upon submission of the screening, the results will be electronically transferred to the patient's health record, where the provider will immediately be able to view a resulting report, which will include the PHQ-9 score, its meaning, evidence-based recommendations for treatment, and patient progress on a graph—if treatment is needed. This tool can be used over and over to assist in a time-constrained integrated primary care setting whose population includes Navajo patients.

Your participation in this project is completely voluntary and you can withdraw at any time. There are no known risks associated with this project. To the best of our ability, your answers in this survey will remain confidential. The survey is anonymous and there are NO identifiers connected to the providers. This survey will take you approximately 5 minutes to complete online. You can connect to the survey Web link at the University of Arizona's Qualtrics software through the e-mail sent to you. You may not directly benefit from this survey; however, your willingness to participate in the survey will provide important input on the relevance and usability of this iPad technology assessment tool. If you choose not to participate, your decision will not affect your relationship with the University of Arizona or result in any other penalty or loss of benefits to which you are otherwise entitled.

By submitting this survey, you affirm that you are over 18 years of age and agree that the information may be used in the student project described above.

APPENDIX C:
TECHNOLOGY ACCEPTANCE MODEL QUESTIONNAIRE

TECHNOLOGY ACCEPTANCE MODEL QUESTIONNAIRE

Demographic Information. Please choose the answer that best fits you.

1). Gender

Male Female

2). Age

25+ 35+ 45+

3). Which of the following pertains to your professional license?

Medical Doctor Nurse Practitioner Physician Assistant

4). How many years of education?

4 6 8 10 10+

5). How many years have you been in practice?

1-3 4-7 8-10 10+

6). What is your specialty?

General Practice Pediatrics Geriatrics Other

7). How many years have you worked with American Indians?

1-3 years 4-7 7-10 10+

8). Is English your primary language?

Yes No

Please use the KEY to answer the following questions on Perceived Usefulness of the tool and your Perceived Ease of Use of the tool.

KEY

1) Strongly disagree

2) Disagree

3) Don't know

4) Agree

5) Strongly agree

Perceived Usefulness

1. Using this proposed iPad technology would save me time.

1 2 3 4 5

2. This proposed iPad technology enables me to accomplish assessments more quickly.

1 2 3 4 5

3. This proposed iPad technology addresses my job-related needs.

1 2 3 4 5

4. This proposed iPad technology supports critical aspects of my job.

1 2 3 4 5

5. Using this proposed iPad technology would improve my job performance.

1 2 3 4 5

6. Using this proposed iPad technology would allow me to accomplish more work than would otherwise be possible.

1 2 3 4 5

7. Using this proposed iPad technology would reduce the time I spend on unproductive activities.

1 2 3 4 5

8. Using this proposed iPad technology would enhance my effectiveness on the job.

1 2 3 4 5

9. Using this proposed iPad technology would improve the quality of the work I do.

1 2 3 4 5

10. Using this proposed iPad technology would increase my productivity.

1 2 3 4 5

11. Using this proposed iPad technology would make it easier to do my job.

1 2 3 4 5

12. Using this proposed iPad technology would give me greater control over my work.

1 2 3 4 5

13. My job is more difficult to perform without this proposed iPad technology.

1 2 3 4 5

14. Overall, this proposed iPad technology would be useful for my job.

1 2 3 4 5

Perceived Ease of Use

1. I often become confused when I use this type of iPad technology.

1 2 3 4 5

2. I make errors frequently when using this type of iPad technology.

1 2 3 4 5

3. Interacting with this type of iPad technology and patient's electronic health records is frustrating.

1 2 3 4 5

4. I would need to consult the user manual often when using this type of iPad technology.

1 2 3 4 5

5. Interacting with this type of iPad technology would require a lot of mental effort from me.

1 2 3 4 5

6. I find it easy to recover from errors I encounter while using this type of iPad technology.

1 2 3 4 5

7. This type of iPad technology is rigid and inflexible to interact with.

1 2 3 4 5

8. I would find it easy to get this type of iPad technology to do what I want it to do.

1 2 3 4 5

9. This type of iPad technology often behaves in unexpected ways.

1 2 3 4 5

10. I find it cumbersome to use this type of iPad technology.

1 2 3 4 5

11. My interaction with this type of iPad technology is easy for me to understand.

1 2 3 4 5

12. It is easy for me to remember how to perform tasks using this type of iPad technology.

1 2 3 4 5

13. This type of iPad technology provides helpful guidance in performing tasks.

1 2 3 4 5

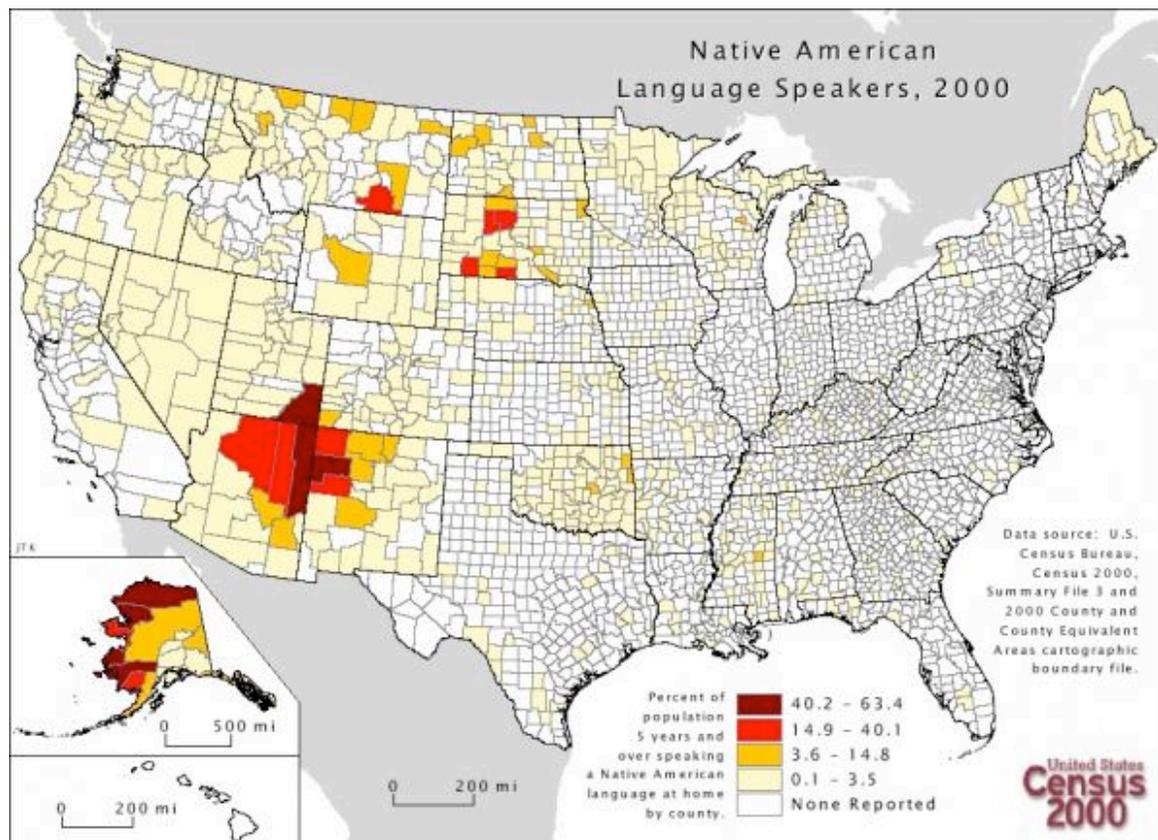
14. Overall, I find this type of iPad technology easy to use.

1 2 3 4 5

Attitude Toward Future Use

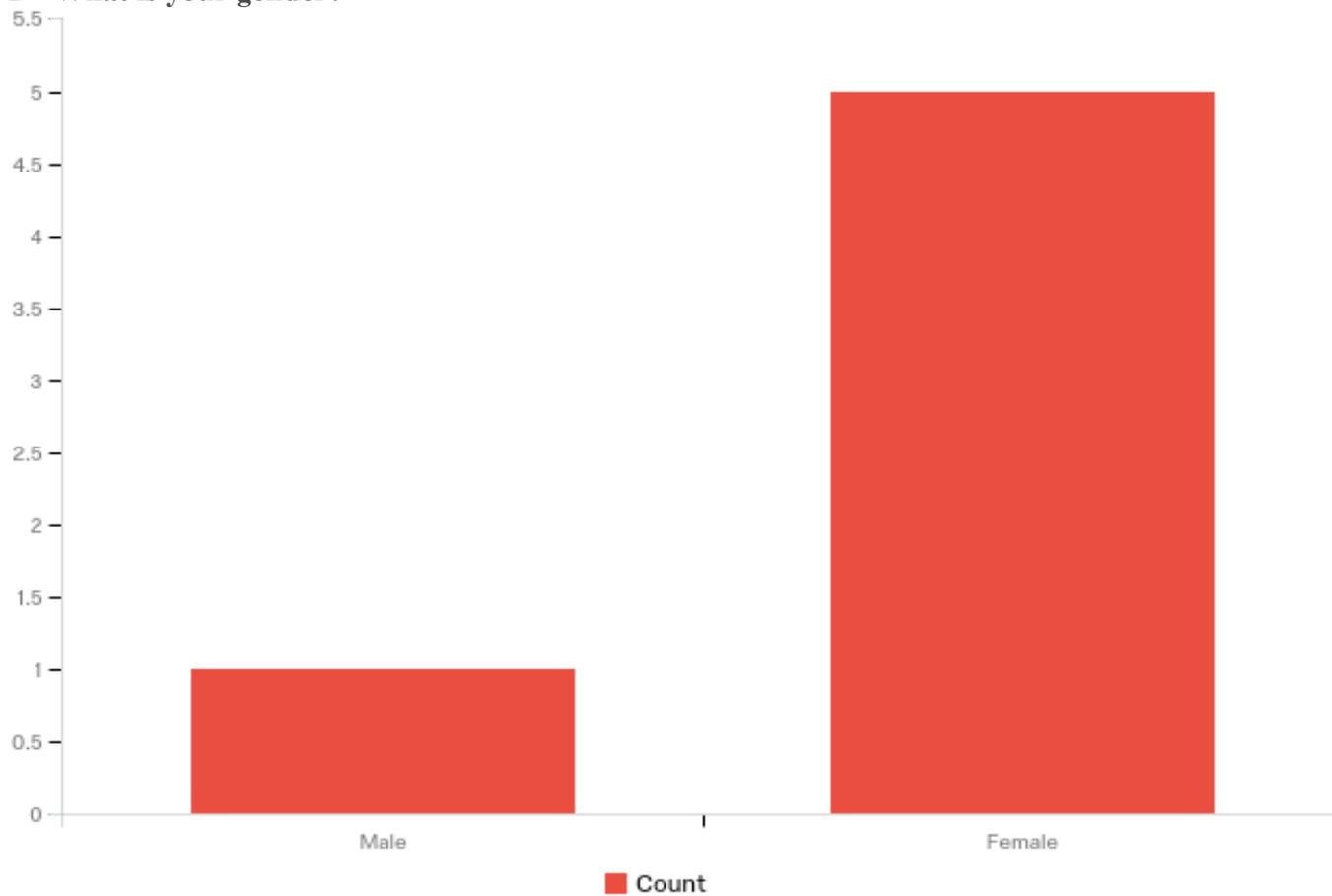
1. Please grade (pass or fail) whether the iPad technology is an acceptable technology to use at the Northern Arizona University Campus Health Services. Choose either pass or fail. **Pass/Fail**
2. If the iPad technology was available for regular use at the Northern Arizona University Campus Health Services, would you want to use it as part of your practice? **Yes/No**

APPENDIX D:
NATIVE AMERICAN LANGUAGE SPEAKERS, 2000

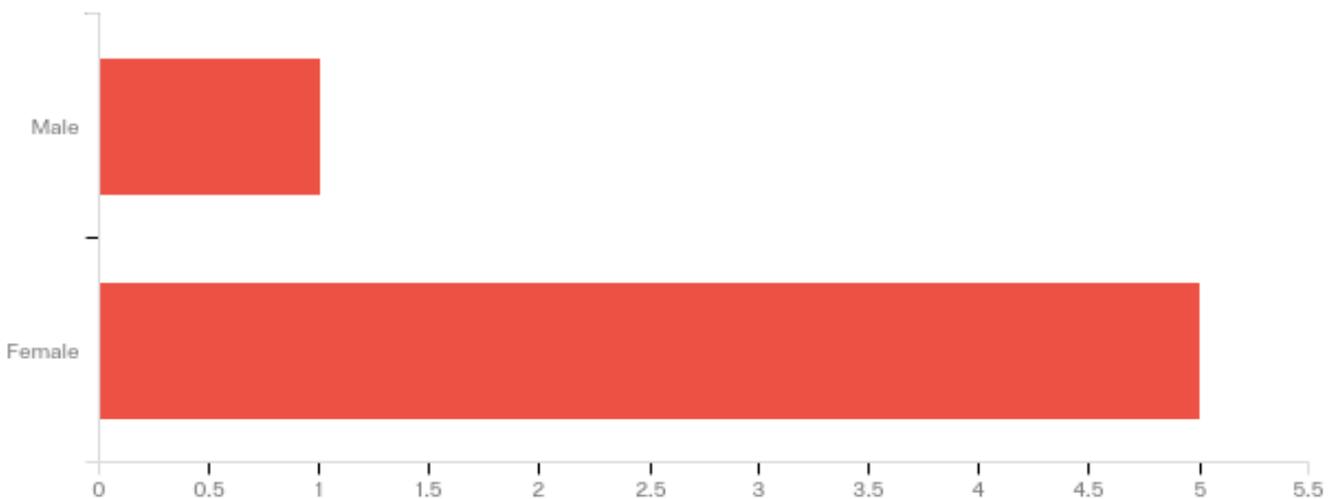


(U.S. Census Bureau, 2000)

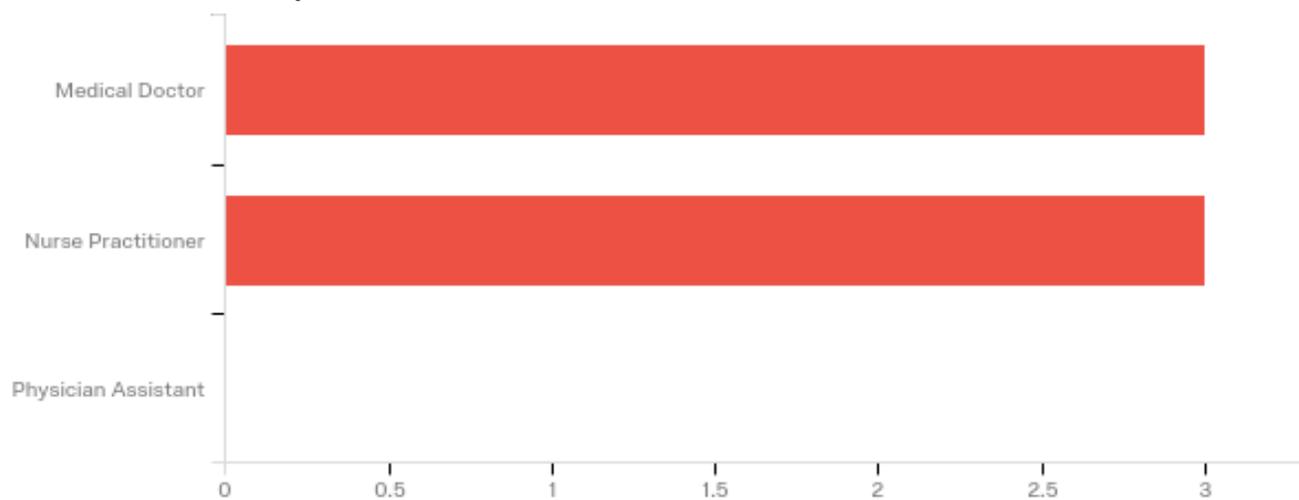
APPENDIX E:
SURVEY DEMOGRAPHIC INFORMATION

Q 1 – What is your gender?

Answer	%	Count
Male	16.67%	1
Female	83.33%	5
Total	100%	6

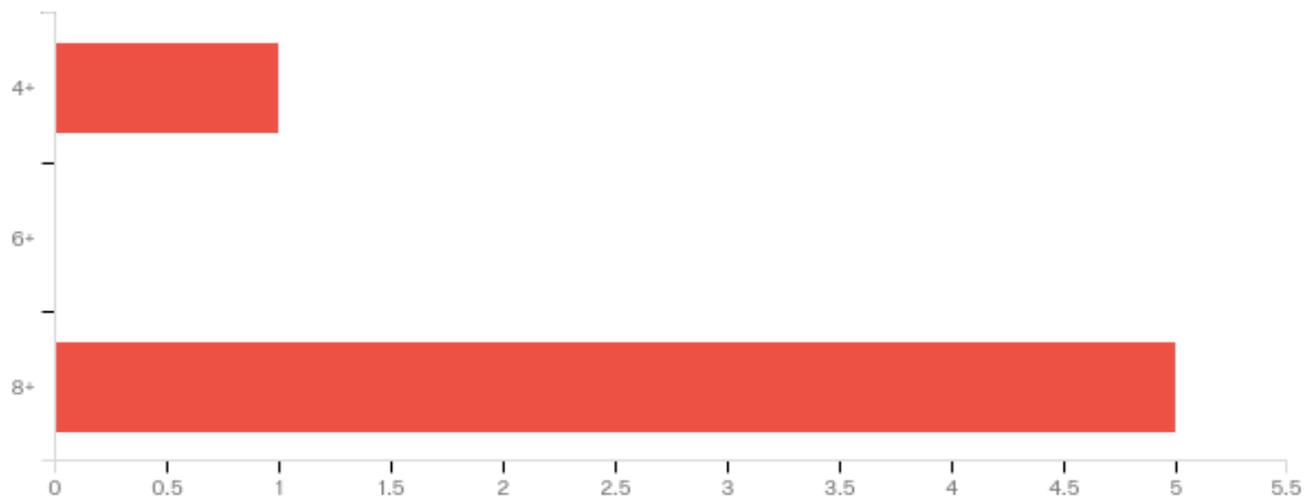
Q 2 – What is your age range?

Answer	%	Count
25+	0.00%	0
35+	16.67%	1
45+	83.33%	5
Total	100%	6

Q 3 – Which describes your license?

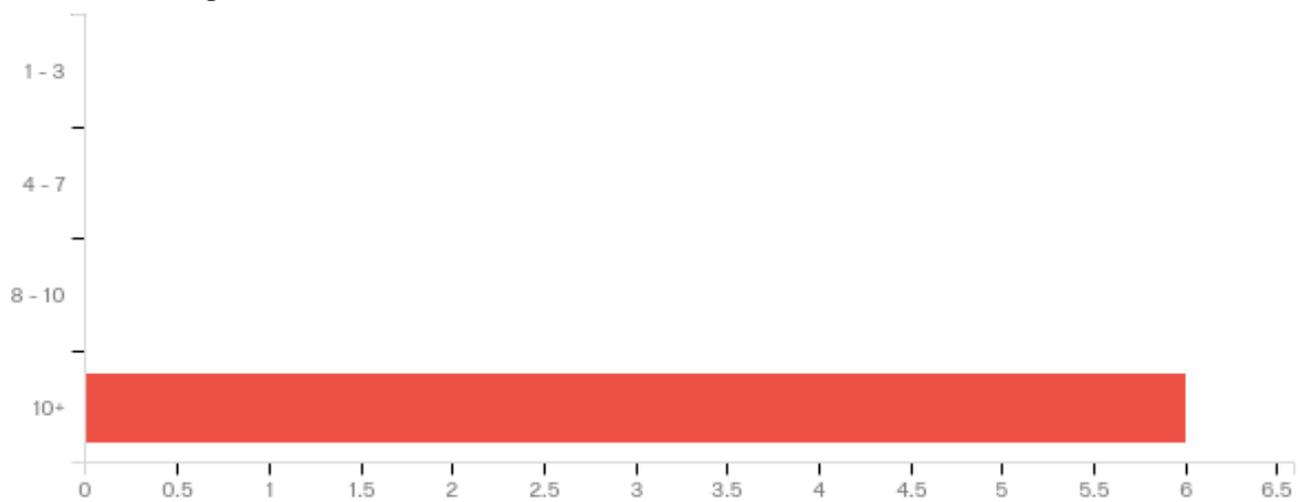
Answer	%	Count
Medical Doctor	50.00%	3
Nurse Practitioner	50.00%	3
Physician Assistant	0.00%	0
Total	100%	6

Q 4 – Years of education?



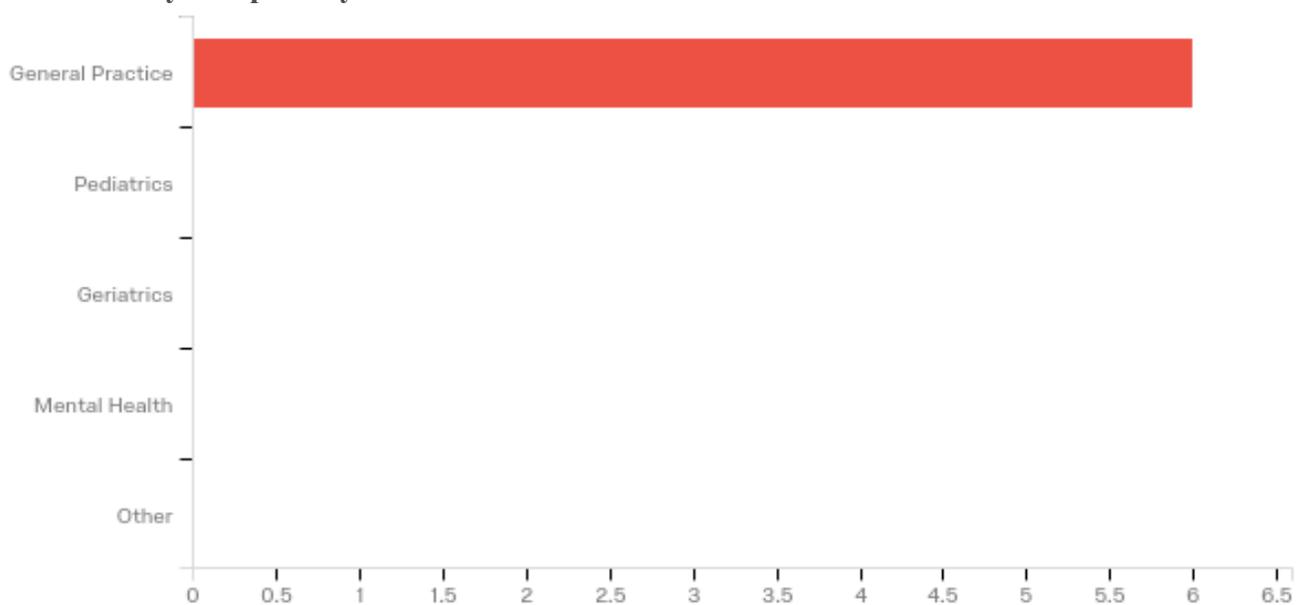
Answer	%	Count
4+	16.67%	1
6+	0.00%	0
8+	83.33%	5
Total	100%	6

Q 5 – Years of experience?



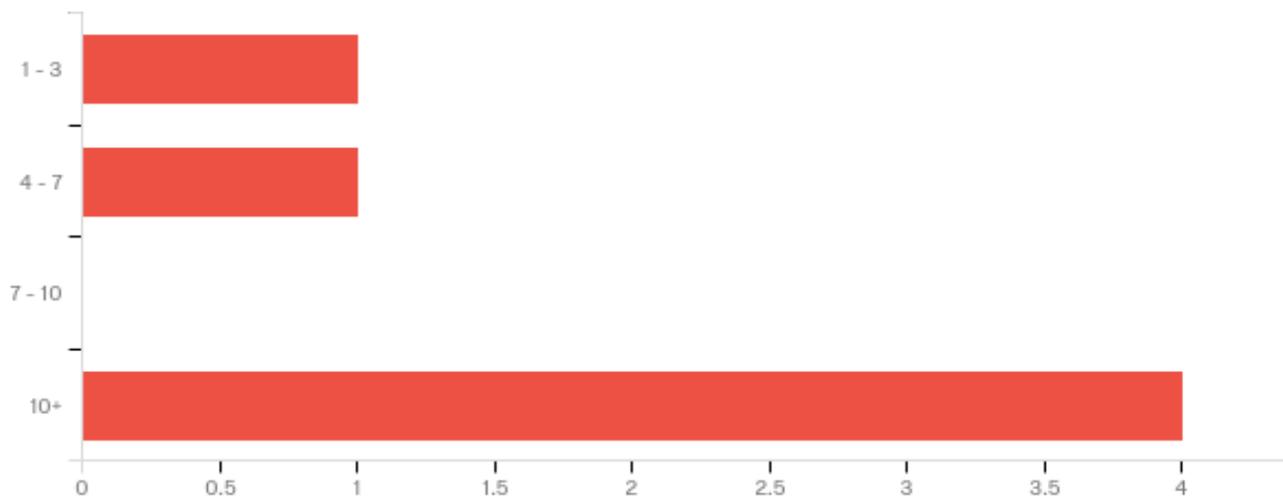
Answer	%	Count
1 - 3	0.00%	0
4 - 7	0.00%	0
8 - 10	0.00%	0
10+	100.00%	6
Total	100%	6

Q 6 – What is your specialty?

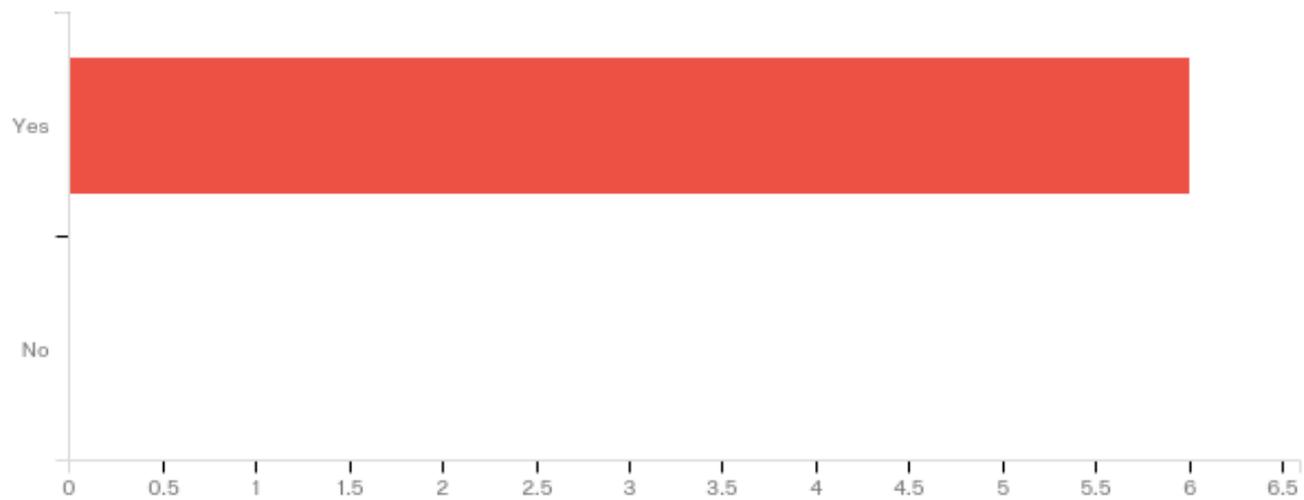


Answer	%	Count
General Practice	100.00%	6
Pediatrics	0.00%	0
Geriatrics	0.00%	0
Mental Health	0.00%	0
Other	0.00%	0
Total	100%	6

Q 7 – How many years of experience do you have working with American Indians?



Answer	%	Count
1 - 3	16.67%	1
4 - 7	16.67%	1
7 - 10	0.00%	0
10+	66.67%	4
Total	100%	6

Q 8 – Is English your primary language?

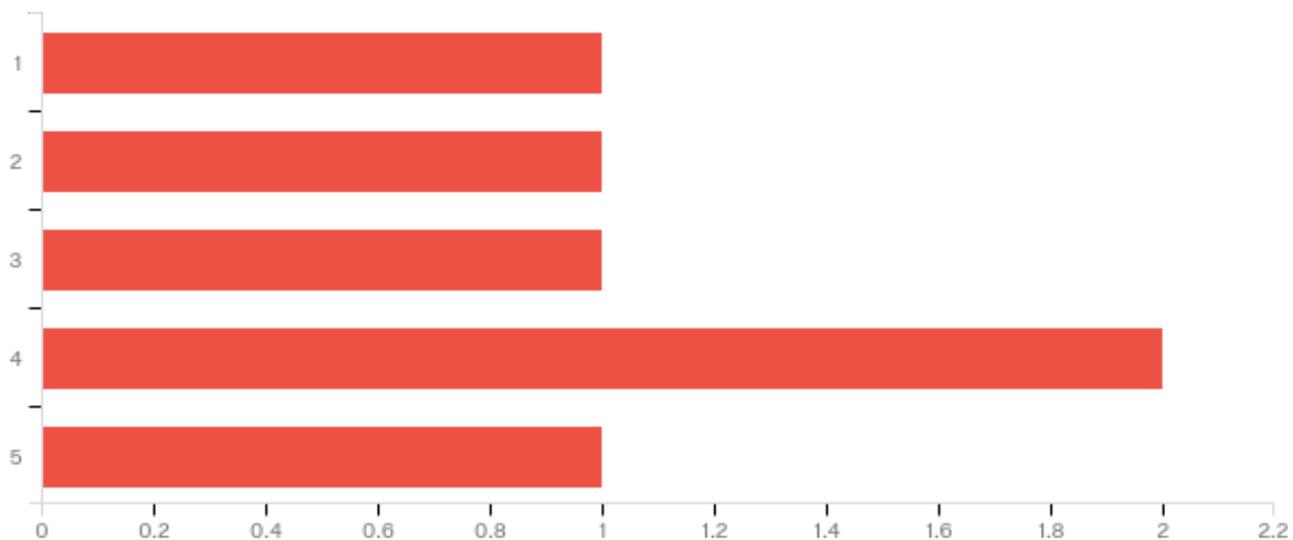
Answer	%	Count
Yes	100.00%	6
No	0.00%	0
Total	100%	6

APPENDIX F:
SURVEY PERCEIVED USEFULNESS

Q 1 – Using this proposed iPad Technology would save me time.

Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1. Using this proposed iPad Technology would save me time.	1.00	5.00	3.17	1.34	1.81	6

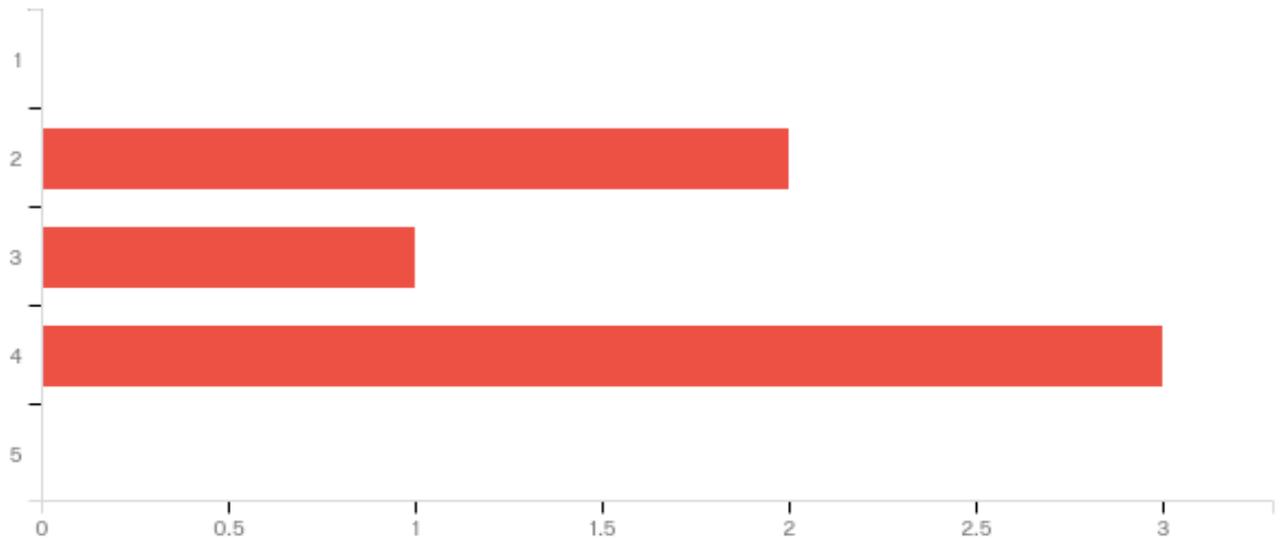
Answer	%	Count
Strongly Disagree	16.67%	1
Disagree	16.67%	1
Do Not Know	16.67%	1
Agree	33.33%	2
Strongly Agree	16.67%	1
Total	100%	6



Q 2 – This proposed iPad Technology enables me to accomplish assessments more quickly.

Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
2. This proposed iPad Technology enables me to accomplish assessments more quickly.	2.00	4.00	3.17	0.90	0.81	6

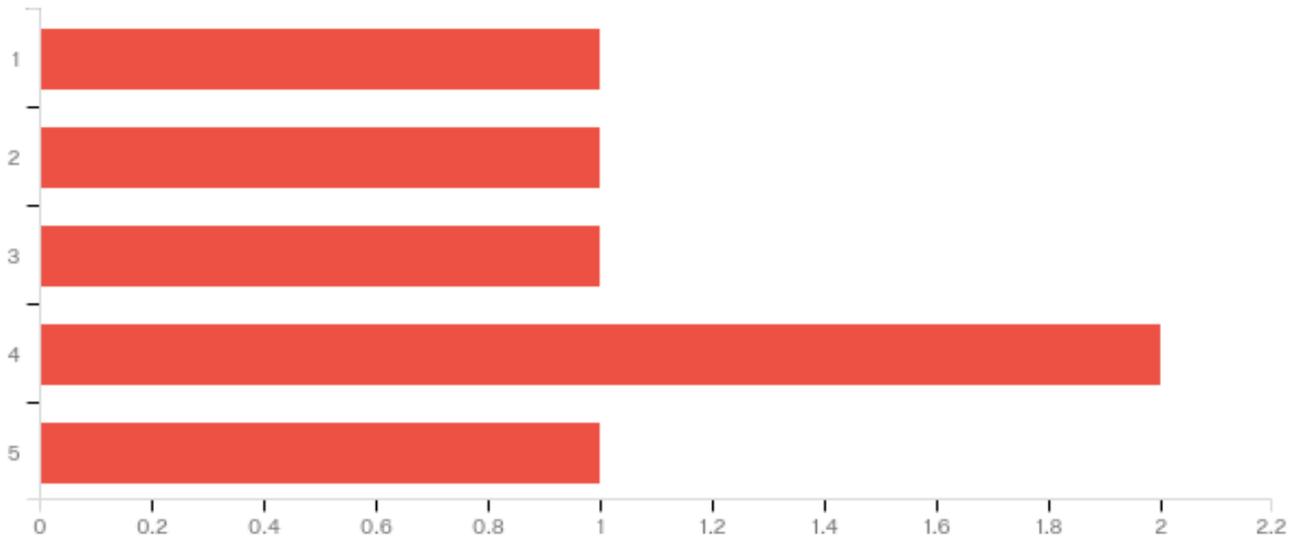
Answer	%	Count
Strongly Disagree	0.00%	0
Disagree	33.33%	2
Do Not Know	16.67%	1
Agree	50.00%	3
Strongly Agree	0.00%	0
Total	100%	6



Q 3 – This proposed iPad Technology addresses my job-related needs.

Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
3. This proposed iPad Technology addresses my job-related needs.	1.00	5.00	3.17	1.34	1.81	6

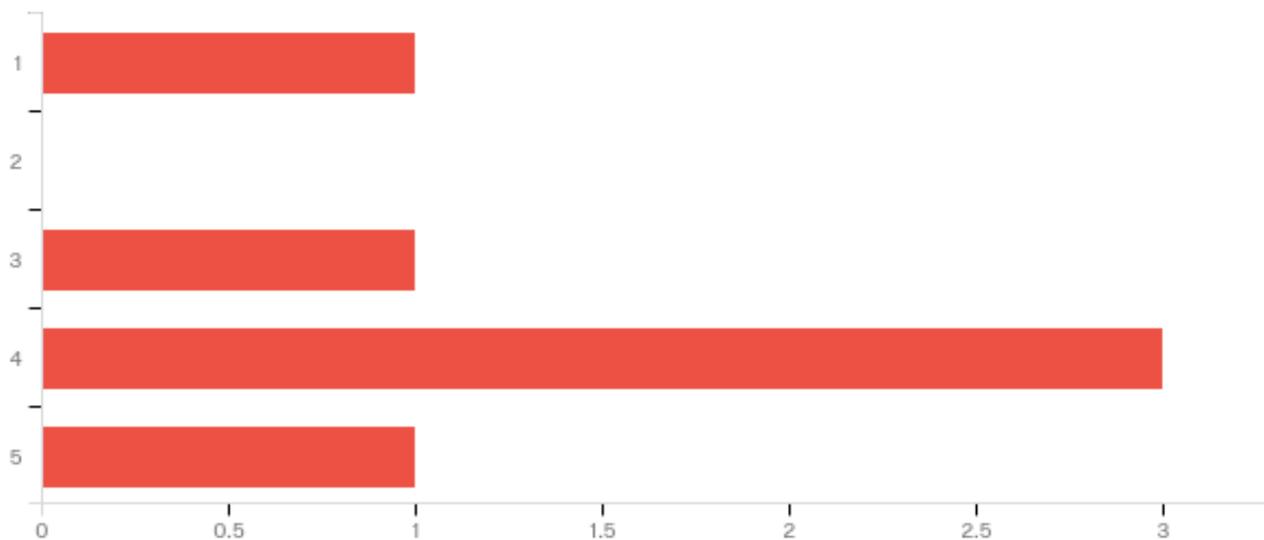
Answer	%	Count
Strongly Disagree	16.67%	1
Disagree	16.67%	1
Do Not Know	16.67%	1
Agree	33.33%	2
Strongly Agree	16.67%	1
Total	100%	6



Q 4 – This proposed iPad Technology supports critical aspects of my job.

Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
4. This proposed iPad Technology supports critical aspects of my job.	1.00	5.00	3.50	1.26	1.58	6

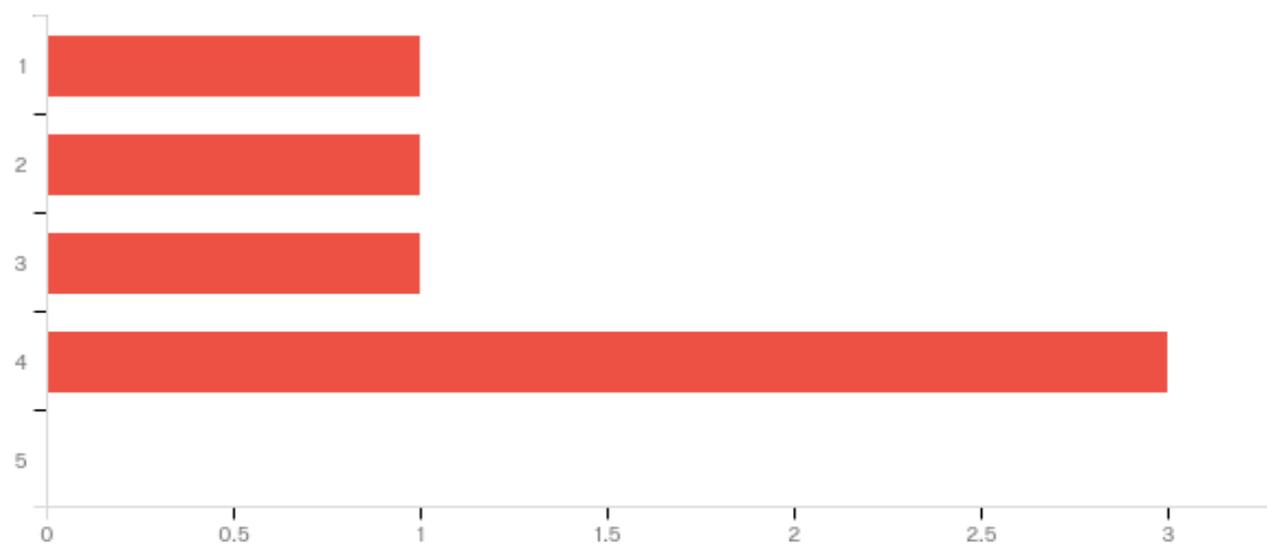
Answer	%	Count
Strongly Disagree	16.67%	1
Disagree	0.00%	0
Do Not Know	16.67%	1
Agree	50.00%	3
Strongly Agree	16.67%	1
Total	100%	6



Q 5 – Using this proposed iPad Technology would improve my job performance.

Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
5. Using this proposed iPad Technology would improve my job performance.	1.00	4.00	3.00	1.15	1.33	6

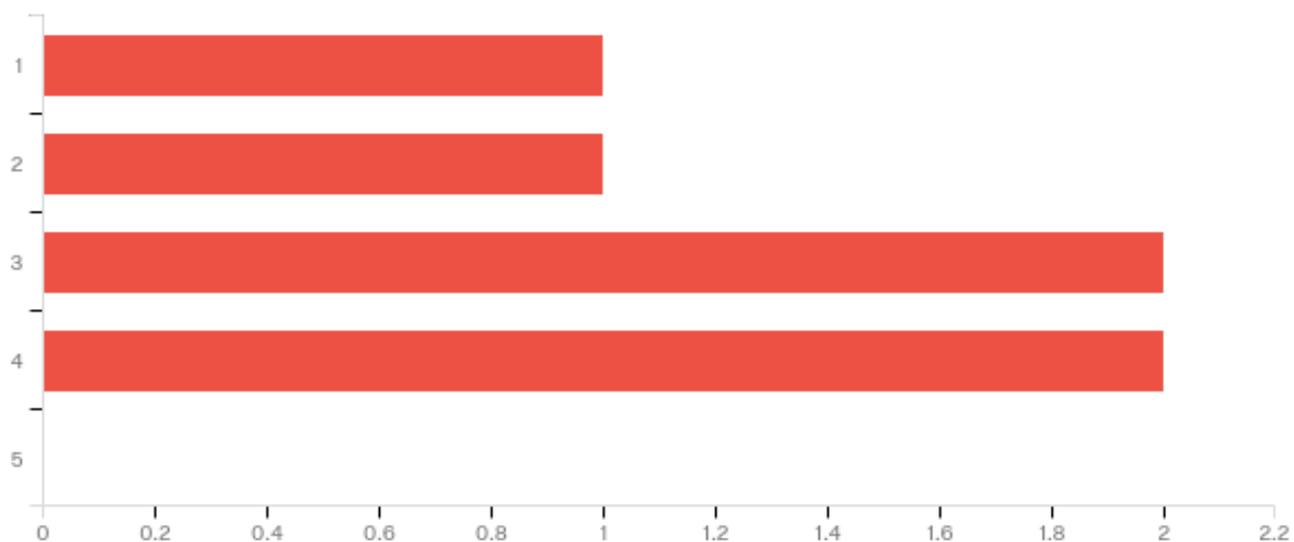
Answer	%	Count
Strongly Disagree	16.67%	1
Disagree	16.67%	1
Do Not Know	16.67%	1
Agree	50.00%	3
Strongly Agree	0.00%	0
Total	100%	6



Q 6 – Using this proposed iPad Technology would allow me to accomplish more work than would otherwise be possible.

Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
6. Using this proposed iPad Technology would allow me to accomplish more work than would otherwise be possible.	1.00	4.00	2.83	1.07	1.14	6

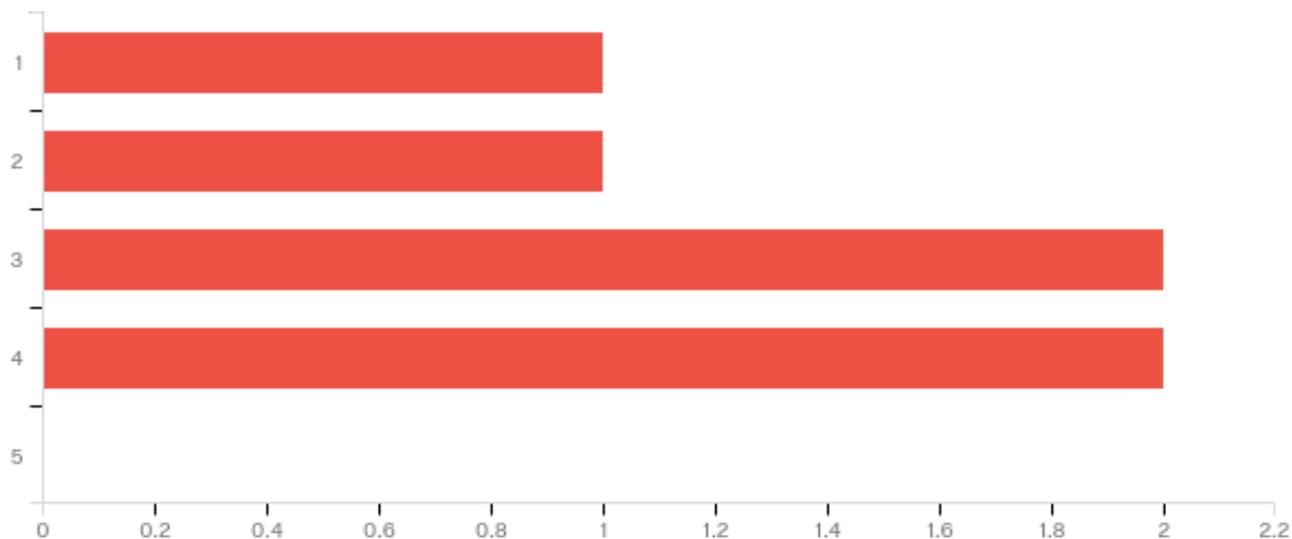
Answer	%	Count
Strongly Disagree	16.67%	1
Disagree	16.67%	1
Do Not Know	33.33%	2
Agree	33.33%	2
Strongly Agree	0.00%	0
Total	100%	6



Q 7 – Using this proposed iPad Technology would reduce the time I spend on unproductive activities.

Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
7. Using this proposed iPad Technology would reduce the time I spend on unproductive activities.	1.00	4.00	2.83	1.07	1.14	6

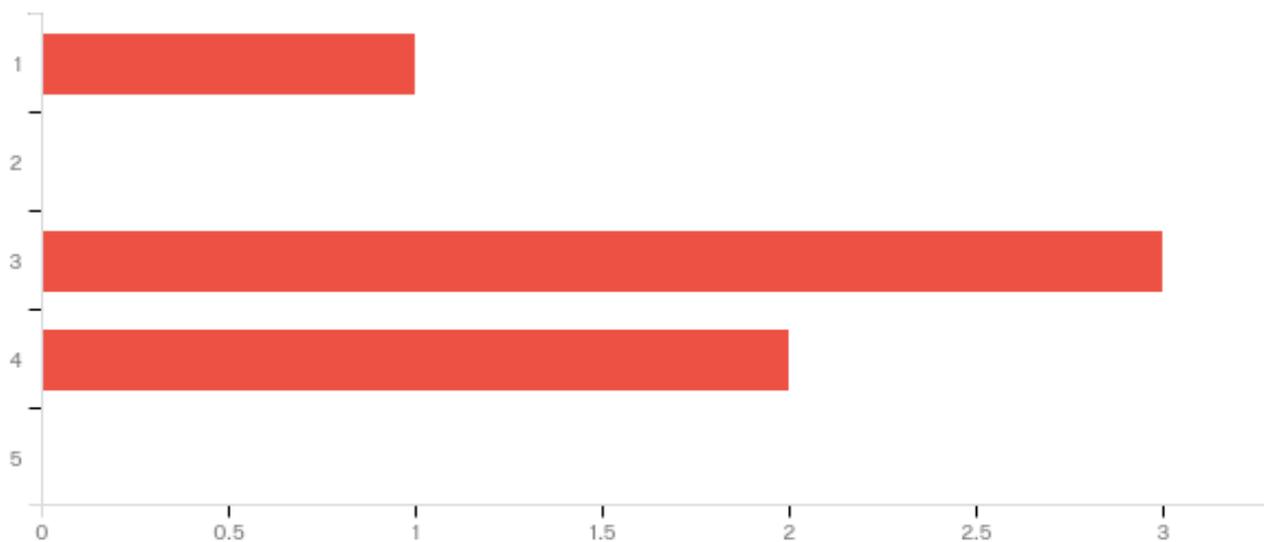
Answer	%	Count
Strongly Disagree	16.67%	1
Disagree	16.67%	1
Do Not Know	33.33%	2
Agree	33.33%	2
Strongly Agree	0.00%	0
Total	100%	6



Q 8 – Using this proposed iPad Technology would enhance my effectiveness on the job.

Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
8. Using this proposed iPad Technology would enhance my effectiveness on the job.	1.00	4.00	3.00	1.00	1.00	6

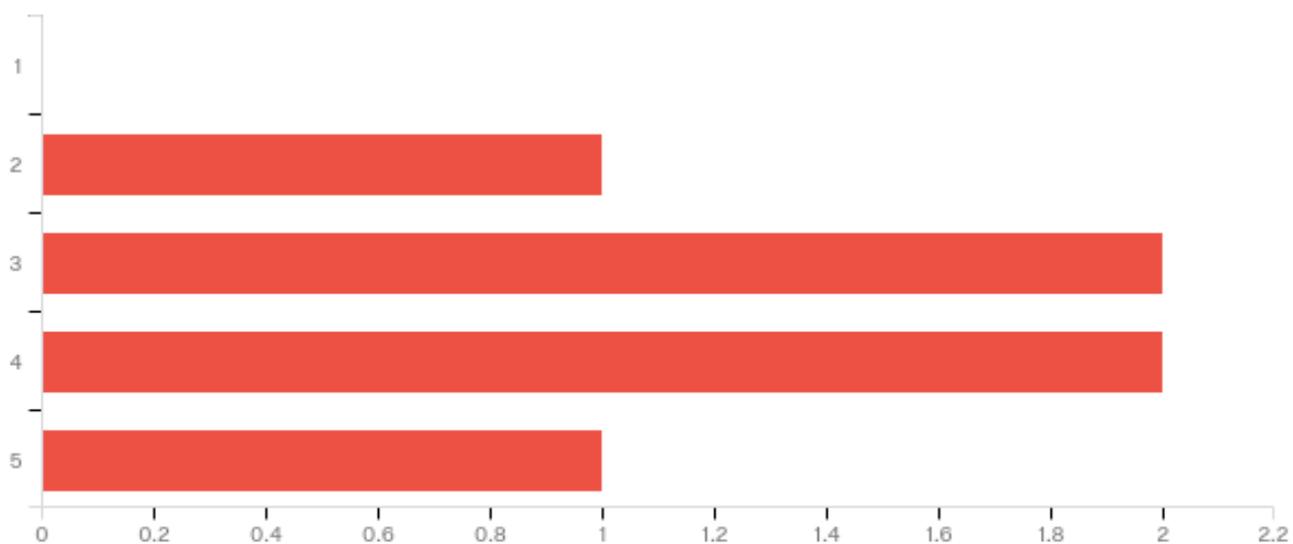
Answer	%	Count
Strongly Disagree	16.67%	1
Disagree	0.00%	0
Do Not Know	50.00%	3
Agree	33.33%	2
Strongly Agree	0.00%	0
Total	100%	6



Q 9 – Using this proposed iPad Technology would improve the quality of the work I do.

Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
9. Using this proposed iPad Technology would improve the quality of the work I do.	2.00	5.00	3.50	0.96	0.92	6

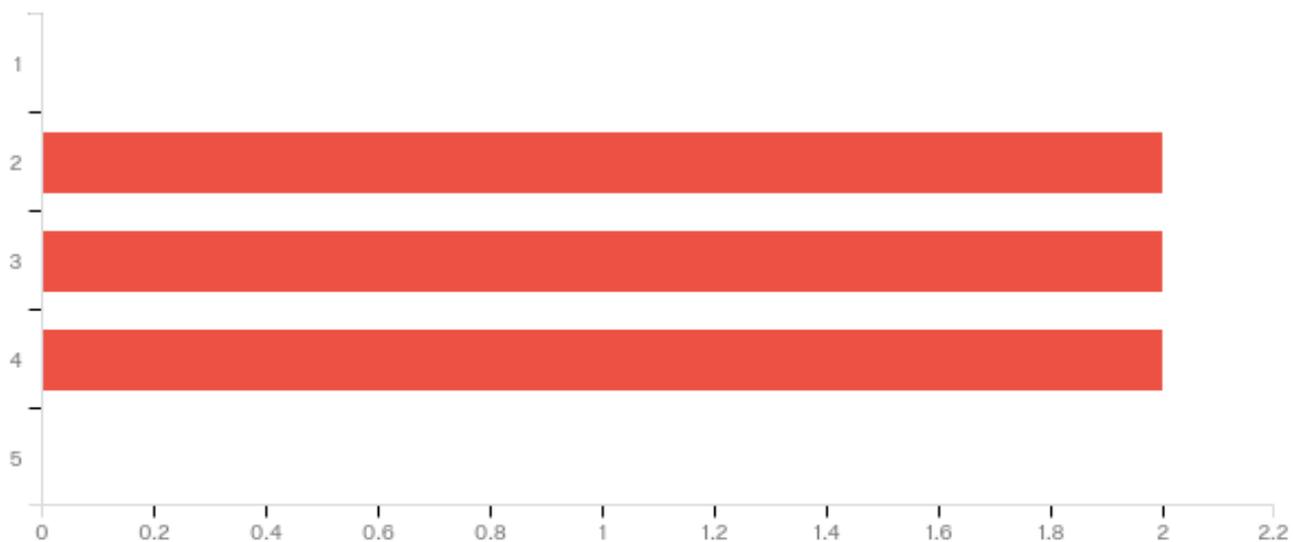
Answer	%	Count
Strongly Disagree	0.00%	0
Disagree	16.67%	1
Do Not Know	33.33%	2
Agree	33.33%	2
Strongly Agree	16.67%	1
Total	100%	6



Q 10 – Using this proposed iPad Technology would increase my productivity.

Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
10. Using this proposed iPad Technology would increase my productivity.	2.00	4.00	3.00	0.82	0.67	6

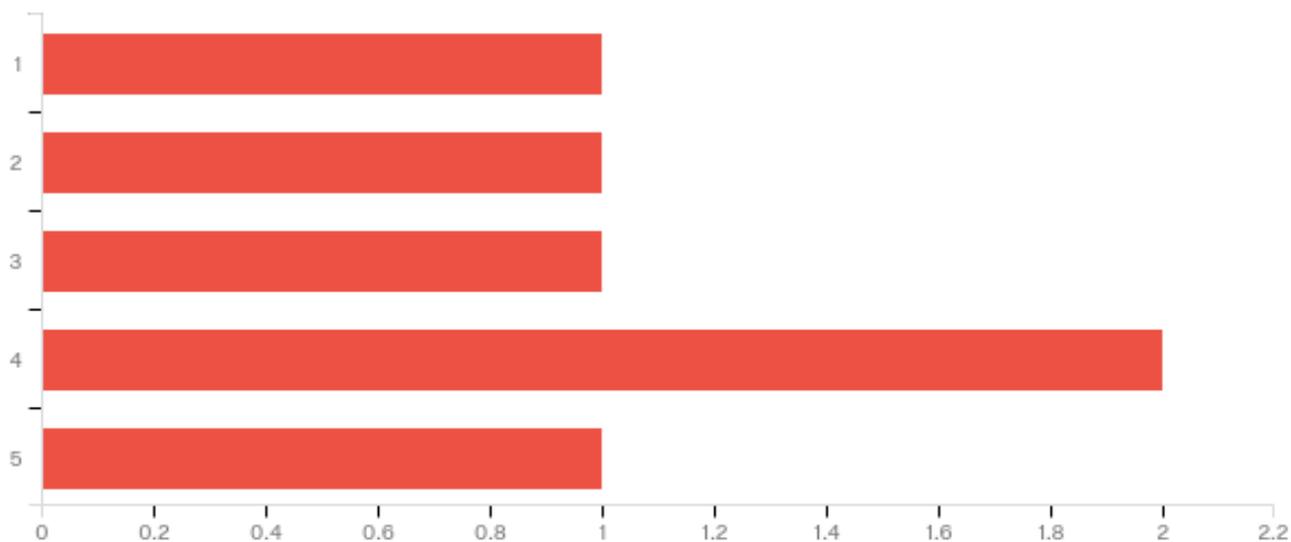
Answer	%	Count
Strongly Disagree	0.00%	0
Disagree	33.33%	2
Do Not Know	33.33%	2
Agree	33.33%	2
Strongly Agree	0.00%	0
Total	100%	6



Q 11 – Using this proposed iPad Technology would make it easier to do my job.

Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
11. Using this proposed iPad Technology would make it easier to do my job.	1.00	5.00	3.17	1.34	1.81	6

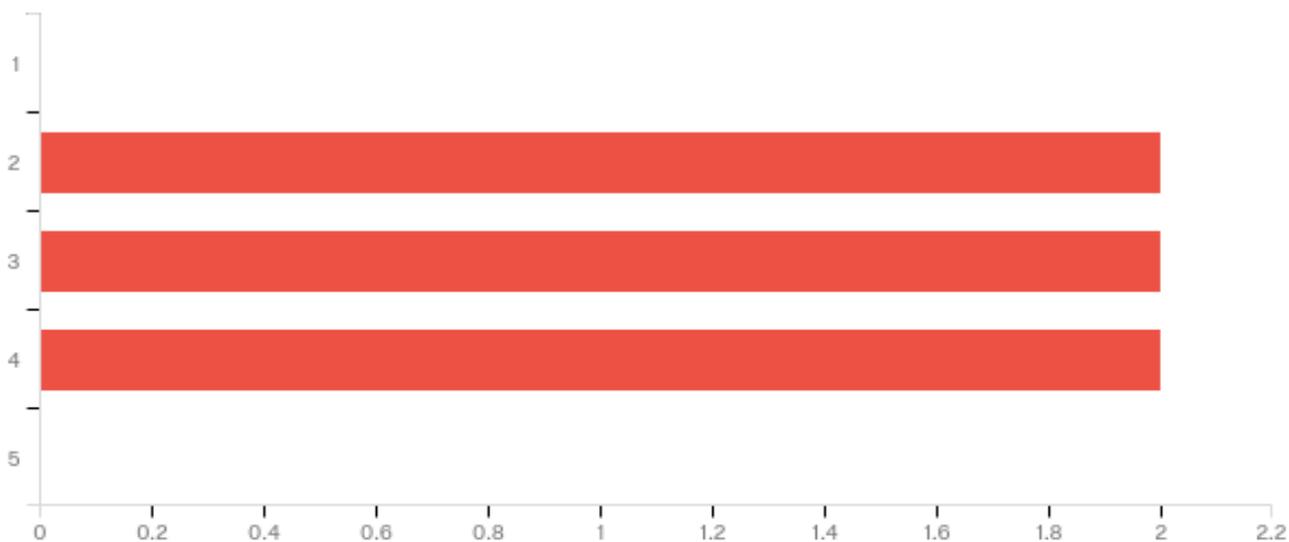
Answer	%	Count
Strongly Disagree	16.67%	1
Disagree	16.67%	1
Do Not Know	16.67%	1
Agree	33.33%	2
Strongly Agree	16.67%	1
Total	100%	6



Q 12 – Using this proposed iPad Technology would give me greater control over my work.

Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
12. Using this proposed iPad Technology would give me greater control over my work.	2.00	4.00	3.00	0.82	0.67	6

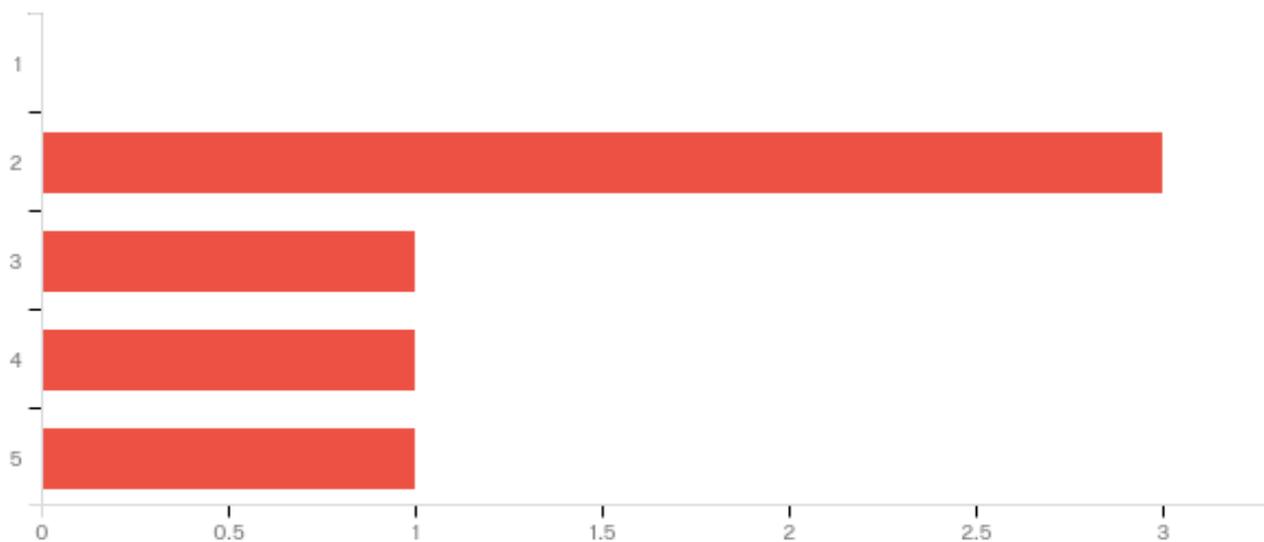
Answer	%	Count
Strongly Disagree	0.00%	0
Disagree	33.33%	2
Do Not Know	33.33%	2
Agree	33.33%	2
Strongly Agree	0.00%	0
Total	100%	6



Q 13 – My job is more difficult to perform without this proposed iPad Technology.

Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
13. My job is more difficult to perform without this proposed iPad Technology.	2.00	5.00	3.00	1.15	1.33	6

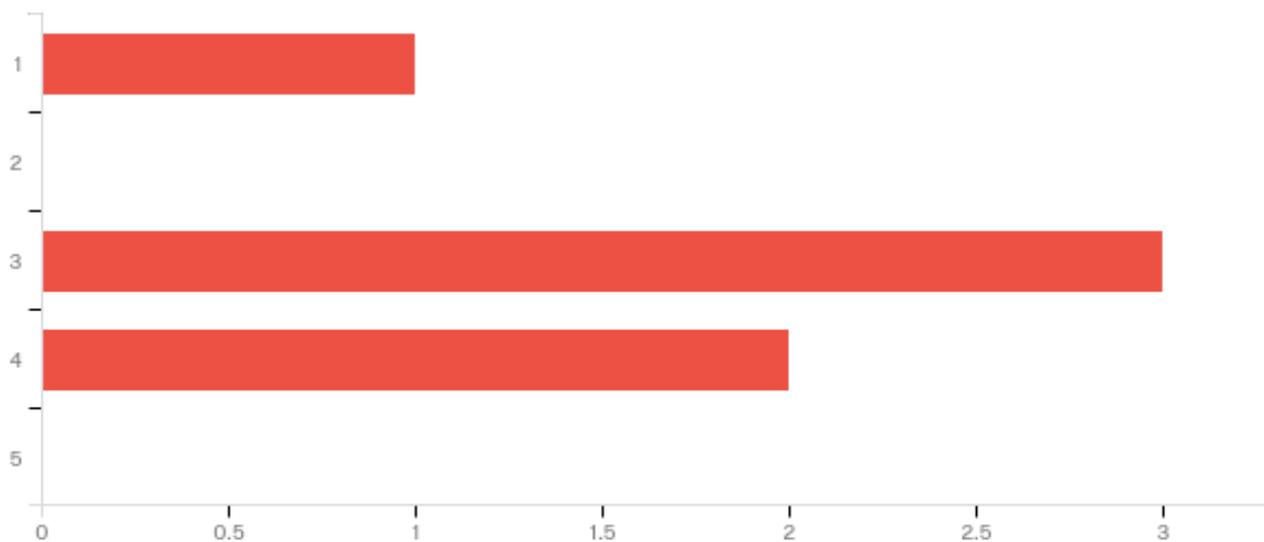
Answer	%	Count
Strongly Disagree	0.00%	0
Disagree	50.00%	3
Do Not Know	16.67%	1
Agree	16.67%	1
Strongly Agree	16.67%	1
Total	100%	6



Q 14 – Overall, this proposed iPad Technology would be useful for my job

Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
14. Overall, this proposed iPad Technology would be useful for my job	1.00	4.00	3.00	1.00	1.00	6

Answer	%	Count
Strongly Disagree	16.67%	1
Disagree	0.00%	0
Do Not Know	50.00%	3
Agree	33.33%	2
Strongly Agree	0.00%	0
Total	100%	6

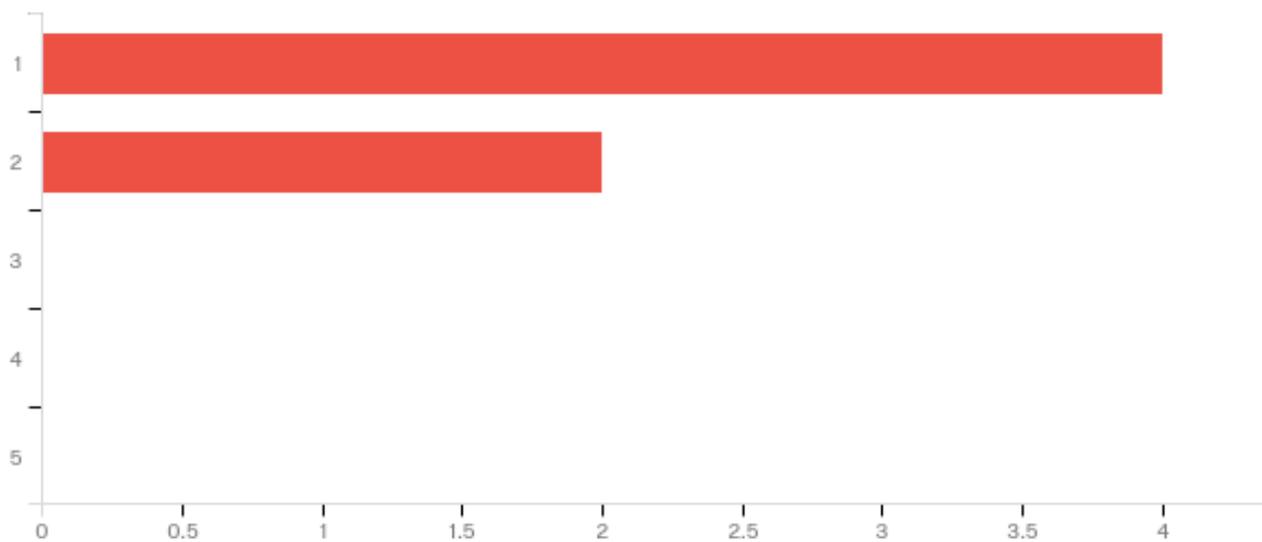


APPENDIX G:
SURVEY PERCEIVED EASE OF USE

Q 1 – I often become confused when I use this type of iPad Technology.

Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1. I often become confused when I use this type of iPad Technology.	1.00	2.00	1.33	0.47	0.22	6

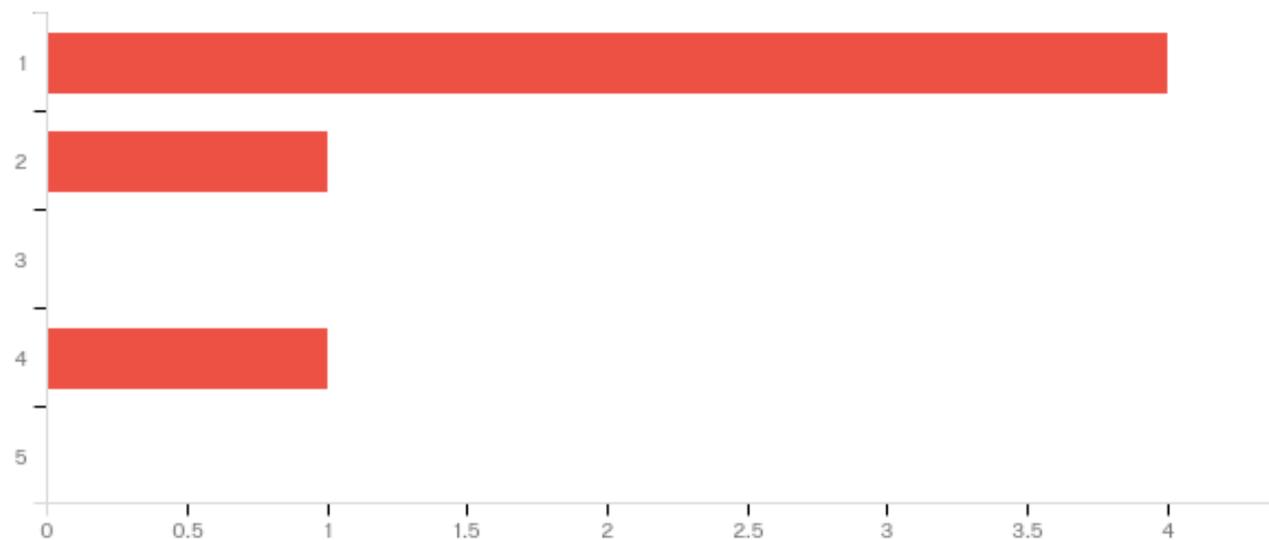
Answer	%	Count
Strongly Disagree	66.67%	4
Disagree	33.33%	2
Do Not Know	0.00%	0
Agree	0.00%	0
Strongly Agree	0.00%	0
Total	100%	6



Q 2 – I make errors frequently when using this type of iPad Technology.

Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
2. I make errors frequently when using this type of iPad Technology.	1.00	4.00	1.67	1.11	1.22	6

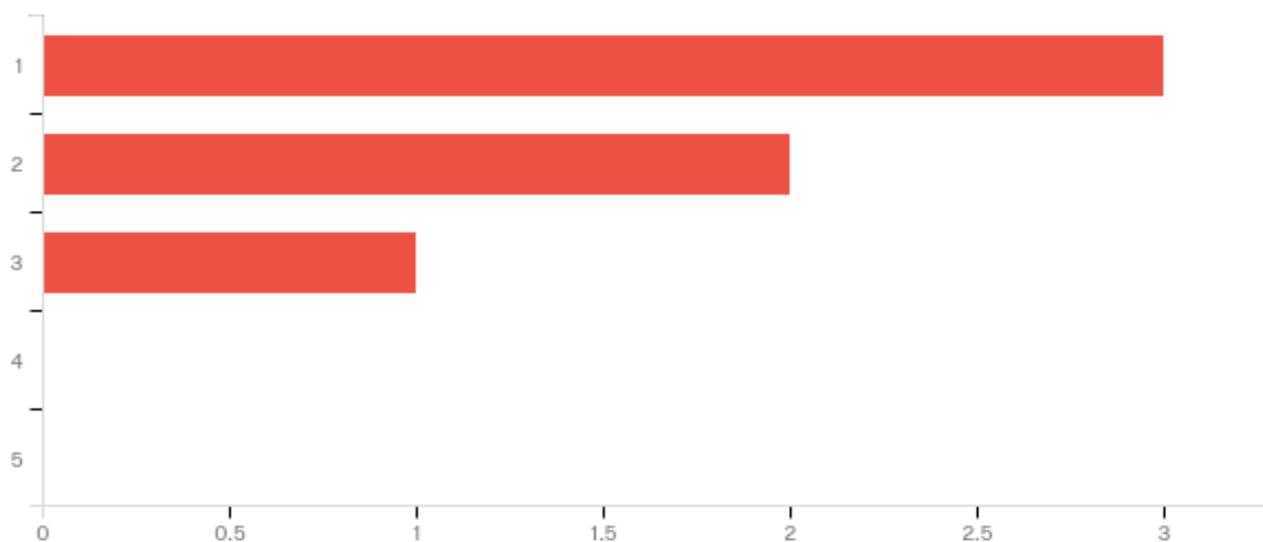
Answer	%	Count
Strongly Disagree	66.67%	4
Disagree	16.67%	1
Do Not Know	0.00%	0
Agree	16.67%	1
Strongly Agree	0.00%	0
Total	100%	6



Q 3 – Interacting with this type of iPad Technology and patient's electronic health records is frustrating.

Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
3. Interacting with this type of iPad Technology and patient's electronic health records is frustrating.	1.00	3.00	1.67	0.75	0.56	6

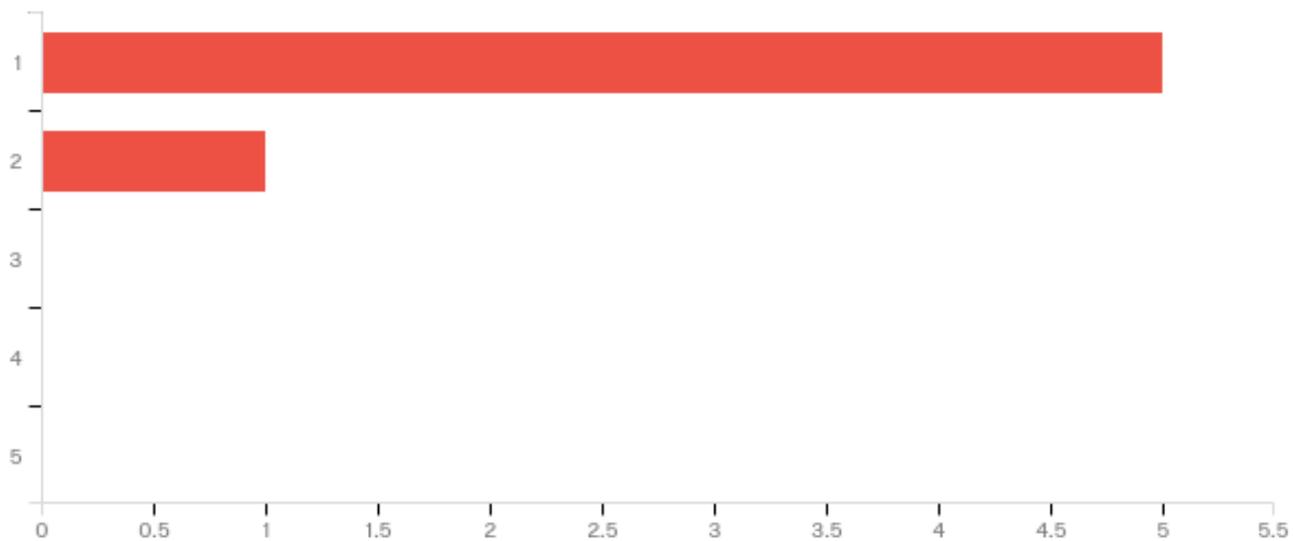
Answer	%	Count
Strongly Disagree	50.00%	3
Disagree	33.33%	2
Do Not Know	16.67%	1
Agree	0.00%	0
Strongly Agree	0.00%	0
Total	100%	6



Q 4 – I would need to consult the user manual often when using this type of iPad Technology.

Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
4. I would need to consult the user manual often when using this type of iPad Technology.	1.00	2.00	1.17	0.37	0.14	6

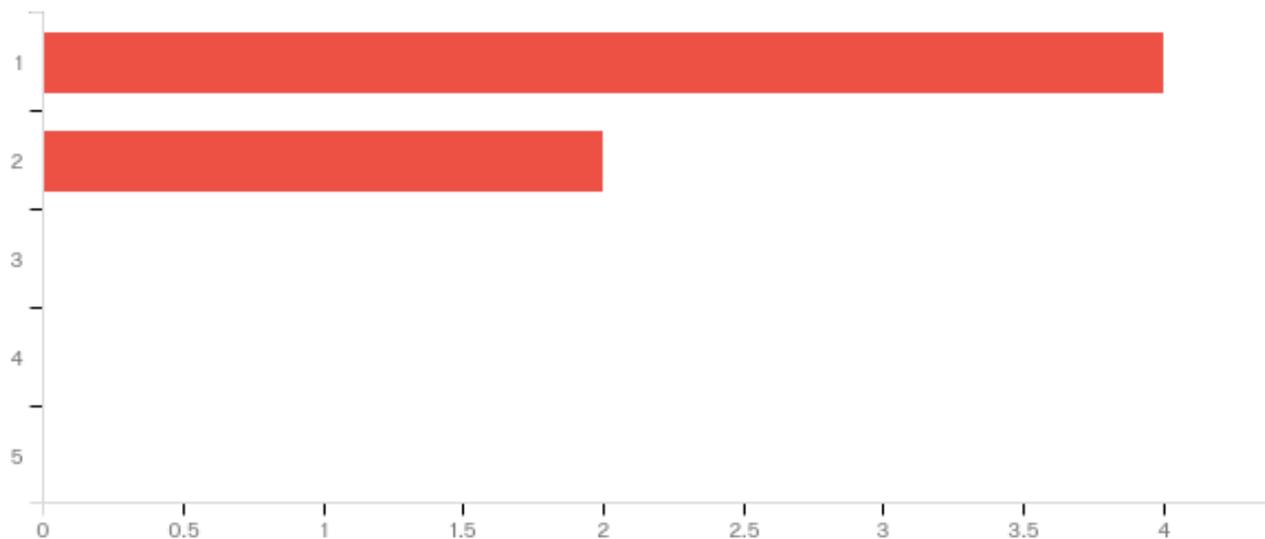
Answer	%	Count
Strongly Disagree	83.33%	5
Disagree	16.67%	1
Do Not Know	0.00%	0
Agree	0.00%	0
Strongly Agree	0.00%	0
Total	100%	6



Q 5 – Interacting with this type of iPad Technology would require a lot of mental effort from me.

Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
5. Interacting with this type of iPad Technology would require a lot of mental effort from me.	1.00	2.00	1.33	0.47	0.22	6

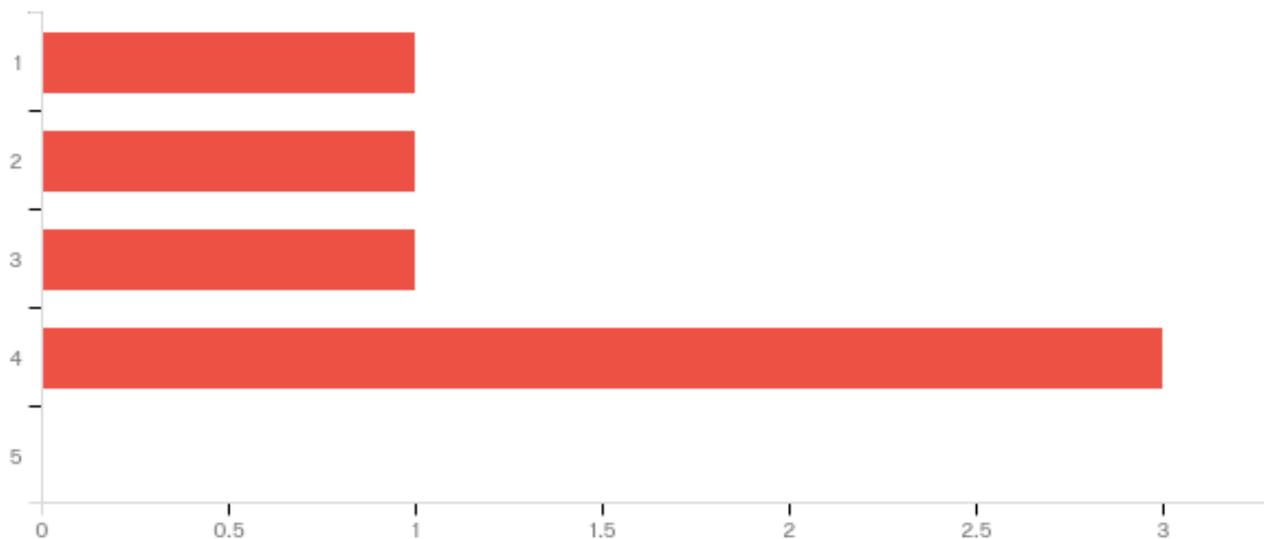
Answer	%	Count
Strongly Disagree	66.67%	4
Disagree	33.33%	2
Do Not Know	0.00%	0
Agree	0.00%	0
Strongly Agree	0.00%	0
Total	100%	6



Q 6 – I find it easy to recover from errors I encounter while using this type of iPad Technology.

Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
6. I find it easy to recover from errors I encounter while using this type of iPad Technology.	1.00	4.00	3.00	1.15	1.33	6

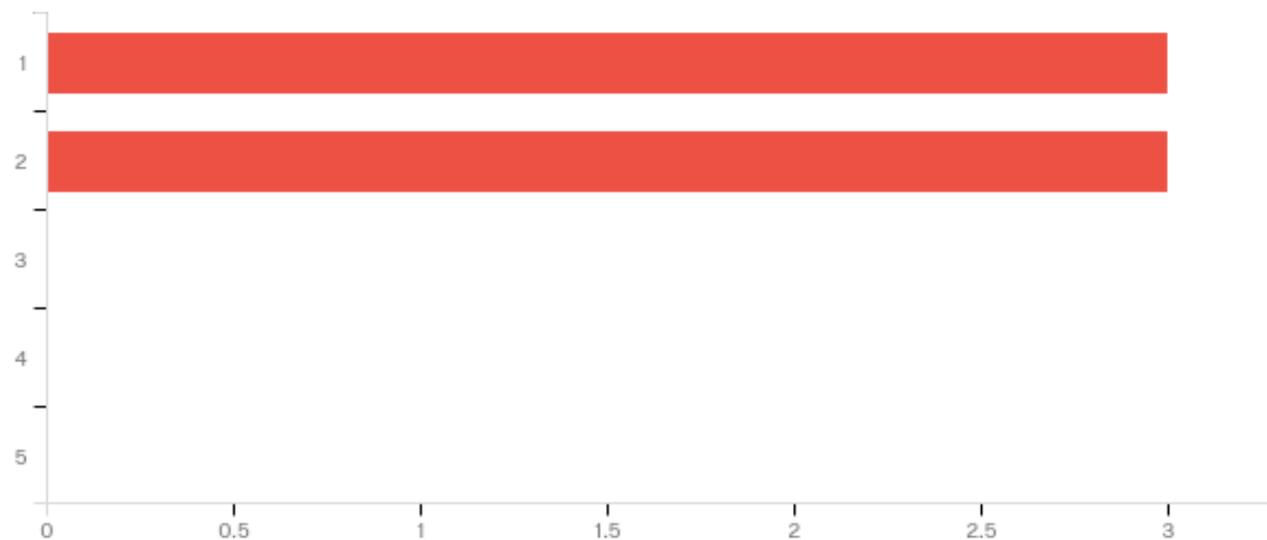
Answer	%	Count
Strongly Disagree	16.67%	1
Disagree	16.67%	1
Do Not Know	16.67%	1
Agree	50.00%	3
Strongly Agree	0.00%	0
Total	100%	6



Q 7 – This type of iPad Technology is rigid and inflexible to interact with.

Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
7. This type of iPad Technology is rigid and inflexible to interact with.	1.00	2.00	1.50	0.50	0.25	6

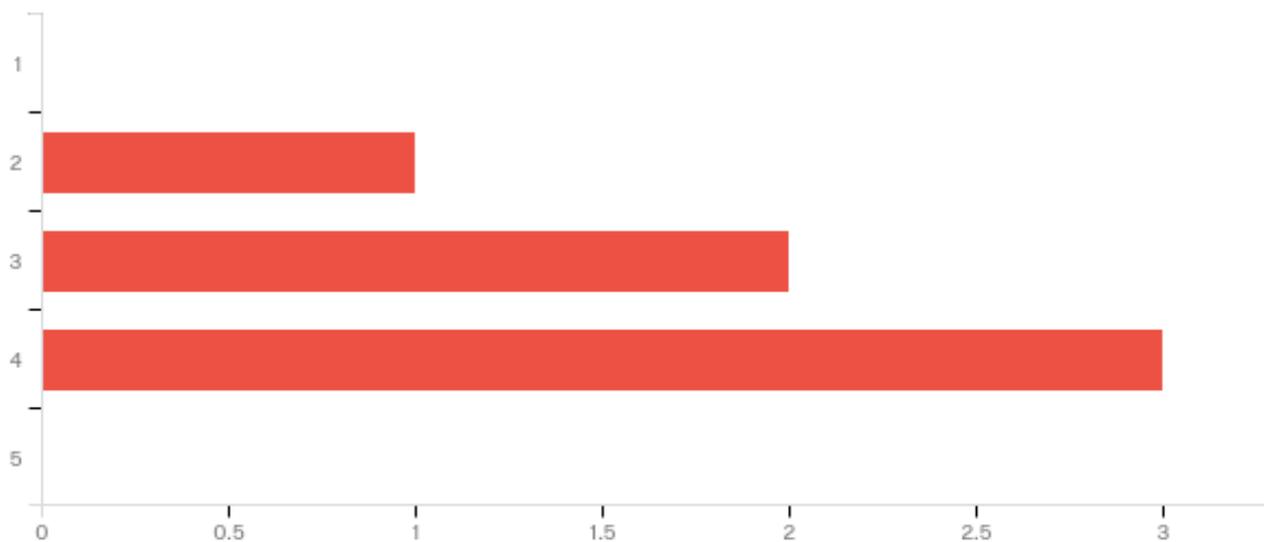
Answer	%	Count
Strongly Disagree	50.00%	3
Disagree	50.00%	3
Do Not Know	0.00%	0
Agree	0.00%	0
Strongly Agree	0.00%	0
Total	100%	6



Q 8 – I would find it easy to get this type of iPad technology to do what I want it to do.

Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
8. I would find it easy to get this type of iPad technology to do what I want it to do.	2.00	4.00	3.33	0.75	0.56	6

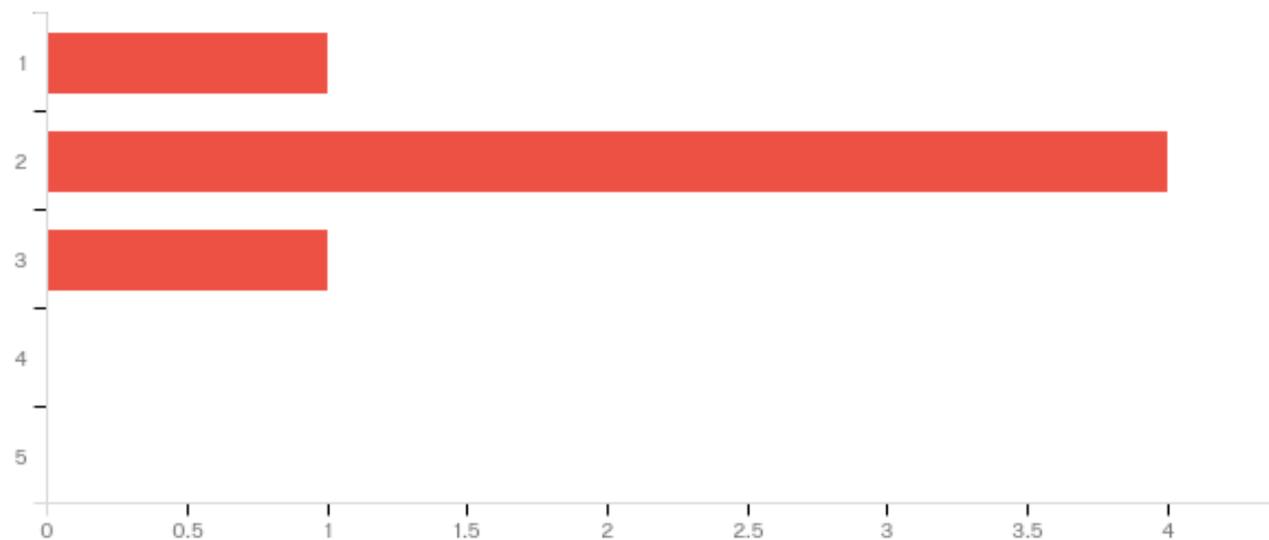
Answer	%	Count
Strongly Disagree	0.00%	0
Disagree	16.67%	1
Do Not Know	33.33%	2
Agree	50.00%	3
Strongly Agree	0.00%	0
Total	100%	6



Q 9 – This type of iPad Technology often behaves in unexpected ways.

Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
9. This type of iPad Technology often behaves in unexpected ways.	1.00	3.00	2.00	0.58	0.33	6

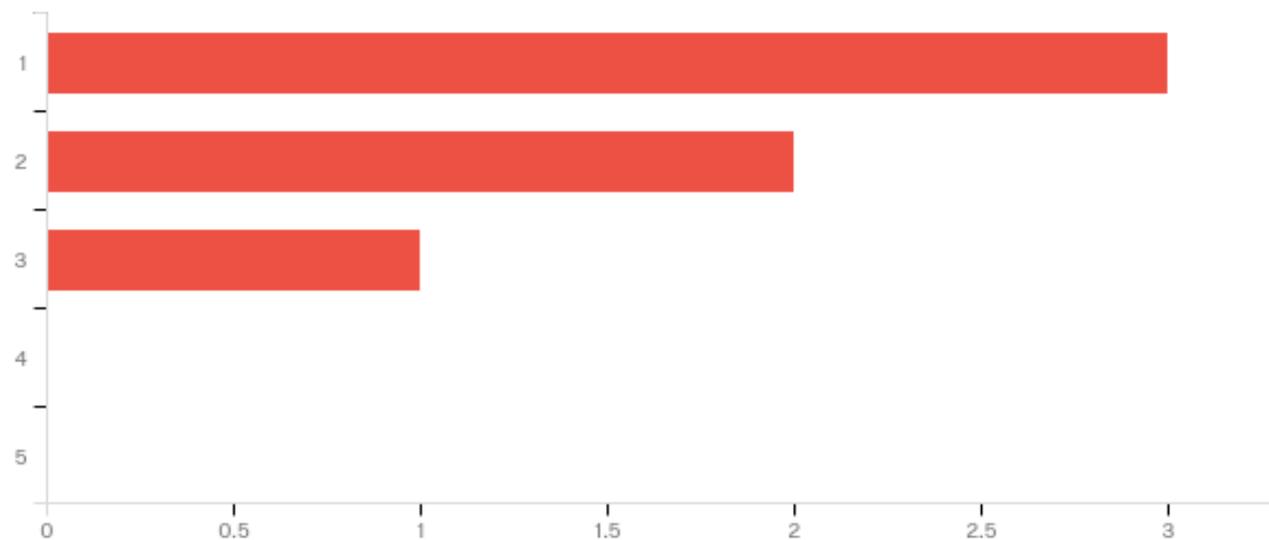
Answer	%	Count
Strongly Disagree	16.67%	1
Disagree	66.67%	4
Do Not Know	16.67%	1
Agree	0.00%	0
Strongly Agree	0.00%	0
Total	100%	6



Q 10 – I find it cumbersome to use this type of iPad Technology.

Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
10. I find it cumbersome to use this type of iPad Technology.	1.00	3.00	1.67	0.75	0.56	6

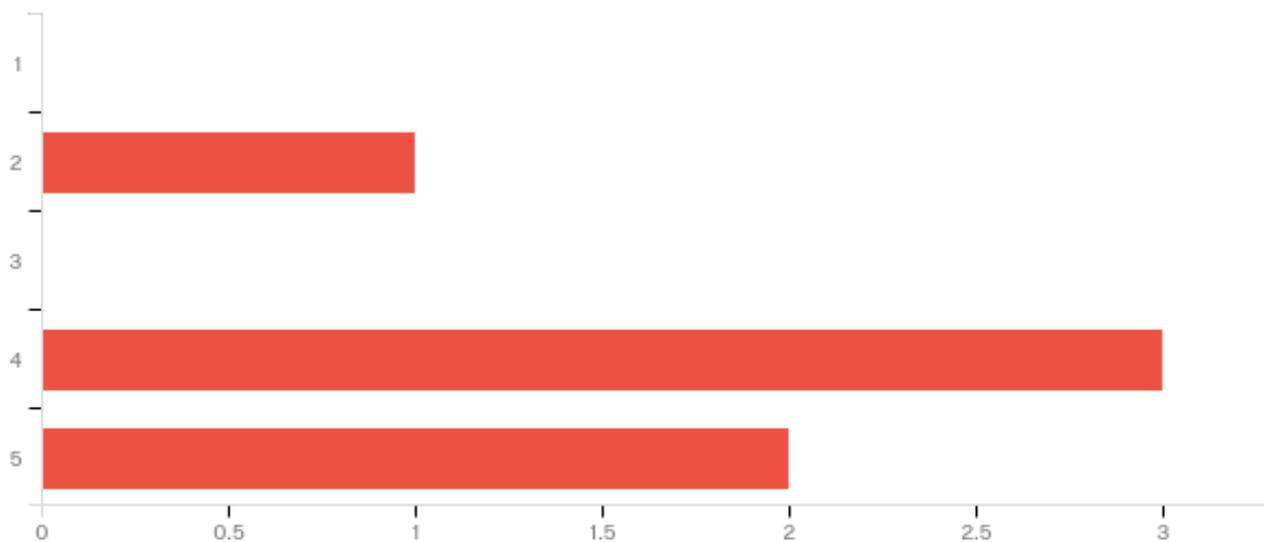
Answer	%	Count
Strongly Disagree	50.00%	3
Disagree	33.33%	2
Do Not Know	16.67%	1
Agree	0.00%	0
Strongly Agree	0.00%	0
Total	100%	6



Q 11 – My interaction with this type of iPad Technology is easy for me to understand.

Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
11. My interaction with this type of iPad Technology is easy for me to understand.	2.00	5.00	4.00	1.00	1.00	6

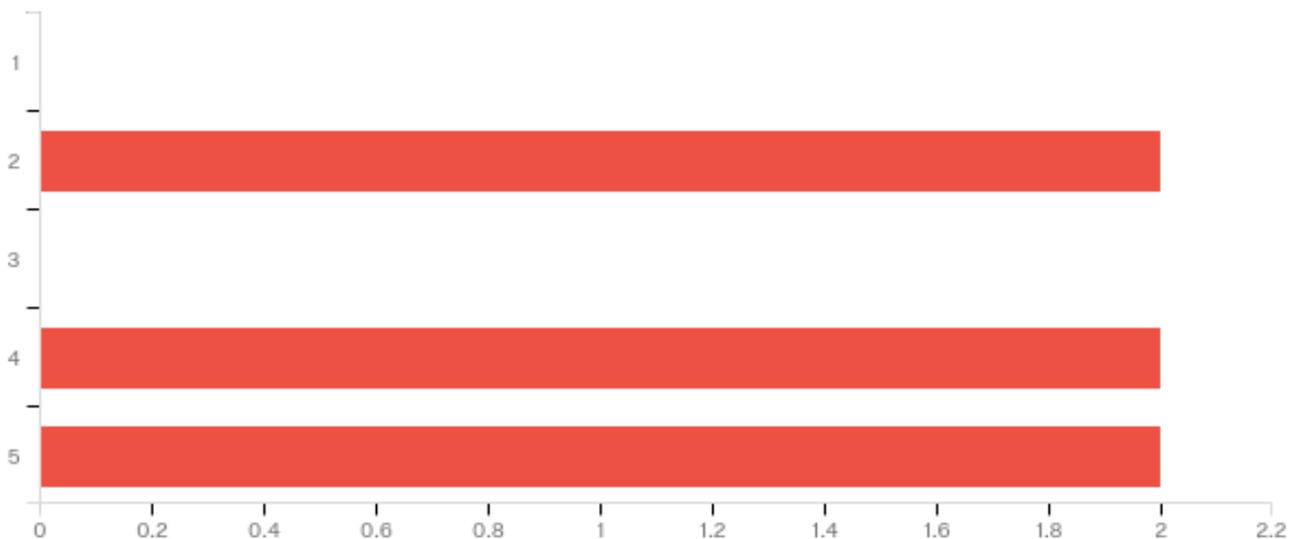
Answer	%	Count
Strongly Disagree	0.00%	0
Disagree	16.67%	1
Do Not Know	0.00%	0
Agree	50.00%	3
Strongly Agree	33.33%	2
Total	100%	6



Q 12 – It is easy for me to remember how to perform tasks using this type of iPad Technology.

Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
12. It is easy for me to remember how to perform tasks using this type of iPad Technology.	2.00	5.00	3.67	1.25	1.56	6

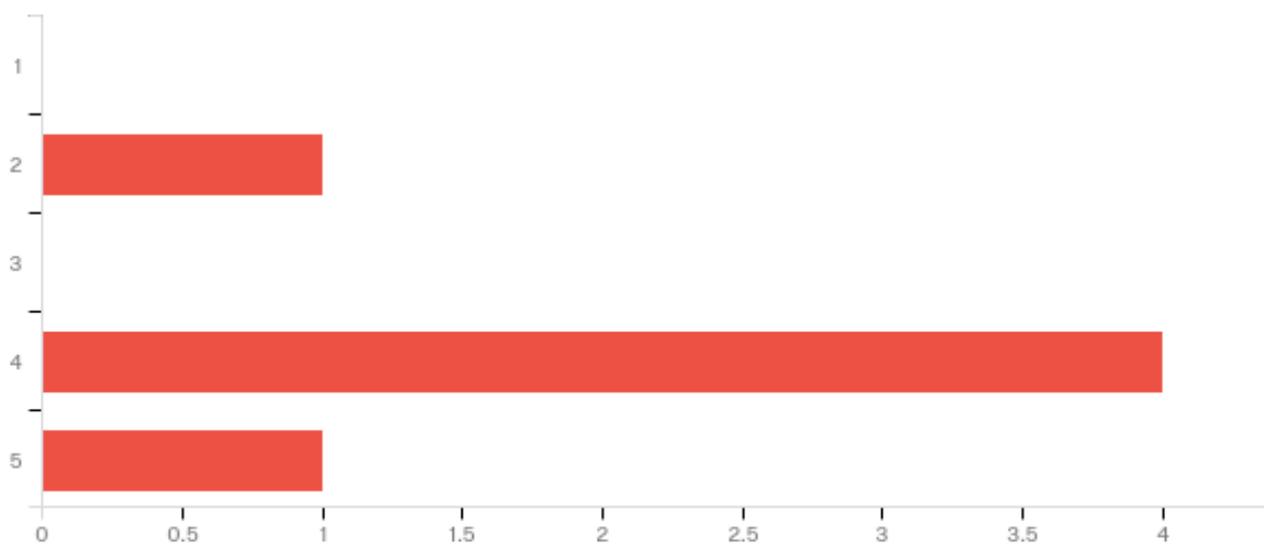
Answer	%	Count
Strongly Disagree	0.00%	0
Disagree	33.33%	2
Do Not Know	0.00%	0
Agree	33.33%	2
Strongly Agree	33.33%	2
Total	100%	6



Q 13 – This type of iPad Technology provides helpful guidance in performing tasks.

Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
12. It is easy for me to remember how to perform tasks using this type of iPad Technology.	2.00	5.00	3.67	1.25	1.56	6

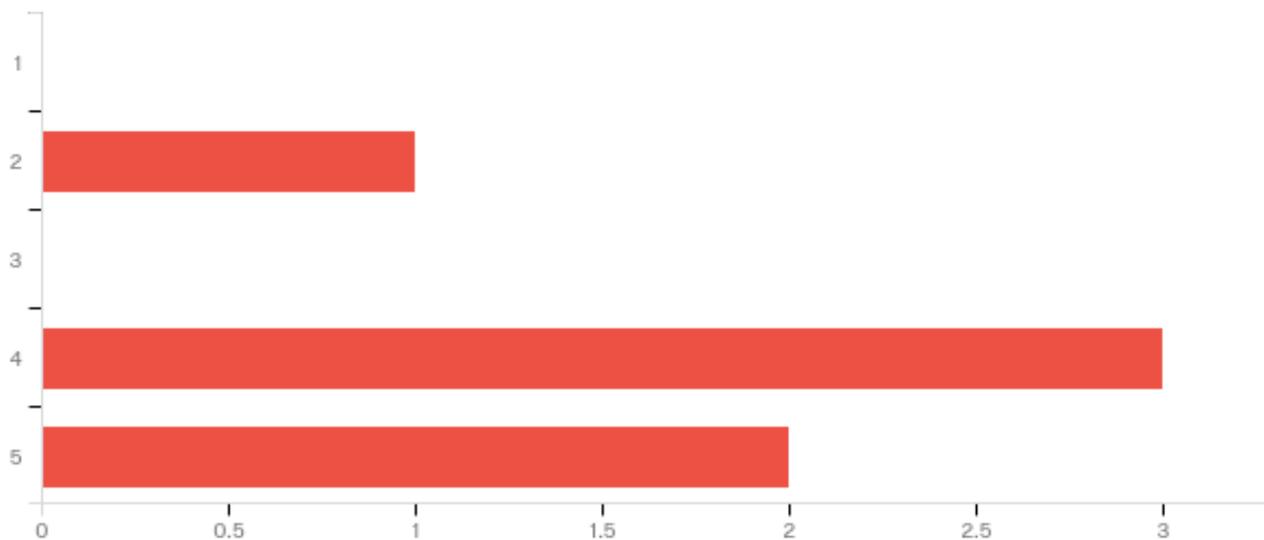
Answer	%	Count
Strongly Disagree	0.00%	0
Disagree	16.67%	1
Do Not Know	0.00%	0
Agree	66.67%	4
Strongly Agree	16.67%	1
Total	100%	6



Q 14 – Overall, I find this type of iPad Technology easy to use.

Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
14. Overall, I find this type of iPad Technology easy to use.	2.00	5.00	4.00	1.00	1.00	6

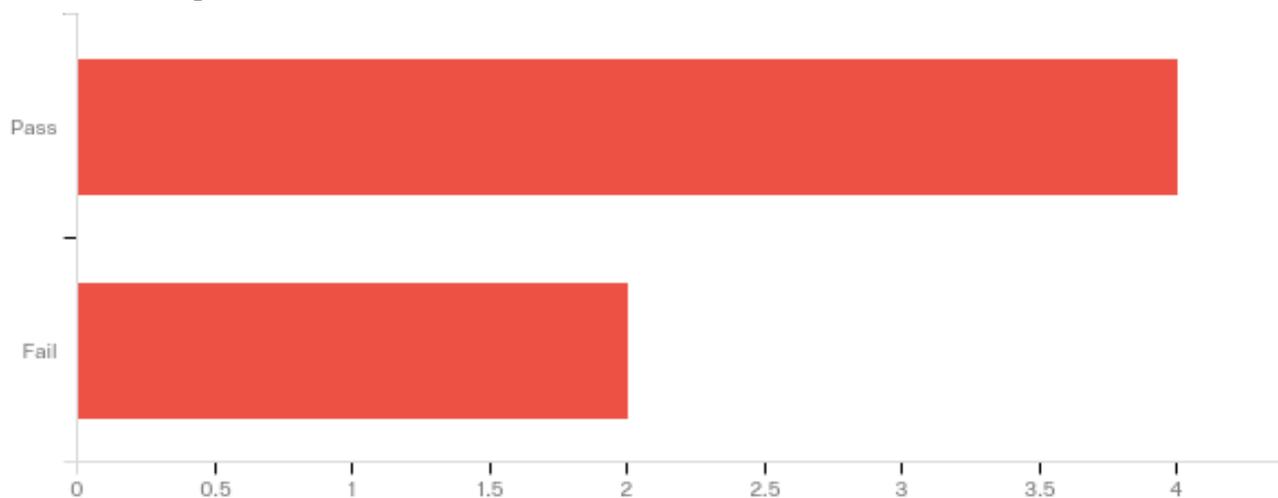
Answer	%	Count
Strongly Disagree	0.00%	0
Disagree	16.67%	1
Do Not Know	0.00%	0
Agree	50.00%	3
Strongly Agree	33.33%	2
Total	100%	6



APPENDIX H:
SURVEY ATTITUDE

Q 1 – Attitude towards future use

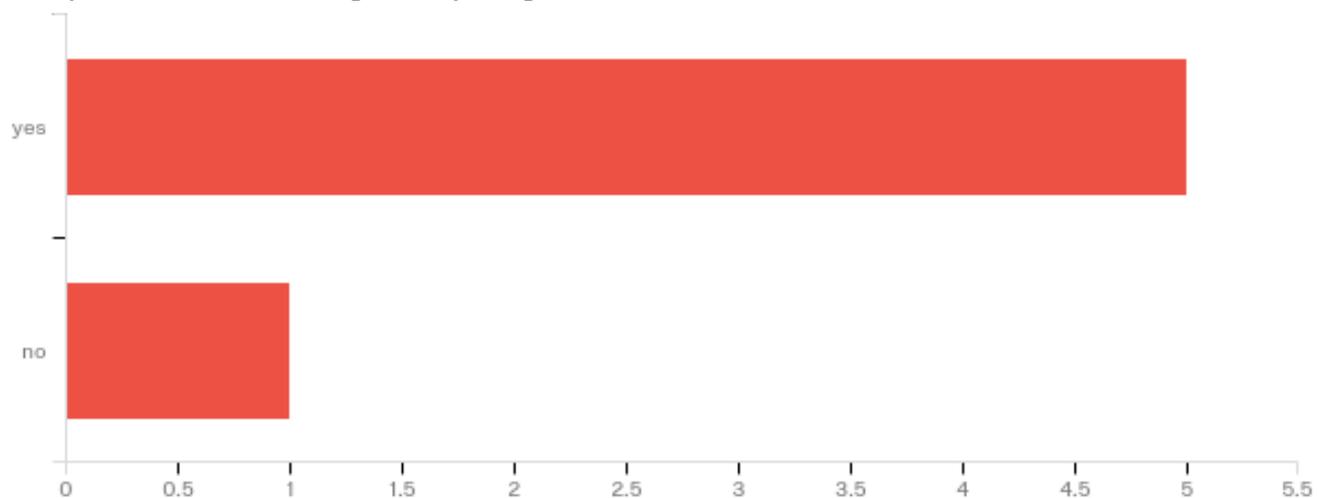
Please grade (pass or fail) whether the iPad Technology is an acceptable technology to use at the NAU Campus Health Services.



Answer	%	Count
Pass	66.67%	4
Fail	33.33%	2
Total	100%	6

Q 2 – Attitude towards future use

If the iPad Technology were available for regular use at the NAU Campus Health Services, would you want to use it as part of your practice?



Answer	%	Count
yes	83.33%	5
no	16.67%	1
Total	100%	6

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