ABSTRACT

FACTORS AFFECTING TECHNOLOGY INTEGRATION BY TEACHERS IN THE ATLANTIC UNION CONFERENCE OF SEVENTH-DAY ADVENTISTS

by

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ABSTRACT OF GRADUATE STUDENT RESEARCH

Dissertation

Montemorelos University

School of Education

Title: FACTORS AFFECTING TECHNOLOGY INTEGRATION BY TEACHERS IN THE ATLANTIC UNION CONFERENCE OF SEVENTH-DAY ADVENTISTS

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Problem

The inquisition into how teachers' technology skills, attitudes towards technology, burnout, and self-efficacy impact the use of technology in the Seventh-day Adventist schools of the Atlantic Union Conference of Seventh-day Adventists.

Method

The research was ex post facto design. The study population was made up of 356 teachers in the Atlantic Union Conference of Seventh-day Adventists. An instrument was administered, and 149 respondents of the population described participated.

The constructs for the instrument used were tested through factorial analysis techniques and the reliability, measured with the Cronbach alpha coefficient for each

instrument, was acceptable. The statistical technique of structural equation models was used for the analysis of the hypothesis.

Results

The use of technology, with an explained variance of 48%, is primarily determined by a teacher's self-efficacy (β = .50) and secondly by his/her attitudes towards technology (β = .34). Self-efficacy depends on the ability that a teacher has – referred to as the teacher's technology skills (γ = .91). The attitudes towards technology are determined by the level of burnout (γ = .30). Burnout itself does not determine the use of technology but rather influences other factors that determine the use of technology. Similarly, technology skills do not directly determine the use of technology.

Conclusions

With the intention of achieving a greater use of technology by NEC teachers, the development of skills in the use of technology should be promoted mainly with the intention that self-efficacy increases and integration in education and technology be achieved. On the other hand, although less important, time should be spent stimulating the teacher so that the burnout level decreases and attitudes towards the integration of technology improves.

Montemorelos University

School of Education

FACTORS AFFECTING TECHNOLOGY INTEGRATION BY TEACHERS IN THE ATLANTIC UNION CONFERENCE OF SEVENTH-DAY ADVENTISTS

A dissertation
presented in partial fulfillment
of the requirements for the degree
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Sherina Phillips

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FACTORS AFFECTING TECHNOLOGY INTEGRATION BY TEACHERS IN THE ATLANTIC UNION CONFERENCE OF SEVENTH-DAY ADVENTISTS

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presentada en cumplimiento parcial
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por

Sherina Phillips

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CHAPTER I

PROBLEM DIMENSION

Introduction

This chapter includes the background that serves as a basis for this research among which is the approach and the statement of the problem that was investigated: the hypotheses of the research, the complementary questions, the objectives, the justification, the limitations, the delimitations, the philosophical framework and the definition of terms.

Problem Statement

With the turn of the 21st Century, the topic of using technology in the classroom has been one of debate and study. This research considers the reasons why teachers may or may not use technology, the different types of technology used, and the benefits that technology can have on students with learning challenges.

In the United States of America, the education curriculum has become technology-infused, and regular integration is highly encouraged across the core subjects. More and more classrooms are gaining access to document cameras, interactive boards, tablets, laptops, and various other methods of technology to enhance the learning process (Puckett, 2013).

Traditional teaching is still very dominant in many of SDA school systems, and with it comes the neglect of the outlier students (the weak and the gifted) who are not

fully recognized and need to work at their own pace. Applying educational technology to these classrooms allows students to master the material in class on an individual basis, along with being able to review content that they were unclear of before. Educational technology also provides the advantage of quicker feedback between the teacher and the student (Stošić, 2015). While there are teachers who are well versed in the use of technology, there are others, who are not as knowledgeable – there is still a basic level of technology integration understanding to take place. The use of educational technology in teaching provides better interaction with students, better reception of information because the students receive knowledge via visual, auditory and kinesthetic ways (Stošić, 2015).

To another end, look at one of the more straightforward levels of technology integration that do not even think of it as integration and that is the digitization of the libraries to make resources more accessible and readily available (Yavarkovsky, 2013). The writer went on to mention how the introduction of immersive technology has brought about interactive 3D graphics. This type of immersive technology can be seen in both the integration of Virtual Reality into classes along with the new wave of gamification. Gamification is

> a strategy that aims at applying the mechanics of gaming to non-game activities to change behaviours. At its root, the concept applies the mechanics of gaming to non-game activities to change people's behaviour. When used on the educational field, gamification is the process of integrating game dynamics and game mechanics into learning activities and didactic objects such as tests, quizzes, training exercises, edu-games, etc., in order to drive engagement, internal or intrinsic motivation and participation (Cardoso Gomes, Guerreiro Figueiredo, Bidarra, & Cardoso Gomes, 2016, p. 287).

When looking at physical education teachers (Krause, Franks, & Lynch, 2017) noted that technology was being used in different ways. The main techniques seen

were the use of activity trackers like heart rate monitors and pedometers, mobile devices, and social media. Teachers used networking and online sites like Twitter, Facebook, and SHAPE America's Xchange to collaborate and increase their professional development. Other teachers have also used iPad apps for integration into their classes and for data collection and management.

In the United States of America, the use of mobile phones in school is frowned upon with schools using tablets and chrome books instead for 1:1 usage. These options are not as readily available due to factors such as the cost of the items. As such, Bachore (2015) carried out a study in Ethiopia to see how mobile phones enhanced education in the country. It was understood that mobile technology improves the learning environment and accessibility to knowledge, and it aids teachers and students alike to have access without location and time constraints.

Cowie and Sakui (2015) made a note of the fact that when it comes to teaching language, many new technologies are being put to use, such as Google Docs for collaborative working. Additionally, students also use tablets and laptops to complete tasks and assignments. Furthermore, Cowie and Sakui went on to say that digital technology has been used for traditional assessment in ways such as computer-generated and graded tests and quizzes. Similarly, Carapina and Boticki (2015) discovered in their research that over the last five years, small handheld devices and tablets are both used very frequently in 1:1 learning environments and collaborative atmospheres.

Technology integration is linked to the attitudes that teachers have. Generally, it was seen that teachers had "moderate digital technology self-efficacy, positive attitude

toward learning technologies, and moderate constructivist philosophy" (Hughes, 2013, p. 491).

The researcher went on to say that productivity software was the most commonly used form of technology integration along with hardware like laptops and computers. The point was made that involving mobile technology into coursework, helps teachers integrate it into their classes.

While many may be forward-thinking with computer integration, it was noted in an article by Zinth (2016) that there has been a growth over the past decade in the field of computer systems design and other related fields. However, it was noted that there is a significant absence of females and minorities in courses like Advanced Placement computer science. In an attempt to direct more students into the computer science courses, the trend in education is showing that high schools are allowing their students to fulfill science or math graduation requirements by using credits attained from computer science.

Technology can be integrated into many subjects. Delgado, Fajardo, and Molina-Solana (2013) looked at the integration of technology into music. They said that the most common way that this integration takes place is in recording the performances of students. Students and teachers alike can use these recordings to improve performance and create different styles of expressive music. This is now more comfortable with the use of technology for e-learning due to the increase in Broadband speeds and the cost reduction in the purchasing price of equipment. E-learning uses platforms like Skype to replace face-to-face teaching sessions (Uhomoibhi & Ross, 2013) as well as teleconferencing for small-group tutorials and learning. More recently, the introduction

of virtual environments have been seen for learning various forms of content in school. Universities are using virtual environments in which teaching can continue on a 24/7 basis worldwide.

Yildirim, Elban, and Yildirim (2018) researched the differences in traditional education, and virtual reality (VR) enhanced education. The point was made that VR lessons are more engaging and memorable, causing the experience to be more lasting. The ability of the users to feel present in the environment was key for keeping the children's attention and creating a positive overall experience. Due to the interest level developed, students become more intrigued to find out more about the topic or want to visit the location they saw via VR.

Luo and Murray (2018) carried out a research where they discovered that teachers embraced their students using technology and mobile devices in a 1:1 environment. The teachers also admitted that there should be a balance between technology use and traditional learning environments.

Research Problem

The problem statement of the present investigation is as follows:

How do teachers' technology skills, attitudes towards technology, burnout, and self-efficacy impact the use of technology in the Seventh-day Adventist schools of the Atlantic Union Conference?

Hypothesis

The study hypothesis is presented below:

Teachers' technology skills, attitudes towards technology, burnout, and self-efficacy impact the use of technology in the Seventh-day Adventist schools of the Atlantic Union Conference.

Research Objectives

Following the research aim, the following research objectives were set:

This study is of great importance since educators are teaching students today who are much more technologically advanced than they are. With the attention span of the general human race decreasing, it cannot be expected that the conventional textbook methodology of teaching be continued. Teachers must use ways that students are familiar with, and that will catch their attention to help relay content. As such, teachers must be willing to seek and learn new techniques of teaching. Technology integration is of importance in meeting today's 21st Century students where they are and keep their interests in a way that will match their shortened attention spans.

The result of this study will be beneficial to educators and administrators, and it will target reasons why technology is not implemented within Seventh-day Adventist schools and create a base on which schools can build and provide training for their staff to get them to become more comfortable with technology.

Justification

The generation of students that sit in our classrooms today in the United States of America have been born into, and grown up in, a world of technology. These students have the latest everything and in many cases, they have more expensive devices than the teachers that teach them. With this challenge in mind, educators have to meet the

students at their interest level and find ways to integrate similar technology into their school life.

Wantulok (2015) states that students are demanding this integration as they are used to an interactive world outside of their classrooms and school life. The writer goes on to say that, students are “digital natives” and they find this way of learning easiest to understand, allowing them to learn at their own pace. Technology integration expands the range of sources that are available to students to enhance their learning experience.

An article written by Mims-Word (2012) states that with advancing technologies in the world there needs to be global reform within the educational community with a need for equipped teachers to take up the challenge. With this in mind, school leaders need to make sure that teachers and students alike have the skills needed to be productive members of today's changing society. Mirroring the thought process of Mims-Word (2012) and Al Zou'bi and Al-Onizat (2015), the researchers made the point that there was a high value placed on technology as a major component needed when transferring students into the developed world.

As such, if Seventh-day Adventists teachers want to create well-rounded students, they not only need to create students who are grounded in the Word of God, but also need to equip them to meet the demands of requirements of the developed world within which they live.

Limitations

In the development of this research, some relevant constraints are considered as follows:

1. The application of the instrument requires the participation of third parties.

2. The time available to conduct the investigation.

3. The availability of respondents to answer the instruments.

Delimitations

Here are some delimitations that were considered relevant in the preparation of this research:

1. Research was limited to teachers who work in Seventh-day Adventist schools of the Atlantic Union Conference.

2. The study was conducted in the 2019-2020 school year.

3. The research was not proposed to resolve the possible difficulties detected.

Assumptions

Below are some assumptions considered in the preparation of this research:

1. It is expected that the participants responsibly answered the instruments and that they had enough time to answer each one.

2. The research used is empirical and quantitative, prepared with all the scientific rigor.

3. It was assumed that the indicators of each instrument were interpreted correctly.

Philosophical Background

To look at the concept of technology and Christianity, one must first define the word technology. George (2006) states that technology, unlike science, is not an end in itself, but instead, it is a technique that is applied to daily life. Ferre (1995) defines

technology as activities, beliefs, and attitudes and it can be discussed in terms of tangible things as well as intangible belief systems, attitudes, and ways of thinking. Looking at both of these authors, they take technology as an intangible item applied to daily life. As such, looking at life at the beginning of time from a Biblical standpoint. Technology enhances the power to create things, yet seeing in the book of Genesis, objects are being created. “And God said, let there be light: and there was light” (Genesis 1:3). The chapter continues to repeat the phrase, ‘And God said.’ Our omnipotent God used the first technology – His voice – to create objects and life.

Moving from the Creation of the world to the time of the Great Flood where Noah was instructed to build the Ark and was given the measurements and blueprint for its construction. He had to use technology to cut the wood to the specified size and connect the pieces to fashion the Ark according to the will of God. Genesis 6:14-16 shows the accuracy to which Noah was told to cut the sections to build the Ark:

> Make thee an ark of gopher wood; rooms shalt thou make in the ark, and shalt pitch it within and without with pitch. And this is the fashion, which thou shalt make it of: The length of the ark shall be three hundred cubits, the breadth of it fifty cubits, and the height of it thirty cubits. A window shalt thou make to the ark, and in a cubit shalt thou finish it above; and the door of the ark shalt thou set in the side thereof; with lower, second, and third stories shalt thou make it.

Technology usage continued after the flood when the tower of Babel was built to save man from another flood. Genesis 11:3 shows the formation of bricks and mortar for construction “And they said one to another, go to, let us make brick, and burn them thoroughly. And they had brick for stone, and slime had they for mortar.”

Going through the Bible to the New Testament, Matthew, 24:14 says: “And this gospel of the kingdom shall be preached in all the world for a witness unto all nations; and then shall the end come.” Christians are tasked with spreading the gospel to the

entire world. Aside physically visiting various places around the world, through the use of telecommunications and networks like Three Angels Broadcasting Network (3ABN), the Seventh-day Adventist church are now able to get the message of Christ to those both near and far.

To get the message of the gospel to the world, teachers must be like-minded in their thought. Isaiah 54:13 instructs that **"**All your children will be taught by the Lord, and great will be their peace" which is a direct indicator that there needs to be faith integration and faith schooling within the education setting to follow the Biblical model put forth. In the Garden of Eden, Adam and Even had one teacher giving them all the knowledge that was needed – that teacher was God. Through the fall, and the entrance of sin, that connection was lost. However, in an attempt to reconnect with God, Isaiah is making the point that children should be taught of God, which can symbolically be likened to the connection in the first classroom. In a restorative educational environment, that link to God should be re-established in a Biblical classroom setting. This setting is what Seventh-day Adventist classrooms model where there is the integration of faith and learning in all aspects of the curriculum, classes, and school setting.

It is the integration of faith into the curriculum that sets general Christian education apart from secular culture. Dulaney, et al. (2015) says that

> consider the core content of general classes such as accounting, computer programming, English, or anatomy. The material taught at religious institutions will not — and should not — differ greatly from that of secular institutions. Accounting does not have different rules in a Christian environment nor is the muscular structure altered when viewed by a non-believer. However, weaving faith into the subjects creates a different classroom environment from secular institutions and positions this integration as a crucial part of a Christian university's purpose. (p. 56)

White (1952) says that

> true education means more than the perusal of a certain course of study. It means more than a preparation for the life that now is. It has to do with the whole being, and with the whole period of existence possible to man. It is the harmonious development of the physical, the mental, and the spiritual powers. It prepares the student for the joy of service in this world and for the higher joy of wider service in the world to come. (p. 13)

Daniel 12:4 says, “Put thou, O Daniel, shut up the words and seal the book, even to the time of the end. Many shall run to and from, and knowledge shall be increased.” This text refers to the increase in Biblical knowledge. With the increase of this knowledge worldwide, there has to be a means by which this spread of knowledge takes place. As such, technology is one of the key tools used to help spread the gospel of Christ to a dying world - not only via the use of telecommunications but also, improvements in travel, from the first railroad to bullet trains, and space travel. Man is making strides in all frontiers, including, but not limited to, engineering, medicine, agriculture, and environmental improvements. This concept of knowledge generally being increased is further seen in the fact that there are many leaps and bounds in technology today. Development is occurring on a large scale, and it is becoming more intricate. Within the realm of Christian education, it is said that a significant part thereof is providing students with the tools needed to integrate their faith. Christian teachers, should not only incorporate technology into the classroom but also teach Christian digital citizenship so that the students not only learn how to behave on the Internet but furthermore, how to act in a Christ-like manner.

Technology has moved from the Industrial Age well into the Information Age and into what Fandrich (1992) termed computer mentality. With this computer mentality, God is ignored as being the source of all knowledge and puts that trust in man’s devices. Christians, are not to be engulfed in the computer mentality, but rather, must

acknowledge that the use of computer technology can be used to help understand the universe as God created it. While negativity can be found in technology usage, the world is sinful and negativity can be seen all around. Christians should use technology for positive and not negative.

Recognizing that technology usage can be both for good and for ill, the teacher with a Christian worldview must integrate technology in a positive and enhancing manner. Fandrich states in his writing that Christian teachers are there to help their students develop a Christo-centric worldview that models the world as it ought to be, and they should conduct themselves in a manner that ought to be right, ignoring what the general culture of the world dictates. With the rise in technology, Christian educators, need to focus on the ethics of technology within the Christo-centric worldview. As such, these ethics must be enforced in the classroom integration of technology, which looks at both social and moral obligations, to ensure that programs that are offered, are technologically tested and fail-safe.

While the concept of technology may seem like a new one, the use of various forms of technology has been around from the beginning of time. The world was created using the most immaculate form of technology – the voice of God. Genesis 1:3 says, “And God said let there be light; and there was light.” By the omnipotent power of God, he was able to speak the world into existence. This concept is seen reiterated throughout the beginning texts in Genesis. After the fall of man, technology skills continued to be shown throughout the Bible. Such skills were put into effect after the Fall, and one such usage is in the construction industry when the people built the Tower of

Babel. Genesis 11:3 "…Go to, let us make brick, and burn them thoroughly. And they had brick for stone, and slime had they for mortar."

Further along the Biblical journey in Exodus 31:1-5, the listing of different skills can be seen when the Lord said to Moses

> see, I have called by name Bezalel the son of Uri, son of Hur, of the tribe of Judah, and I have filled him with the Spirit of God, with ability and intelligence, with knowledge and all craftsmanship, to devise artistic designs, to work in gold, silver, and bronze, in cutting stones for setting, and in carving wood, to work in every craft.

During the crucifixion of Christ, some of the cruelest forms of technology are seen used on the Lord. Such examples are in the whips used on Jesus and the cross on which He was hung "And He, bearing His cross, went out to a place called the Place of the Skull, which is called in Hebrew, Golgatha" (John 19:17). At this point, technology skills can be seen being used for evil but at the same time, as part of the redemptive story of the world, in that, while the technology brought about Jesus' death, His death also brought salvation.

In the Bible, God's voice is being used to create the world. While the voice is not heard again, Isaiah 65:17 says, "For behold, I create a new heaven and a new earth." The power to construct an entire world was once again put forth by God - God restored the world to its original state before the Fall.

Having eaten the fruit of the Tree of Knowledge of Good and Evil, Adam and Eve had enlightenment, "and the eyes of them both were opened, and they knew that they were naked; and they sewed fig leaves together and made themselves aprons" (Genesis 3:7). Before this, "they were both naked, the man and his wife, and were not ashamed" (Genesis 2:25). A contrast is being seen in the attitude of Adam and Eve

after eating the fruit. The removal of God's light that originally clothed their bodies caused them to become ashamed, and from that, they made the first clothes out of fig leaves to cover their nakedness.

Looking back at the Tower of Babel, there was great construction being carried out. Technology was being used in making the bricks for the walls of the structure. God saw the unity of the people as a way of progress and it is evident in Genesis 11:6 "indeed the people are one, and they all have one language, and this is what they begin to do; now nothing that they propose to do will be withheld from them." However, the attitude that the Lord had towards this unified front was not one of favor and as such the single language at that time was split and men were scattered around the world as evidenced in Genesis 11:7-8: "Come let us go down and there confuse their language, that they may not understand one another's speech. So, the Lord scattered them abroad from there over the face of all the earth, and they ceased building the city."

Technology can also be seen in the story of Moses and the deliverance of the Israelites that while Moses had the power, through God, to perform miracles and wonders in front of Pharaoh, Pharaoh was not moved by them and was hardened towards them. Exodus 11:10 says "and Moses and Aaron did all these wonders before Pharaoh: and the Lord hardened Pharaoh's heart so that he would not let the children of Israel go out of his land."

After Christ rose, He sent the Holy Spirit to His disciples in the upper room, which caused them to speak in other tongues (Acts 2:4). When the disciples realized that they were able to speak different languages, "they were all amazed and marveled, saying

one to another, Behold, are not all these which speak Galilaeans? And how hear we every man in our own tongue, wherein we were born?" (Acts 2:7).

Long before the development of voice scramblers to encrypt messages and scramble voices, God created the first language modifier when he scrambled the languages at the Tower of Babel to halt progress on the construction (Genesis 11:7).

Looking at the use of technology in the Bible, as a way to dwell among the people after the Fall, God instructed that a Sanctuary be built (Exodus 25:8). For this to be done, God bestowed the knowledge and skill to carry out this task unto Bezalel and Oholiab. With this knowledge, they were able to use technology to build the sanctuary to the specifications required by God.

> Now Bezalel and Oholiab, and every skillful person in whom the Lord has put skill and understanding to know how to perform all the work in the construction of the sanctuary, shall perform in accordance with all that the LORD has commanded. (Exodus 36:1)

Leading up to the redemption of the world, Jesus began his ministry as a child. Jesus grew up as a carpenter, following in the footsteps of His earthly father. Mark 6:3 (KJV) references this carpenter lifestyle in the words "Is not this the carpenter, the son of Mary, the brother of James, and Jose, and of Jude, and Simon? And are not his sisters here with us? And they were offended at him." He spent his time on earth not only preaching the Word of God but also using the carpentry technology tools of the family business; He created items with His hands.

The Bible also looks at the use of technology in the framework of wars. 2 Chronicles 26:14-15 shows how cities were defended with the aid of technology.

> Then Uzziah prepared for them, for the entire army, shields, spears, helmets, body armor, bows, and slings to cast stones. And he made devices in Jerusalem,

> invented by skillful men, to be on the towers and the corners to shoot arrows and large stones.

What can be looked at as the ultimate use of technology is seen in Revelation 21:2 when New Jerusalem steadily descends from heaven. This occurrence is penned in the words “Then I, John, saw the holy city, New Jerusalem, coming down out of heaven from God, prepared as a bride adorned for her husband.”

At the beginning of the world, God said:

> Let us make man in our image, after our likeness: and let them have dominion over the fish of the sea, and over the fowl of the air…so God created man in his own image, in the image of God created he him; male and female created he them. (Genesis 1:26-27)

As God is sinless, He created man in His perfect, sinless image, and at creation, there was no burnout. God rested on the seventh day and ended His work (Genesis 2:2), which was also a pattern that He created to be follow. After sin, man had to work and toil the earth, which was hard and tiring. As such, once again, God expected his pattern of resting on the Sabbath day to be implemented not only to worship Him but also as a break from the routine of the daily tasks so that each body could recuperate before burnout out sets in.

After sin came into the world, man’s body became ravished with sin, and one such result of sin is tiring and breaking down of our cells. Due to this tiredness, people must take time out to show temperance and rest – both physically and mentally. Jesus says in Matthew 11:28-30:

> Come to me, all you who are weary and burdened, and I will give you rest. Take my yoke upon you and learn from me, for I am gentle and humble in heart, and you will find rest for your souls. For my yoke is easy and my burden is light.

Christ is reminding each one the need to exchange their load for what He is offering, and in doing so, each one will be able to rest.

While caught in the world and its vices, teachers need to remind their students that they must retain the connection with Christ despite what the world may throw to each. Romans 12:11 reminds, “Don’t burn out; keep yourselves fueled and aflame. Be alert servants of the Master.” Once keeping the spirit uplifted in Christ, shall be then achieve the ultimate reward offered by Salvation as stated in Isaiah 40:31 “but they who wait for the Lord shall renew their strength; they shall mount up with wings like eagles; they shall run and not be weary; they shall walk and not faint.”

It is one thing to use technology, but a person’s belief in their ability to use said technology is a vital part of the usage. In Joshua 6, can be seen how God told Joshua to march around the city for six days silently and on day seven to blow their trumpets.

> And the LORD said unto Joshua, See, I have given into thine hand Jericho, and the king thereof, and the mighty men of valour. And ye shall compass the city, all ye men of war, and go around about the city once. Thus, shalt thou do six days. And Joshua had commanded the people, saying, Ye shall not shout, nor make any noise with your voice, neither shall any word proceed out of your mouth, until the day I bid you shout; then shall ye shout. (Joshua 6:2, 3, 10)

Joshua had positive self-efficacy in being able to carry out the task from God, and as such, we see in Joshua 6:20

> So the people shouted when the priests blew with the trumpets: and it came to pass, when they people heard the sound of the trumpet, and the people shouted with a great shout, that the wall fell down flat, so that the people went up into the city, every man straight before him, and they took the city.

Wadsworth (2015) researched how the religious beliefs of teachers affect their classroom practices and choices. These choices affected students’ character development, teacher classroom management, and lesson plan development. Christian teachers, unlike atheist teachers, are influenced by their religious beliefs, and it is reflected in their daily work. While public school teachers, according to the First Amendment, are

not allowed to teach religion in a biased manner objectively, Christian teachers can do such as they work for private institutions. Tensions can arise with Christian teachers who are working in the public school sector as they come across conflicts between what they believe and what is occurring since they cannot live their worldview due to legal issues.

The Christian Academy (2015) carried out a survey containing Christian, Jewish, and atheist teachers from both the public and private school sectors. When looking at the behavior and educational decisions of the teachers, there was no significant difference between groups and how they interacted with students, but the basis of their interactions varied considerably. For example, one teacher showed respect to her students because it was Christ-like while the other did it because honor was a personal value of his – no religious basis.

While technology use is not wrong, it can be used for wrong-doing and illegal matters that are not only against the laws of God but also against the laws of the government or country and it can result in idolization. Technology can take away from the time spent with God, and as such, Christians need to find the balance between using technology and knowing when to put it away. The millennials, for instance, are always glued to their phones but at times spend less time on Christo-centric endeavors.

White (1923) makes the point that youth should be educated from multiple, equal angles, including a balance of training on morals, philosophy, physical training, and the Scriptures. It is a combination of these aspects, which render the highest level of service, “for unless all are equally developed, one faculty cannot do its work thoroughly, without overtaxing some of the human machinery” (p. 210).

It should be remembered that Satan uses whatever he can get his hands on to tempt us. White (1904) says that

> when Satan is defeated in one line, he will be all ready with other schemes and plans which will appear attractive and needful, and which will absorb money and thought, and encourage selfishness, so that he can overcome those who are so easily led into a false and selfish indulgence. (p. 52)

Seventh-day Adventist (SDA) education was created to support holistic education encompassing the spiritual, social, mental, physical, intellectual growth, and humanitarianism. In the Handbook for Superintendents, the North American Division (2015) lists seven points in the mission statement of the SDA education system. The last of these points is that the Seventh-day Adventist educational system creates opportunities for students to become ready for the work force after they leave school.

To aid in building work-ready students, the SDA elementary technology standards are divided into three categories: (1) digital learning, (2) digital fluency, and (3) digital citizenship. Engrained in each of these topics are three central faith-based essential questions: (a) How do digital technologies support the ways God designed us to learn? (b) Why teachers should excel in the understanding and use of digital technology resources? and (c) How to be safe and responsible citizens in the online community while honoring God? (North American Division, 2016). The high school computer courses cover content that falls under the primary focus of identifying SDA Christian principles and values in correlation with computer technology. If taught correctly, it is evident that in developing technology content, teachers are required to integrate Christ into the technology curriculum. Furthermore, fundamental seven of the SDA education system says that the teachers are to make the students workforce-ready. It then stands to reason that teachers need to have a positive attitude towards

technology integration and seek ways to sharpen their skills (North American Division, 2010).

In an article written by Khan (2015), the writer says that in the future, most academic content will be free and online, which will give teachers time to take part in high-level discussions with their students. The writer goes on to say that there is not much time for teachers to coach their students and that technology can help in this matter in that systems can give students motivational feedback when they master tasks they initially struggled with. In the Bible, Jesus also used technology to teach. When the temple of God was being used for selling and not for worship, Jesus had to restore the house of God to its intended purpose and teach the people the right and wrong way of temple use. John 2:15,16 says:

> And when He had made a scourge of small cords, He drove them all out of the temple, and the shops, and the oxen; and poured out the changers' money and overthrew the tables. And said unto them that sold doves, take these things hence; make not my Father's house a house of merchandise.

Technology creates data and shows patterns as to how a student is working on a particular skill or standard, and based on this information, the instruction can be adjusted to meet the needs of the individual students. While traditional grading still works, Khan (2015) notes that more students can be reached in a shorter period, thus increasing classroom productivity.

All communities and religious groups are making use of distance learning methodology to upgrade their knowledge, skills, and attitudes. Christian educational institutes in all parts of the world are being benefitted by the Christian distance education program (Satyanarayana & Meduri, 2013). Due to the concept of globalization, Chris-

tians across different denominations have moved to expand their idea of distance learning across country borders. Christian websites are noted as being a large number among all religions on the internet with educational institutions that are sponsored by Christian churches, ranking the largest in the number of sites.

Satyanarayana and Meduri wrote that Pope John Paul II encourages the use of the internet to convey religious information and teachings around the world and that "this vision of being able to reach beyond all barriers and frontiers has been one of the motivations of the many Christian pioneers of multiple denominations to adopt distance learning."

Baker (1997) states in Baker's Guide to Christian Distance Education that the Seventh-day Adventist church has the Home Study International, which is among the oldest of the distance education programs worldwide. Home Study International was renamed Griggs University offering 124 courses from various denominationally affiliated colleges and universities. This comment was among other Christian profiles regarding their online education systems. Satyanarayana and Meduri (2013) make a point of saying that for a distance education program to be successful, it must rely on communication and information technologies to enrich it. These institutions must ensure that the product they put out is quality.

Griggs University, also referred to as Griggs International Academy, is one of the oldest online education programs indicating that the Seventh-day Adventist Church within the North American Division has, for many years, seen the benefits in online education as a way of allowing those from both near and far an opportunity to SDA educational system. The mission statement of Griggs International Academy states that

it “seeks to inspire learning, transform lives, and serve the world through Seventh-day Adventist Christian education.” Furthering this, the vision statement says that it “serves students globally, providing accredited distance education infused with faith-based instruction.” Finally, part of the faith statement says that it “is owned and operated by Andrews University, an established leader in Adventist higher education.”

Akers (1990) outlines three points in the mission of Adventist education. The primary mission point is to produce Christians grounded in historic Adventism. Additionally, Adventist education provides a standard of education that allows graduates to cope effectively in the world. Lastly, at the college levels, students are prepared for world church service. The increase in distance education means that more students can be reached worldwide. Following the outlined mission of the SDA system, more people worldwide can be equipped for service in the world church helping to fulfill the directives in Matthew 24:14 “And this gospel of the kingdom shall be preached in all the world for a witness unto all nations; and then shall the end come.”

Following the model of technology use for education, classroom teachers should then also embrace technology to meet students in their classrooms who are both mentally near and far – in other words, those students who are paying attention and those who are sitting in class, but their minds are wandering. George Lucas Educational Foundation (2007) lists the reasons why technology integration is needed in the classroom, and they label these as 21st-century skills. The writers said that students need to be taught responsibility on both a personal and social level. They should also be taught strong skills for communication, along with interpersonal relationships. Additionally, they should be prepared to discern when to use technology appropriately and which

tools they should use to achieve the task at hand. If students are expected to learn 21st Century skills, educators have to create situations for them to be exposed. Educators must be integrating technology in a way that not only makes the curriculum fun, but that it also teaches students valuable skill items that they would need such as decision making, creativity, social responsibility, and strong communication skills to name a few. Within the realm of technology, educators must keep these aspects at the forefront of their lesson planning to adequately equip today's students.

21st-century skills should be taught to students who are going to graduate high schools so that they will be able to succeed in the workplace and be skilled in what is required to meet the demands of the job market. Among these skills is the need for students to have critical thinking skills, high levels of communication, creativity, and communication. Without these skills, jobs will remain unfilled if applicants lack the necessary skills required for the job.

It is considering articles like these that it is more evident that teachers need to have a positive attitude towards technology integration in their classrooms as it has become as important as the traditional core subjects in school. For teachers to remove technology from their lessons is to limit student creativity and skill development. This is not to say that every moment of the day must be spent on a device doing technology-related activities, but there should be a fair balance between traditional and technologically based teaching.

If Seventh-day Adventist schools are to be on the cutting edge of education, then there is a need to have well-rounded students graduating from SDA institutions. The primary purpose of SDA educational system is to win souls for Christ and the work of

redemption and education is one, but while doing so, schools must produce productive citizens of society.

Gone are the days when someone could use the excuse of “not knowing something” as a reason for lack of implementation. Teachers need to acquire the skills to integrate technology into the classroom if they are unaware as to how to do so. In the United States of America, there are free classes offered by the United Federation of Teachers on how to integrate technology into the classroom. Within SDA denomination, the Adventist Learning Community (ALC) has been formed. This is a website geared at providing online classes to both educators, ministers and church officers to “empower people with the passion and skills necessary to further the Kingdom of Christ in the 21st century” (North American Division, 2018). Included in the ALC’s online learning platform are courses that teachers can use to get more skills in learning different ways to integrate technology into their classrooms.

The issue is no longer how to do it, but instead if the teacher wants to do it. Bandura (1994) states that self-efficacy is “people’s belief about their capabilities to create designated levels of performance that exercise influence over events that affect their levels of performance” (p. 71). In short, if teachers believe they were capable of integrating technology, they would be more comfortable to do it. With that said, the self-efficacy of teachers needs to be raised so that they feel empowered to carry out tasks. Not only do they need to feel empowered, but also school administrators should regularly assist – either directly or indirectly - those staff who are having problems with

integration. It is not to be said that the administration should micro-manage the teachers, but they could help the struggling staff find more ways to acquire skills needed to successfully integrate 21st century technology skills into their classrooms.

Aside from administrative support, teachers within SDA system need to remember that while SDA institutions are faith-based, the excuse of "God will make up the deficit" cannot be used for everything. Each teacher should seek out ways to make themselves better each day. High functioning students are produced by high functioning teacher and in the 21st century, high-functioning teachers integrate technology.

The Bible says in Proverbs 22:6 "Train up a child in the way that he should go, and when he is old, he will not depart from it." This text is often used to support the fact that children should be taught of the Lord and raised in the church with good morals, but has this ever been taken to the academic field? If students are trained to make the most in life and to strive for excellence in all that they do and to always seek ways to learn more content in different ways, then when they grow old and graduate they will continue to nurture the desire to learn and continually seek to better themselves.

Looking inward towards the church, if SDA education is preparing the future leaders of SDA church, what type of Conference Presidents are being developed in SDA classrooms? Many times, SDA students learn more by observing what teachers do more than by what it is said. Teachers model faith in action, show redemptive discipline, have spiritual leadership, have a Christian work ethic, and are Biblically motivated. A key point in this as it relates to teachers' technology integration is that of Christian work ethic. It is necessary to train SDA students on how to have Christian ethics

as they interact with others while using technology. It is appalling the image that students portray of themselves online. In SDA schools, there are students who are nice in school and very vulgar and un-Christian online on sites like Snap-Chat. How then do Christian teachers break down this issue?

The end of time is coming, and the devil is “rampant seeking whom he may devour” but it is needed to educate SDA students in the ethical use of technology, which is part of the NAD Computer Curriculum (North American Division, 2010). Teachers must engage in an open discussion on the issues of what SDA students do online without seeking to find what is being put online. The teachers’ job, in part, is not to find out the online gossip, but to develop Christian-minded students who, when they encounter technology, know how to use it correctly and safely.

In all things, educators should seek ways to create model beings for the workforce - creating not only ethically sound students but those that are armed with not only the tools of Spiritual warfare but also the skills to be competitive and excel in the job market. The easy road should not be taken because “we are near to retirement” or because “I taught like this for the past 30 years and my students were fine.” With the help of the Lord, teachers can have more 21st century classrooms - the Lord will provide what is needed. Asking, acting in faith and beginning the task of equipping these students, the Lord will step in and bridge the gap, supplying the tools needed. This concept of living in faith is uttered in 2 Corinthians 5:7 stating that “we live in faith, not by sight.” Living in faith, will be rewarded as it is reminded in 2 Timothy 4:7 which says “I have fought the good fight, I have finished the race, I have kept the faith.”

White (1913) states that every teacher who has a part in the education of young students should remember that children are affected by the atmosphere that surrounds the teacher, whether it be pleasant or unpleasant.

White (1923) states that

> our institutions of learning should be provided with every facility for instruction…teachers need to educate themselves in this direction. Our students should have a thorough training that they may enter upon active life with an intelligent knowledge…teach them that they must be learners as long as they live. (p. 185)

The work of education and redemption is one. Students should be given the 21st century skills they need to be a redemptive force and be able to not only meet the job market of today but to reach souls in ways that will attract more people to Christ.

Definition of Terms

Technology: Relates to the use of mechanisms, skills, and techniques to change the world to meet specific needs.

Technology Integration: The use of technology in education to teach students the necessary 21st Century skills.

21st Century Skills: These skills encompass, but are not limited to, aspects like social responsibility, critical thinking, creativity, strong communication skills, decision making, and reasoning.

Seventh-day Adventists (SDA): These are members of a Protestant sect who observe Saturday as the Sabbath, keep the commandments of God, and believe in the soon return of Christ.

General Conference of SDA (GC): This is the SDA headquarters that governs all the churches and institutions across the world.

Atlantic Union Conference of SDA (AUC): A subdivision of the GC, covering institutions in New York, Connecticut, Main, Rhode Island, Vermont, Massachusetts, and Bermuda.

Northeastern Conference of SDA (NEC): A subdivision of AUC, covering institutions across parts (but not the entirety) of New York, Connecticut, Rhode Island, Maine, Massachusetts, and Vermont.

CHAPTER II

LITERATURE REVIEW

Introduction

The world has changed from industrial to informational, but the educational system has not followed with the information pathway to reflect the general world change. Technology use in the educational field can enhance lessons and make them more appealing and attractive to students.

Teachers' Skills

Teacher skills can be defined as the competencies that are needed to effect the job of pedagogy proficiently. With today's students growing up in a highly technological age, educators today are challenged with instructing in a way that incorporates content and techniques that mirror this century. While this differs around the world, The United State of America puts a high emphasis on integrating technology within the classroom. For this to be done, teachers need to have fundamental skills to successfully integrate technology and implement modern lessons and curricula.

Having carried out extensive reading, it was seen that technology skills and technology competency were used interchangeably to refer to how well a person goes about using the various aspects of technology.

In the research conducted by Ozdemir (2017), there was a focus placed on technology competency which referred to how well a person was able to use and manipulate technology for example spreadsheets, word processing, and audio-visual technologies. In the writing, the term competency was also used in addition to skill, which referred to how well teachers were able to use technology after they had undergone training. Competency, then, is how well a person uses a particular acquired skill with a higher competency level indicating better attainment of skill. Another term that come across is that of computer literacy which is defined by Oluwatayo (2012) as “the amount of knowledge and skills acquired by an individual to perform a given task using the computer system” (p. 97).

While other writers looked at technology usage as it related to computer programs like Word and PowerPoint, Ciftci and Aladag (2018) refer to technology in the sphere of digital technology ranging from computers and televisions to social media platforms like Facebook and Twitter with this type of technology encompassing digital citizenship.

Again in another article, El Alfy, Gómez, and Ivanov (2017) look at technology readiness of a person to include optimism, insecurity discomfort, and innovativeness. The writers looked at the association that technology readiness, attitude, and behavior have on how teachers in Egypt use e-learning technologies. While many definitions of e-learning were cited in the research, the author defines it as the learning process and teaching that uses information technologies. E-learning embraces computer-based learning along with web learning, web-based instruction and technology readiness. For

this study El Alfy, et al. refer to the mindset of a person relating to their willingness to adopt new technology.

When looking at skills, professional development training becomes a part of the scenario. As such, Kafyulilo, Fisser, and Voogt (2016) looked at professional development factors as being training design factors incorporating varying learning principles, the sequence of training material, and the job relevance of the content material. They go on to look at personal factors as the factors, which are related to an individual teacher, like their skills, beliefs, and time availability. Institutional factors revolve around the belief and value system of the school, which are mainly driven by the administration via incentives and rewards. Technology factors mainly incorporate the ease of use of the technology tool and its effectiveness in the classroom.

Looking further into various studies, Ozdemir (2017) carried out a correlation study that looked at the relationship between the competency and attitudes of teachers in Turkey towards technological usage in their lessons. The research used 85 public school teachers from the Bartin province in Turkey. The researcher used a relational screen method, which is used to determine the relationships between variables to find clues indicating a cause and effect. At the end of the interviews, the researcher found out that the teachers ranked high in basic computer operation skills, setup, maintenance and troubleshooting, word processing, networking, and media communication. These same teachers rated medium in the use of spreadsheets, telecommunications, and social, ethical, and legal issues. It was noted from this research that there was a high relationship between the attitudes of teachers towards technology-aided learning and the use of technology within the classrooms.

Oluwatayo (2012) carried out research to assess the level of computer literacy in the Ekiti State of Nigeria to determine whether gender, years of experience or location affected computer literacy of teachers. Based on the research, it was discovered that 66% of the teachers portrayed a low to a very low level of computer literacy, and 34% showed high to very high levels of literacy. Gender did not play a significant role in computer literacy. Unlike gender, experience played a significant role in the computer literacy of the teachers, but the location of school did not.

A study by Ciftci and Aladag (2018) investigated the relationship between pre-service primary teachers' attitudes towards digital technology and their digital citizenship levels. In the writing, it was stated that digital citizenship looks at the normal level of responsible and appropriate behavior that a person has relating to his/her use of technology. The study set out to see if there was a significant difference in teacher attitudes based on gender, class, internet access, and the number of years the participants used the internet. The study further sought to find out the relationship between digital technology and citizenship levels. Finally, it also looked at if the attitudes of the teachers affected their citizenship level. Digital technology today encompasses all forms of technology that are presently used while digital citizenship is how the person uses technology. In other words, the extensive expansion of digital technology creates digital citizens.

Based on the research by Ciftci and Aladag, there was no significant difference between genders on either the Attitude Scale for Digital Technology (ASDT) or the Digital Citizenship Scale (DCS). When it came to class, there was a substantial difference in the class levels. Having an internet connection had little impact on those that took

the ASDT, but it was significant for those that took the DCS with the difference being in favor of those who had an internet connection. The ASDT had substantial results with those who had more years using the internet and those who had more daily use of the internet. There was a positive relationship showing that the higher the digital technology score, the higher the digital citizenship level.

El Alfy, et al. (2017), having carried out their research, discovered that teachers in Egypt and UAE have positive technology readiness along with a positive attitude towards e-learning technologies but had a slightly lower score for behavioral intention. Instructors in both UAE and Egypt both held a very positive view of technology and generally, there was little difference in technology readiness between the two countries. Human interaction was seen to be higher for the instructors from UAE as opposed to those from Egypt.

Kafyulilo, Fisser, and Voogt (2016) set out to determine what factors affected teachers' continuation of technology use in teaching. Pre-service teachers along with teachers from three schools (Schools A, B, and C) underwent professional development and were interviewed at the end of this development period. These teachers taught in the biology, physics, and chemistry departments. They were chosen because they had previously taken professional development. Schools A and B were government schools that contained a single computer lab with thirty computers each of which School A had one working computer and School B had two working computers. School C was a private school that contained three computer labs with twenty working computers in each lab.

Upon completion, the researchers looked at the continuation of technology use in teaching, and it was found that only the pre-service teachers and those in School B continued to use technology. At the end of the professional development study, the teachers in Schools A and C stopped using technology. In School B, the teachers said they regularly used technology in teaching. Additionally, they looked at factors determining the continuation of technology use. Teachers in School B were noted to be confident with their technology skills and understanding, while those in Schools A and C said that they needed additional practice to develop skills. All teachers had a positive attitude towards technology. Across all the schools, teachers complained of having a lack of technological tools at their school, along with a lack of support from school management in the form of rewards and incentives. They all noted that technology was effective in teaching.

There were many instruments used across the various studies all of which were different and focused on different aspects. Ozdemir (2017) used three instruments in her research, which were “Basic Technology Competency Scale for Educators,” “Attitude Scale toward Making Computer Supported Educated,” and “The Questionnaire of Using Education Technologies.” The Basic Technology Competency Scale for Educators is made up of nine dimensions, and it was modified from its original 45 questions to 48 questions.

Oluwatayo (2012) carried out the research where 300 teachers from across 30 public secondary schools were used via a random sampling technique. The instrument used in this research was the Self-Assessment of Computer Literacy, which consisted of 25 items.

Ciftci and Aladag (2018) used the Attitude Scale for Digital Technology (ASDT) and the Digital Citizenship Scale (DCS) in an associational research model, which analyzed associations and connections. The study sample was made up of 461 teachers (142 male, 319 female); 454 people had no internet connection with 339 having used the internet for more than five years. Three hundred eighty-five participants said they had intermediate internet usage skills. As it relates to teacher skills concerning technology, four scales were seen in the studied researches. Such scales were The Questionnaire of Using Education Technologies, Self-Assessment of Computer Literacy, Attitude Scaled for Digital Technology (ASDT), and Digital Citizenship Scale (DCS). All of these scales were 4 or 5-point Likert scales.

El Alfy, et al. (2017) created a 28 question survey making up the Technology Readiness Scale. Kafyulilo, et al. (2016) created semi-structured interviews to assess the professional development program of the teachers being studied.

Relevance

Across the many studies carried out, it was seen that teachers generally ranked high in their basic computer skills and medium in aspects like spreadsheet usage, legal and social issues. It was also seen that a high percentage of teachers showed low computer literacy, linked many times to the level of computer experience a person had. When it came to technology readiness, researchers saw that there were positive views toward technology.

In order to carry out the various forms of research that have been read about, several instruments were looked at. While all instruments measured the desired construct set forth by the writers, the Basic Technology Competency Scale for Educators

by Ozdemir (2017) was the one best suited to this research in question and formed the base for the Technology Skills section of this research.

Teachers' Attitudes Towards Technology

Attitude can be defined as the mental outlook of a person. As it relates to teachers and technology, this definition can be expanded to refer to the mental outlook that a teacher has towards technology, either in general use or using it for a specific task.

It was stated in a paper, by Gülbahar (2008), that positive attitudes towards computers lead to an increase in computer competency. The problem that is sometimes faced, as stated by Oriji and Amadi (2016), is that:

> Many teachers do not initially see any benefit in having access to the new technologies of teaching and learning. Some also see it as a more demand on time and a set of tools not asked for and even do not know how to use. Some teachers are of the view that they are already doing a good job in the classroom and wondered what improvements the technology would further bring. (p. 122)

Looking at the attitudes that teachers have toward technology, Harmandaoğlu Baz (2016) uses as a definition of attitude which encompasses evaluating how a person reacts to a particular object or situation based on his/her opinions and beliefs. Looking at attitude, this study sought to discover the attitudes of teachers in Turkey towards technology integration in their English as a foreign language class. Another definition is seen by Akturk, Izci, Caliskan, and Sahin (2015)**,** who in their research, define attitude as positive or negative emotional tendencies of individuals towards objects, people, places, events, and ideas.

Ahmed and Kurshid (2015) define Information and Communication Technology (ICT) as a broad term that covers teaching and learning purposes incorporating communication tools as well as technological services. It is “the application of modern digital tools in all aspects of education” (p. 26).

Unlike others who defined attitude, Koç (2014) seeks to define technological tools, including items like cameras and projects in their definition. The writer also adds cellular phones, computers, video games, and televisions to this category.

Konca, Ozel, and Zelyurt (2016) refer to information and communication technologies (ICT) as technologies that will bring about change in education. They go on to say that these types of technologies have become a part of everyday life. Pittman and Gaines (2015) refer to the technology used in school as items like word processors, internet research, learning games, presentation software, online collaboration tools, and graphics programs.

Uyangor and Ece (2010) define instructional technology as “a process including creation and organization of necessary environments to realize the learning, guiding the educators through the solutions to the problems which will come out, enabling a proper selection, arrangement, and preparation of instruments” (p. 213).

Letwinsky (2017) defines communication technology as that which can be used in daily teaching practices. He also defined technology as a communication technology that is used to support mathematics learning.

Wong (2016) notes that a teachers’ acceptance of technology looks at his/her willingness to use technology for its designed purpose. Birkollu, Yucesoy, Baglama,

and Kanbul (2017) define attitude in their paper as a person's disposition, or organization of feelings, thoughts, and behavior towards a particular object.

Towards investigating the attitudes of teachers towards technology, Hart and Laher (2015) carried out a study in South Africa that focused on the attitudes that teachers had towards technology and the factors that influenced these attitudes. In their study, they surveyed 177 teachers who came from 12 schools, most of whom came from public schools. Based on their survey, it could be seen that the teachers generally had a positive attitude towards educational technology. Additionally, they also saw that teachers perceived educational technology to be useful. Typically, teachers were neutral on their view of educational technology being culturally relevant within South Africa.

Some factors that brought about the positive attitudes in the study were that the teachers had more than sufficient access to the technology with 85.6% of them having daily access at home, 78.4% of them had access at school, and 49.5% had daily access in their classroom. Teachers, on average, had taken at least two training courses to improve their skills. Some of this training was done voluntarily while other schools provided training for their workers. Of the teachers who did not attend training courses, the main reason was that they lacked the opportunity to do such. Fewer reasons included a lack of funding and a lack of interest.

Harmandaoğlu Baz (2016) carried out research to determine the attitudes of Turkish EFL student teachers towards teaching and language learning. He used mixed methods made up of both quantitative and qualitative techniques. Based on the research done, the student teachers thought that technology attracts the attention of those who are learning. They also believed that technology gives them practicality

along with it helping them save time. The student teachers admit that there can be some negatives when it comes to technology use; one note is that the students can become lazy. They went on to say that at times, the learners abuse the technology. The student teachers did say that with the advancement in technology, students are now expected to do more in class. Generally, the research revealed that student teachers had a positive attitude towards technology use.

Akturk, et al. (2015) carried out similar research to Harmandaoğlu Baz (2016) in which they also analyzed the attitudes of 642 preserving teachers in Turkey. This research, unlike the one that was done by Harmandaoğlu Baz (2016), used a relational survey model where the purpose was to identify the presence and amount of variation among variables. Akturk, et al. (2015) saw that teachers had a positive attitude toward technology, with males being more positive than the females. Positive attitude was seen to increase based on participants' length of daily internet use as well as the number of technological devices owned.

Baek, Zhang, and Yun (2017) carried out research in South Korea that looked into the attitudes that teachers in this country had towards mobile learning based on gender, level of the school, experience, and the subjects they taught. The researchers used the Mobile Learning Perception Scale (MLPS), which was developed by Uzunboylu and Ozdamli (2011) with 140 teachers at both the elementary and secondary levels. There was nearly an even split between the genders (64 males and 76 females) as well as the level of school taught (elementary 71 and secondary 69). The teaching experience ranged from 2 to 34 years. Fifty-one teachers taught for less than nine years, 47 taught for 9 to 15 years, and 42 taught for more than 15 years. Thirty-two

teachers taught language arts, 42 teachers taught science, and another 42 teachers taught all subjects.

This study showed that in South Korea the attitude towards mobile technology was low in (a) Forms of Mobile Learning Application (FMA), (b) Tools' Sufficient Adequacy of Communication (TSAC), and (c) Aim-Mobile Technologies Fit (A-MTF). FMA and TSAC scored the highest with A-MTF scoring the lowest. What this showed is that the teachers admit that there is communication via mobile devices and that it increases the quality of learning. The female teachers showed a more positive attitude than their male counterparts and secondary teachers scored higher than elementary teachers.

Mustafina (2016) researched in the Republic of Kazakhstan to see the role of teachers' attitudes towards technology integration from the perspective of self-confidence, knowledge, gender, and age. The writer went on to see the relationship between the attitudes of the teacher and their students' motivation towards academics. Twenty-nine teachers and 39 students were sampled using focus groups and one-on-one interviews. On the teachers' attitudes towards ICT survey, the sample group scored less than average showing that they had a positive attitude towards ICT. The average score for the survey is 30, and the lower your score, the more positive your attitude. There was a positive correlation between teachers' self-confidence and their attitude towards ICT, and this also showed that Kazakhstani teachers thought themselves to be averagely confident like other International teachers. No relationship between gender or age, and ICT attitude was seen.

When the students took the Academic Motivation of Students' survey, about half of the students said that if their teacher had a positive attitude towards technology, then they were motivated.

When examining the university-level professors, Ahmed and Kurshid (2015) designed a study to determine the use of information and communication technology (ICT) in both public, and private universities. They then went on to look at the role that the educators' demographics played in the application of ICT. One hundred faculty members from across six universities (three from public, and three from private) took part in the study. The results showed that there was a vast difference in the results between the two genders, and that ICT use was higher among the young faculty members between the ages of 20-30. Professors scored higher on the use of ICT as compared to Assistant Professors. It was also seen that University faculty members who had more experience, scored higher for the use of ICT in teaching.

At the level of early childhood, Koç (2014) carried out a study which was aimed at determining the attitudes that teachers had towards technology use in Turkey. The survey participants had a positive reaction to the items concerning technological tools on the learning, and development of young children. It was noted that many participants said that technological tools motivated children, and make the classroom activities more enjoyable as well as keeping the attention of young students. Additionally, they did not see technology as a waste of time, but rather it was essential for them. Technology use was seen as effective in the early childhood classroom. Many teachers declared that their technical skills, along with their instructional methods, were adequate for using technology.

Further studying the preschool world, Konca, et al. (2016) created a study to look at the attitudes of preschool teachers towards technology use and tools. For the research, 103 teachers in Kirsehir and Malatya were surveyed, which showed that 90.26% of them had a high attitude, and an additional 8.74% had a moderate attitude. Preschool teachers had a positive attitude towards technological and material usages. Educators who graduated from the faculty of education had a positive attitude towards the use of technology as compared to those who graduated from Open University. The research revealed that the use of technology in preschool education is to be seen as being important and necessary for the development of both the students and the teachers.

Pittman and Gaines (2015) developed a study focused on technology integration in the third to fifth-grade classrooms, seeking to identify high-level versus low-level technology usage and the factors that are associated with these factors. Seventy-five teachers from Pasco County in Florida were surveyed, of which only 18.7% were high-level users. It was seen that the teachers who used technology at the higher grade levels had no greater technology support or resources than those that were low-level users. However, participants reported having greater access and support as their level of usage increased. Teachers indicated the following items as barriers to technology use, in the order listed: (a) lack of available computers, (b) difficulty scheduling a time to use common computers/hardware, (c) classroom time required to teach students to use the technology, and (d) time required to develop lesson plans that incorporate technology. There were no significant differences seen in the levels of education or the years of teaching experience.

Uyangor and Ece (2010) aimed to determine the attitudes of prospective secondary math teachers towards Instructional Technology and the Material Development (ITMD) course. The ITMD course provides permanent learning and helps prepare materials appropriate to the teaching methods. Forty-four students took the course, and it was seen that this caused their attitudes to increase positively. The participants said that instructional materials make education more effective, and they want to be able to take part in more training.

Different aspects that influence technology beliefs were looked at, and these included perceived usefulness, perceived ease of use, attitude, facilitating conditions, and behavioral intention. Having conducted the study, Wong (2016) discovered that in Hong Kong, the main factors affecting the teachers were facility conditions followed by attitude. Perceived usefulness and perceived ease of use did not play a significant part with the teachers in Hong Kong.

Birkollu, et al. (2017) developed a study to determine the attitudes of pre-service teachers towards teachers. Having surveyed 132 pre-service teachers, they learned that teachers' attitudes towards technology differed based on the gender and the male teachers had a higher self-efficacy relating to technology. They also saw that teachers who had taken at least one technology course had higher attitudes than those who took no courses. Generally, however, the pre-service teachers had a positive attitude towards technology.

Similar to the research on technology skills, similar instruments were used to carry out different studies on teacher attitudes. However, while similar, each study had its specific instrument. Hart and Laher (2015) carried out a quantitative study using the

survey in the Attitudes Towards Technology Scale. They used a correlational design for their research. Harmandaoğlu Baz (2016), on the other hand, used a quantitative approach based on the Scale of Attitude Towards Technology by Yavuz (2005). The scale is made to rate five main areas including not using technological tools in education, using technological tools in education, the effects of technology on educational life, teaching how to use the technology tools, and evaluating technological tools.

Akturk, et al. (2015) used a rational survey model, which aimed to identify the presence, and the degree, of variation among multiple variables. The Scale for Attitude Towards Technology alongside the personal Information forms were used to collect the data in their research. Baek, et al. (2017) used the Mobile Learning Perception Scale (MLPS), which was developed by Uzunboylu and Ozdamli (2011).

Mustafina (2016) had a mixed-design format consisting of both a qualitative and a quantitative form. Firstly, there was the quantitative portion wherein data was collected, followed by the qualitative data collection wherein the qualitative data was used to elaborate on the quantitative data. They additionally used the Teachers Attitudes Toward ICT Survey, and the Academic Motivation of Students Survey.

Ozdemir (2017) used the Attitude Scale Toward Making Computer Supported Educated which consisted of 20 items, with 10 being positive and 10 being negative. The Questionnaire of Using Education Technologies scale consisted of 29 items. The researcher conducted 29-questioned face to face interviews in 10 to 15 minutes increments for the period of about one month from May 16 - June 17, 2016.

Ahmed and Kurshid (2015) used the ICT questionnaire to survey 100 faculty members, which consisted of 39 items related to teacher attitude towards ICT, ICT awareness, ICT adoption, and ICT perceived usefulness, and ICT ease of use.

Koç (2014) surveyed 217 teachers from across the city. This survey consisted of 20 questions on a 5-point Likert scale. Konca, et al. (2016) used the Attitudes Scale for Technological Tools and Materials Use in Preschool Education in a quantitative research to carry out their research. This scale is made up of 20 items on a 5-point Likert scale.

Pittman and Gaines (2015) developed their scale, known as the Survey of Technology Integration and Related Factors, to carry out the research, which was made up of 44 items across seven categories including (a) demographic data, (b) technology access and support, (c) technology-related professional development, (d) the importance of technology in instruction, (e) technology use by students, (f) technology use by a participant, and (g) barriers to technology integration.

Uyangor and Ece (2010) created a pool of items from various studies that were conducted previously by other researchers. They took this pool and developed a questionnaire, which consisted of 26 items on a 5-point Likert scale.

Wong (2016) used both the Structural Equation Model and Technology Acceptance Model. Birkollu, et al. (2017) used the Demographic information and Technology Towards Attitude Scale to collect the data for their research.

Relevance

Public school teachers across the various studies saw technology as being useful and had a high positive attitude towards educational technologies. Many of these

teachers had daily access to technology at home as well as at their school. Teachers had also taken at least two professional developments to improve their skills. Teachers also saw it as a way to get the attention of their learners. However, unlike in Turkey and the USA, it was seen that in South Korea that the attitude towards technology was comparatively low even though they did admit that it increased the quality of learning. It was seen in the Republic of Kazakhstan that there was a positive correlation between the self-confidence of a teacher and their attitude toward technology integration.

In order to conduct the various forms of research that have been read about, a number of different instruments were looked at. While all instruments measured the desired construct set forth by the writers, the Attitudes Towards Technology Scale (Hart & Laher, 2015), and Scale of Attitude Towards Technology by Yavuz (2005) (Akturk, et al., 2015; Harmandaoğlu Baz, 2016) were the ones that were best suited to this research in question and formed the base for the attitudes towards technology section of this research.

Use of Technology

Technology, in its broadest sense, encompasses the creation and use of technical means and how they are related to life. The use of technology refers to the application of these technical means and aspects in various contexts – in this case, in the education sector.

Technology can be broken down into three main categories-computer, audio-visual, and internet-based. Computer technology includes items like Word, PowerPoint,

flash drives, and smartboards. Audio-visual Technology contains items such as projectors, DVDs, and CDs. Internet-based technology includes web pages, social media, video conferencing (Özdemir, 2017).

When looking at the use of technology, Mantiri (2014) lists six basic categories into which media fits, and these include text, audio, visuals, video, manipulatives, and people all to facilitate learning and communication. The use of technology in classroom and learning environments, allows students to self-evaluate themselves. Technology use can "reach beyond boundaries such as physical markets, race, gender, and various social categories."

Yavarkovsky (2013) notes that digitization and internet service within libraries have made it easier to find and use information due to digital access, as people no longer need to visit libraries to find and access information.

In a research carried out by Al-Awidi and Ismail (2014), the writer defined Computer Assisted Language Learning as a language learning and teaching approach wherein computers are used for presentations, assisting students, promoting interaction, and evaluating materials.

Hursen (2017) sought to determine the tendency that people had towards technology and with this in mind, the writer looked at how a teacher used technology daily to enhance learning and education in his/her classroom. Similar to the previous writer, Kara and Cagiltay (2017) took this same concept but looked at how the preschool teachers, in both private and public schools, used technology within the classroom of

the early childhood learner. Both pieces of research defined the use of technology similarly relating it to the methods that teachers used technology to meet the learning needs of their students.

Koral GüMüşOğLu and Akay (2017), as well as Stockless (2018), additionally noted that technology can be used to help students complete their daily tasks in the classroom and as such the teacher's use of technology encompasses what techniques were used to add technology to classroom instruction.

In his writing, Hursen (2017) sought to see what teachers' tendencies were towards using technology wherein a total of 293 student teachers at the University of North Cyprus were studied via the quantitative method. This group was nearly evenly split between males and females with most between the ages of 16 and 21. It was discovered that the student teachers had a positive tendency to the subject matter as well as a positive emotional level. They were, however, undecided in the behavioral tendency and sex did not play any role in their tendency towards technology. Generally, there was a high tendency toward the use of technology in classes.

Kara and Cagiltay (2017) decided to carry out a study on preschool teachers to see how they felt about the use of technology in the educational arena. They interviewed 18 female teachers in the Ankara district in Turkey from across both public and private schools. They used an interview protocol, which consisted of three main categories – interview plan, demographic questions, and content and process questions and took about 27 minutes to complete.

Resulting from this study, it was discovered that all the teachers used computers in their preschool education, generally with regular incorporation of computers, projectors, overhead projectors, and televisions. Most teachers said that technology works well as visual aids for their students, along with storytelling. Teachers saw technology as a major aid in their classroom as it addressed many of the children's senses and increased cognitive abilities and curiosity. While there were advantages, teachers also said that it decreased communication and opened up the possibility for undesired content being viewed on the internet.

Koral GüMüşOğLu and Akay (2017) developed a study to determine the technology acceptance level of teachers at Anadolu University School of Foreign Languages to teach the Unified Theory of Acceptance Use of Technology (UTAUT), which determines the variables influencing a person's acceptance of the technology. This study used the quantitative research method with a survey using a 5-point Likert scale. The survey used was based on the original UTATU survey, which was made up of seven parts – performance expectancy, effort expectancy, attitude towards using technology, social influence, facilitating conditions, self-efficacy, and anxiety.

Overall, based on the results, the teachers at Anadolu University School of Foreign Languages had above-average levels of technology acceptance with nearly all the scores being in the positive ranges.

Stockless (2018) researched a group to teachers to see what influenced their use of Learning Management Systems (LSMs). The research was carried out in Montreal, Canada; wherein there are 35,000 students and 2,500 teachers. From the research, it was determined that LMSs are indeed useful in the K-12 system as it supports

classroom learning and teaching and the perceived usefulness of it is a good predictor as to the intention of use.

Al-Awidi and Ismail (2014) set out to determine what perceptions teachers had regarding Computer Assisted Language Learning (CALL) in teaching students to read. They surveyed 145 ESL teachers that taught children in KG1 to grade 3. This study was done in government schools in the United Arab Emirates. Having used both qualitative and quantitative research, the research revealed that teachers primarily used computers to teach reading skills. They understood the importance of using computers to increase student motivation for learning. It was also seen that there were barriers that also hindered teachers from using computers in ESL teaching, which included the availability of resources and a lack of hardware and suitable programs.

Various surveys were used across different researches. Hursen (2017) used the Tendency Scale Related to Technology Use in Class, which was developed by Gunuc and Kuzu in 2014, which was a 5-point Likert scale consisting of 16 statements. Kara and Cagiltay (2017) did not use an instrument, but rather carried out convenience sampling, and interviews making up the main form of data collection for this research.

Stockless (2018) used the Technology Acceptable Model (TAM) to carry out their research. While TAM was used, it should be noted that a large portion of TAM is derived, from the Unified Theory of Acceptance and Use of Technology (UTAUT) by Venkatesh and Davis (2000).

Al-Awidi and Ismail (2014) developed a 5-point Likert scale survey with two sections containing 39 statements related to CALL in teaching ESL reading skills in the early stages.

Relevance

Preschool teachers showed a high level of integration in their classrooms through the aid of projectors and televisions, which gave aid to helping students use their senses. These teachers did, however, limit the use of technology as they found that it also decreased communication. At other levels of education, teachers generally used technology to support learning and teaching. Technology increased student motivation.

In order to carry out the various forms of research that have been read about, a number of different instruments were looked at. While all instruments measured the desired construct set forth by the writers, the survey questions were adapted from the survey The Questionnaire of Using Education Technologies (Ciftci & Aladag, 2018; Ozdemir, 2017) and formed the base for the Use of Technology section of this research.

Burnout

Burnout can be seen as fatigue and frustration due to stressful situations, intense activity, or overwork. Burnout syndrome is a medical situation wherein a person suffers from or experiences burnout symptoms.

In an article written by Bridgeman, Bridgeman, and Barone (2018) it was stated that burnout syndrome could be both on a professional and behavioral level wherein people show increased levels of anger, frustration, paranoia, and suspicion. They went on the say that people who are committed and dedicated to their jobs tend to suffer from it the most. Burnout is a huge problem in the medical field, and it has been linked in some cases to increase medical errors. Additionally, burnout is being treated similarly to mental health and depression.

Ozkula and Durukan (2017) state that when referring to occupational groups, burnout is a syndrome that includes “dimensions of emotional exhaustion, depersonalization, and a low sense of personal accomplishment” (p. 186). Irsay, et al. (2017) noted that burnout syndrome is a psychosomatic condition that presents with exhaustion, a lack of interest in accomplishment, and interpersonal detachment.

Unlike previous researchers, García Padilla, Escorcia Bonivento, and Perez Suarez (2017) looked at a group of professors to see the level of burnout syndrome. When it came to professors, burnout syndrome was placed under the umbrella of “deterioration of their mental health with negative impacts on their job performance” (p. 98).

Bauer, et al. (2006) looked at burnout as a syndrome that affects people who mainly work in high social and ethical responsibility environments. Burnout is often linked to exhaustion, low personal accomplishment, and depersonalization. Bulatevych (2017) used the definition of burnout being a psychological disorder occurring in the professional activities of people.

Rodríguez-Mantilla and Fernández-Díaz (2017) define emotional exhaustion as “feelings of physical strain and psychological tiredness as a result of constant physical interactions” (p. 370). Cynicism looks at the development of negative and distant feelings toward others. Inefficacy is the loss of confidence in personal performance and the development of negative self-image.

Ozkula and Durukan (2017) studied 480 physicians and saw that there was no significant difference in the levels of burnout between males and females. When looking

at age, young physicians between the ages of 20-29 years old showed the highest level of emotional burnout and depersonalization and the lowest personal achievement.

Irsay, et al. (2017) looked at the burnout syndrome in Romanian physicians. Similar to Ozkula and Durukan (2017), they noted that there are psychosomatic factors that lead to burnout. The first factor is emotional exhaustion, which focuses on being drained by human interactions. The next factor is depersonalization, which is seen by a detachment and indifference towards other people. The final factor is a low personal accomplishment due to a low perception of one's value and competence on the job.

García Padilla, et al. (2017) carried out a study of 37 professors with nearly an even split between the genders with the result showing that 83.3% of the professors did not suffer from emotional burnout while 8.3% showed intermediate to high levels of emotional exhaustion; 94.4% of the professors do not suffer from depersonalization, while 5.6% did. Personal accomplishment ranked high, with 66.7% showing high levels of accomplishment, and only 5.6% having low accomplishment levels.

Bauer, et al. (2006) carried out a cross-sectional study looking at the patterns of coping with occupational burdens and the psychological symptom load faced by the grammar teachers in Germany. Four hundred eight teachers were surveyed, of which 49.3% were females, the average age of the group was 46.7 years, and the average duration of service was 19.9 years. When it came to gender, Type B (exhausted/re-signed) was higher in females than in males, and the males had a higher proportion of Type S (unambitious) compared to females. Teachers that worked part-time also showed a higher level of Type B than did full-time teachers. When it came to lengths of service, there were no significant differences. Teachers in Catholic schools were seen

to have a higher level of Type G (healthy/ambitious) and Type A (tense) as compared to public school teachers. All four types indicated that class size and behavior of difficult students were the strongest stress factors. Additionally, 20.3% of teachers had a serious degree of mental health symptoms.

Bulatevych (2017) sought to study the phenomenon of burnout among teachers and the influencing factors thereof. One hundred thirty-two teachers, having an average age of 40.7, were surveyed. It was seen that the dominant symptom was the emotional response to the psycho-traumatic circumstances found in the work environment. 64.6% of teachers showed signs of trauma. 32.6% of the teachers had signs of dissatisfaction with themselves as well as the duties and profession. 37.1% had hopelessness, helplessness, and awareness that they are governed by circumstances. 44.7% showed signs of situational and person anxiety, which is the most important first phase of burnout. 19.7% of the respondents already had signs of burnout with another 25% beginning to develop it.

Rodríguez-Mantilla and Fernández-Díaz (2017) set out to study the influence of teacher's interpersonal relationships with students, coworkers, and their superiors on emotional exhaustion, cynicism, and inefficacy. Seven hundred ninety-four teachers were used in the survey. Within this number, 72.6% were from public schools, 29.85% were from state-subsidized private, and the final 7.55% were from strictly private schools. Three hundred eighteen of the participants were women.

It was seen that emotional exhaustion showed an important and direct effect on cynicism, indicating that teachers increased exhaustion also caused cynicism to increase and efficacy to decrease. Improving teacher-coworker relationships was seen to improve professional efficacy.

Unlike previous constructs, burnout was the one that across multiple researchers the same instrument was seen in many cases. Ozkula and Durukan (2017) used the socio-demographic and occupational information form, followed by the Maslach Burnout Inventory. Irsay et al. (2017), similar to Ozkula and Durukan (2017), used the Maslach Burnout Inventory but in their study, the survey was referred to as the Maslach Burnout Inventory-Human Services Survey (MBI-HSS). In addition to the two previous authors, García Padilla, et al. (2017) also used the Maslach Burnout Inventory. They also went on to use the Teachers' Self-efficacy Beliefs.

Bauer, et al. (2006) used the German instrument known as AVEM – in English, it is called MECCA. Within this instrument, there are four patterns looked at including Type G (healthy/ambitious), Type S (unambitious), Type A (tense), and Type B (exhausted/resigned). There were 26 items in the AVEM survey.

Bulatevych (2017) used Boyoko's Emotional Burnout Inventory, Inventory of Behavior, and Work-Related Experiences. This is the same as the German AVEM scale. This scale contained 84 questions across three phases; stress, resistibility, and exhaustion. The phase of tension included the experience of traumatic circumstances of professional activity, feelings of being trapped, dissatisfaction with oneself, depression, and anxiety. The phase of resistance included inadequate selective response, emotional and moral disorientation, and reduction of professional duties requiring emotional

expenses. The phase of exhaustion looks at emotional deficiency, emotional isolation, and personal detachment.

Rodríguez-Mantilla and Fernández-Díaz (2017) used two instruments. To study the interpersonal relationships between teachers and students, the Climate Measurement Instrument in Secondary Schools was used. When measuring emotional exhaustion, cynicism, and inefficacy, the Measuring Instrument for Burnout Syndrome in Teachers was used. Both of these instruments used 5-point Likert scales.

Relevance

Burnout is linked back to those in the medical profession as well as in other high-level professions. Educators suffer from similar symptoms stated in the various studies. From the daily activities and demands put on teachers, it is easy to become tired. This is extremely prevalent when it comes to teachers being requested to integrate technology when the said teacher feels he/she has inadequate skills and knowledge. Technology integration at this point can cause, or add to, the mental fatigue burnout felt by educators. Teachers who are drained and emotionally exhausted do not give their best in the classroom.

To carry out the various forms of research that have been read about, it was generally seen that the same survey was used across various studies. As such, due to its relevance, the survey questions were developed from the survey Maslach Burnout Inventory (García Padilla, et al., 2017; Irsay, et al., 2017; Ozkula & Durukan, 2017) and formed the base for the Burnout section of this research.

Self-efficacy

It is important to note that even if a person is trained and given the correct tools, if he/she does not believe he/she is capable of completing a task, they will not be a success at it. Self-efficacy looks at the level of confidence a person has in something which leads to their level of motivation to carry out the same task. In a study by Letwinsky (2017), it was noted teachers who have high self-efficacy are more willing to integrate various forms of technology in their daily curriculum.

Across various studies can be seen a myriad of definitions. Chen (2008) says that “belief systems are organized by individuals according to primary beliefs and beliefs derived from other beliefs” (p. 66).

Teo (2014) defines attitude towards behavior as the amount of pleasure that is derived for a behavior. Gómez Domingo and Badia Garganté (2016) go on to state that teachers’ technology knowledge refers to understandings, while the beliefs look at the ideologies and commitments about how technology impacts learning.

Sarfo, Amankwah, and Konin (2017) looked at Ghana to determine the level of self-efficacy of the teachers in this country and how the age of the teachers, gender, and computer self-efficacy impacted this self-efficacy. A common definition of self-efficacy, as used by Bandura (1994), is that self-efficacy is people’s beliefs about their capabilities to create designated levels of performance that exercise influence over events that affect their levels of performance.

Siyam (2019) looks at technology acceptance as an individual’s thoughts regarding his or her planned use of technology. A person who has perceived usefulness

is defined as “the degree to which a teacher believes that using technology would impact his or her job performance and productivity” (p. 2040). The perceived ease of use is defined as the degree of which a teacher believes that learning to use new technology is easy and required little effort.

Technology Acceptance Model (TAM) is among the most effective models that can be used to determine the acceptance of new technologies. Attitudes are defined as one’s feelings and thoughts towards a psychological matter. Job relevance is defined as the perception of the teacher's perceptions that educational technology is important in their teaching practices.

Yerdelen-Damar, Boz, and Aydın-Günbatar (2017) look at TPACK as being the total knowledge underlying a teacher’s actions with technology. Self-efficacy looks at how capable people believe themselves to be to organize and execute actions to attain a particular performance. Technology competency looks at having the necessary skills or knowledge to use a piece of technology.

EL-Daou (2016) defined ICTs (Information and Communication Technologies) as educational technology that encompasses all digital devices and tools. The researcher additionally defines self-efficacy as the belief in one’s capabilities to execute a course of action to achieve a particular result.

Hsu (2016) says that teachers’ beliefs are considered the best predictor of the way they will practice in their classroom, including technology integration. Within his writing, it was said that the beliefs of the teacher are made up of self-efficacy beliefs about technology, the perceived value of technology for student learning, and the pedagogical beliefs that surround technology integration. The purpose of the research was

to observe trends in the beliefs, barriers, and practices in Kindergarten to grade 6 teachers living in the Midwest United States.

Ha and Lee (2019) define smart learning as a concept that includes current and future technology-based learning. They went on to define efficacy as a person's confidence in his/her ability to complete a task. Holden and Rada (2011) define self-efficacy as "one's beliefs in his or her ability to execute a particular task" (p. 345).

In Hong Kong, the government readily supports technology infrastructure within the schools. Despite this, however, it is not being used as hoped. To look at this issue, Wong (2016) carried out quantitative research on 185 primary teachers to see what the perceived usefulness of technology was related to actual use.

Seeing a need to find out about the impacts of teachers' technology beliefs on teacher pedagogy, Chen (2008) created a study to investigate such a relationship within Taiwan's educational system.

Based on the research, the teachers stated that they used technology, but many did not see it as a means to achieve instructional and curricular goals. The research went on to state that teachers did not understand the constructivist instruction method wherein the learner constructs his/her learning and does not solely absorb what the teacher is instructing. Additional to this is the fact that teachers had personal beliefs that conflicted with the pedagogical beliefs. Participants said that external factors, such as lack of technical support and software, were the cause of their lack of technology usage. In addition to this, subjects in the study by Chen (2008) also said that "all participants reported that there were under pressure to cover all content, and most partic-

ipants were unwilling or hesitant to allow students to spend valuable class time in exploring content on their own with technology" (p. 72). This research relied more on classroom observation and interviews.

In his writing, Teo (2014) makes mention of the fact that technology has been made available, but the integration of it depends on the use by the teachers' willingness to accept the technology for its designed purpose. To study this concept, 673 teachers in South-east Asia were used for the research. From the research, it was seen that the teachers positively accepted technology, and they had been equipped with training and resources at all school levels ensuring that students are efficiently equipped with technology to learn.

Gómez Domingo and Badia Garganté (2016) developed research, which sought to determine teachers' perceptions of the impact of mobile technology in primary education learning. They also set out to research the frequency of usage of Apps in the classroom and the impact difference between technology users and non-users. The researchers collected data from 12 schools that had a full technology infrastructure. These schools were part of the Intercentres project. One hundred two teachers participated while included 77.4% females and 22.6% males with an average age of 44.8 years old and a teaching experience of 19.73 years.

From the research, it was seen that technology usage facilitates student access to information as well as providing new ways to learn and increase lesson engagement. It was also seen that when looking at over 45 Apps, content learning apps are most used in which students can work independently and have instant feedback on content

and assessment. They also saw that the quality of student engagement is higher with learning skill apps.

Sarfo, et al. (2017) developed a study in Ghana as it related to the educational policy of teachers integrating technology in their classrooms. They conducted a survey, which set out to see what the self-efficacy of the teachers was as it related to technology. In other words, the researchers wanted to see how teachers in Ghana judged their capabilities and knowledge of computers in different situations. The researchers then wanted to see what relation age, gender, and computer use, had on teacher self-efficacy and how these related to their level of interaction with technology.

A qualitative descriptive survey was given to 407 teachers - 229 were male, 178 were female, 231 were aged 20-30, 176 were aged 31 and above, 246 had low computer experience, and 161 had high computer experience. The questionnaire was made up of two parts – demographics and the self-efficacy scale covering basic computer skills, media-related skills, and web-based skills. Items were rated on a scale of 1 (strongly disagree) to 5 (strongly agree). Results were evaluated using descriptive statistics, independent sample *t*-test, and univariate analysis.

Siyam (2019) researched to determine the factors that are affecting UAE special education teachers' perceptions of technology using TAM. From the results, it was seen that the teachers had a positive attitude towards using technology, and they see it as being beneficial in their classrooms. Teacher self-efficacy was seen to have the most significant impact on the actual use of technology by the teachers, and access to technology was not a factor in the use thereof.

Yerdelen-Damar, et al. (2017) used the Technological Pedagogical Content Knowledge (TPACK) framework to determine pre-service science teachers' self-efficacy beliefs regarding TPACK. They further expanded to identify how teacher-related factors like their attitude towards technology, their technological competency, and the frequency of technology use affected the overall self-efficacy about technological pedagogical content knowledge. The researchers found that the attitudes towards technology use, the competencies, and previous experiences directly influenced self-efficacy beliefs as they related to TPACK. Additionally, it was seen that while technology ownership did not directly affect self-efficacy, it did indirectly affect competencies and experiences.

EL-Daou (2016) was interested in the relationship that could be found between the self-efficacy of a teacher and the technology integration attitude of said teacher. Additionally, the relationship between self-efficacy and both self-evaluation reports and computer performance results were looked at. The study set out to find what was the relationship between the teacher's apparent self-efficacy and the attitudes they had towards technology integration. The study was looking at how the teachers saw their capabilities to integrate technology, do self-evaluation reports, and performance results.

An open and closed questionnaire survey, which originated from the Computer Integration Survey (CTIS) developed (Wang, Ertmer, & Newby, 2004). Additionally, it was used to measure the attitudes towards technology integration. The survey was given to 72 students – 60 of which were studying to be a science teacher, and 12 were mixed major teachers. 18.33% of the subjects were male, while 81.67% were female.

The average age of the group was 30 years old, and there were all in their second semester year of teacher preparation. The survey sought to determine the confidence level to integrate technology and was made up of 21 questions that were rated on a scale of 1 (strongly disagree) to 5 (strongly agree). Participants scoring 22-72 were considered to have low to medium self-efficacy, 73-89 medium self-efficacy, and 90-105 high self-efficacy. The contrast of alteration for each group was determined by using a paired-samples t-test. At the end of the course, Robert Reasoner's Teachers Self-Evaluation Scale (RRTSES) was given to collect self-rated evaluation reports. The RRTSES was 4 point Likert scale with the results categorized as "I need help" (scores of less than 22), *accepted score* (scores of 22-26), *good score* (scores of 27-31), *excellent scores* (scores of 32-36), and *brilliant scores* (scores of 37-40).

Teachers went through a computer course and then were surveyed. The results showed that the rankings of the teachers' self-efficacies at the end of the session were higher than at the beginning. From this, there were significant modifications in how technology was integrated into Physics and mixed-majors teachers. With each group, significant increases in self-efficacy were witnessed. A linear relationship was discovered, showing a correlation between Reasoner's five elements and teachers' self-efficacy value on the CTIS survey. There was a mindset change in 80% of the teachers towards using different technology integration elements, like SMART boards, videos, and cameras, in their classrooms. The data from this research shows that after the teachers went through the active inspire training, they were able to integrate better and apply technology. Knowledge of how to integrate led to an increased self-efficacy.

Based on the results, participants neither agreed nor disagreed that they were computer self-efficacious. Teachers have self-efficacy in basic computer skills but not in media-related skills. They are uncertain as to their level of self-efficacy as it refers to web-based skills. In the Ghana study, neither gender nor age was factored in computer self-efficacy. The findings show that teachers need more training and support to develop computer confidence.

From the study carried out by Hsu (2016), teachers were mostly seen to have constructivist pedagogical beliefs related to technology integration, and these teachers had firm self-efficacy beliefs. Language arts was seen to have the highest level of integration. It was additionally seen that barriers of integrating technology included lack of technology training for the teachers, lack of students' computer skills, and teachers lacking technical support.

Ha and Lee (2019) looked at the relationship between integrating teachers' knowledge and efficacy of technology use in the classroom with their beliefs about education in smart learning environments. They looked at the technology beliefs (TB), technology support system (TSS), teachers' self-efficacy on knowledge of technology (ICT-K) and self-efficacy in the use of technology in the classroom (ICT-U). The correlations between these factors and the teachers' perspectives on smart learning were prominent in this study. Three hundred ninety-eight teachers were from 20 public elementary schools in Seoul and Gyeonggi, South Korea were surveyed.

From this study, it was seen that student-centered teacher belief had a direct association with efficacy in ICT-U and ICT-K. Furthermore, they found that technology support systems are important and highly associated with ICT-K and ICT-U. From this,

it was shown that it is important to invest in better technology support systems for teachers as this is directly related to their self-efficacy in technology-based teaching and learning. Teachers were seen to have a more positive perspective on future smart learning as well as current computer use in learning and teaching.

Holden and Rada (2011) studied the effects of users' perceived usability and technology self-efficacy on their technology acceptance. They studied 99 K-12 teachers from two rural school districts in Virginia; wherein all the students had access to many forms of technology and online programs. The respondents included 28 elementary, 11 middle, and 16 high school teachers, 83.8% of whom were females and 16.2% were males. The average years of teaching were 14, and the average teacher's age was 42.

There were two hypotheses put forth, and from the first one, it was seen that teachers' perceived usability was high and correlated to their attitude towards technology use. 73% of the variance was explained by perceived ease of use, usability, perceived usefulness, and attitudes towards usage.

The second hypothesis indicated that computer self-efficacy has large main effects on perceived ease of use. Computer self-efficacy did not have a direct influence on PEU or PEUU. The effect of technology self-efficacy on perceived ease of use was not significant. However, technology self-efficacy had a significant direct effect on perceived ease of use and usability. The overall technology self-efficacy of the teachers had a stronger influence on technology acceptance than the computer self-efficacy.

Letwinsky (2017) studied how Pennsylvania (USA) mathematics teachers used communication technology and the relationship between the variables that support

teachers' decision to integrate technology for this purpose. The 90 teachers in the survey taught grades 7 to 12. Nearly half of the respondents said that they used their knowledge of technology for teaching, and even more than half said they liked using technology. Despite this, less than 25% of them said that they used technology in mathematics communication and only did so about once a week. Self-efficacy was negatively skewed, showing that there was a high level of self-efficacy even though the survey revealed that there was minimal technology use.

When the researcher collected data related to technology and teacher self-efficacy, it was seen that the self-efficacy was directly correlated to an increased positive attitude towards technology, but again, the implementation of the technology was low. Additionally, the general use of communication technology had no relation to years of work experience.

Across the various studies, multiple instruments were used although Chen (2008) did not use an instrument but carried out the research using classroom observations and interviews. The interview questions were based on teachers' beliefs about teaching and learning, their beliefs about technology potential, the pros and cons of technology integration, and the factors that prevent the implementation of technology in the classroom.

In the research by Teo (2014) the Technology Acceptance Measure for Pre-Service Teachers (TAMPST) was used. Gómez Domingo and Badia Garganté (2016) gave the participants of their research a 58-item questionnaire geared at tablet integrations in the classroom. The first section contained 18 questions and looked at teachers'

socio-professional background, training experience, and technological access conditions. The second section was made up of 20 questions and looked at the frequency with which students use Apps in the classrooms. Section three had 20 items showing the potential learning impacts of mobile technology usage.

Sarfo, et al. (2017) used an adapted version of the “Computer Self-Efficacy” scale developed by in 2010 by Teo and Koh.

Siyam (2019) used the Technology Acceptance Model (TAM) to determine the level of technology acceptance and the factors that affect the use thereof. The TAM survey, consisting of 31 items, was used to collect the data.

Yerdelen-Damar, et al. (2017) used the TPACK Self-Efficacy Scale as well as the Technology Competencies, Technology Experiences, and Attitudes Towards Technology Use Scale to collect data for their research

EL-Daou (2016) used a survey, which originated from the Computer Integration Survey (CTIS) developed in 2004 by Wang et al. Additionally, an open and closed questionnaire was used to measure the attitudes towards technology integration. At the end of the course, Robert Reasoner’s Teachers Self-Evaluation Scale (RRTSES) was given to collect self-rated evaluation reports. The RRTSES was 4-point Likert scale with the results categorized as “I need help” (scores of less than 22), *accepted score* (scores of 22-26), *good score* (scores of 27-31), *excellent scores* (scores of 32-36), and *brilliant scores* (scores of 37-40).

Hsu (2016) carried out a mixed-methods survey, consisting of online surveys, observations, and interviews, enlisting the cooperation of 152 teachers.

Ha and Lee (2019) developed an instrument of five sections. Section 1 was TB and contained 29 questions. Section 2, TSS, contained 13 questions. TETBTL encompassed ICT-K and ICT-U and was made up of 10 questions. PCL covered 23 questions, and PSL had 37.

Holden and Rada (2011) developed a survey consisting of three sections. – (1) demographics, and computer self-efficacy, (2) identification of current technologies used, and selection of one technology, and (3) perceived usefulness, perceived ease of use, attitudes toward using, and technology-specific self-efficacy.

Letwinsky (2017) used a survey that consisted of 50 questions taken, in pieces, from three different, previously validated instruments. The instruments that questions were taken from where the USEIT teacher survey, the Technology Attitude Survey (TAS), and the Mathematics Teacher Efficacy Beliefs Instrument (MTEBI).

Relevance

The integration of technology is directly affected by a willingness to accept technology for the purpose it was designed. It was seen that the self-efficacy of teachers played a significant role in the level of integration that a teacher portrayed. Owning technology was not linked to self-efficacy.

In order to carry out the various forms of research that have been read about, a number of different instruments were looked at. While all instruments measured the desired construct set for by the writers, the survey questions were adapted from the survey Computer Self-Efficacy scale developed in 2010 by Teo and Koh (Sarfo, et al., 2017) and formed the base for the Self-efficacy section of this research.

CHAPTER III

METHODOLOGY

Introduction

This quantitative research is using the Ex Post Facto research design. Cohen, Manion, and Morrison (2007) note this form of research is used as a replacement for experimental designs when cause and effect hypotheses have to be tested. They go on to say that, this research format is “a method of teasing out possible antecedents of events that have happened and cannot, therefore, be controlled, engineered of manipulated by the investigator” (p. 264). Within this research, participants were not selected randomly to determine what effect technology skills, attitude toward technology, use of technology, burnout, and self-efficacy have on the independent variable technology integration.

Population and Sample

The research will be conducted within the Atlantic Union Conference of Seventh-day Adventists, and it will target 356 teachers working within the Pre-Kindergarten to Grade 12 educational system. In this research, a census was done as opposed to a sample. Data analysis will be based on 356 responses collected in Fall 2019. The participants who complete the responses teach across all subjects in Pre-Kindergarten to Grade 12. All teaching participants were chosen to be a part of the research. The respondents per conference are shown below (see Table 1).

Table 1

Distribution of Participants by Conference

Conference	Number of Teachers
Bermuda Conference of SDA	36
Greater New York Conference of SDA	84
New York Conference of SDA	20
Northeastern Conference of SDA	124
Northern New England Conference of SDA	38
Southern New England Conference of SDA	54
Total	356

Instrument

The research used the Instrument on Aspects Influencing Technology Integration survey as the main instrument for the study (see Appendix A). This survey was developed using the following surveys:

1. Attitudes Towards Technology Scale (Hart & Laher, 2015).

2. Scale of Attitude Towards Technology by Yavuz (2005) (Akturk, et al., 2015; Harmandaoğlu Baz, 2016)

3. Basic Technology Competency Scale for Educators (Ozdemir, 2017).

4. The Questionnaire of Using Education Technologies (Ciftci & Aladag, 2018; Ozdemir, 2017).

5. Maslach Burnout Inventory (García Padilla, et al., 2017; Irsay, et al., 2017; Ozkula & Durukan, 2017).

6. Computer Self-Efficacy scale developed in 2010 by Teo and Koh (Sarfo, et al., 2017).

The survey will include six sections with the results from all sections being used in the study (see Appendix A). Section 1 will collect demographic information from the

participants, Sections 2-4, and 6 will follow a 5-point Likert scale (strongly disagree, disagree, neutral, agree, strongly agree), while section 5 will follow a 5-point Likert scale (never, almost never, regularly, almost always, always).

Operationalization of Each Construct

Following the presentation of the operationalization of the different study constructs:

Technology Skills

Conceptual definition. The technology competencies that are needed to affect the job of pedagogy proficiently.

Instrumental definition. Appendix A references the instrument used in this study and this variable of technology skills is determined using the following questions: insert and eject external memory, store files in a folder or subdirectory, access information on CD-ROM, flash memory, or hard drive, create and delete folders, use of virus protection, connecting peripheral devices, set margins, change font size and type, cut, copy, and paste in and between documents, insert files, graphics, and tables in a document, enter data in cells, move data within a spreadsheet, use formulas in a spreadsheet, create charts, log on to a network, work in a network environment, share files electronically, send and receive e-mail, navigate the world wide Web, subscribe to a list-service, use an overhead projection device, develop an electronic slide show, develop a presentation using graphics, develop a presentation using sound, have a knowledge of copyright laws, have a knowledge of software piracy, and have a knowledge of intellectual property rights.

Operational definition. Using a Likert scale of 1 to 5 creates an interval system wherein the respondent can score from 27 to 135. The totals are summed, and it will be interpreted that the higher the score, the higher the level of technology skills a teacher has.

Reference and factors. The survey questions were adapted from the survey Basic Technology Competency Scale for Educators (Ozdemir, 2017). The instrument contains four dimensions: Computer technologies (items 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, and 14), audio-visual technologies (items 21, 22, 23, and 24), internet-based technologies (items 15, 16, 17, 18, 19, and 20), and technologies law (items 25, 26, and 27).

Attitudes towards Technology

Conceptual definition. The mental outlook that a person has as it relates to technology, whether it be specifically or pertaining to a specific task.

Instrumental definition. Appendix A references the instrument used in this study and this variable of attitudes towards is determined using the following questions: Email is only for communication; it cannot be used in education, overhead projectors and slides should not be preferred as they take too much time to be used, using the Internet in the learning process is a waste of time, using technological tools does not affect students' motivation, technological tools do not need to be used in instruction, recording some parts of the lesson via video could provide the students with the opportunity to see their mistakes, because video recordings could be watched again, students can provide feedback, technological tools could be used for practice or revision, students should receive basic education on computer literacy, using current technologies would

promote the improvement of new ones, technological facilities have a positive effect on productive studying and learning, using technology would facilitate the understanding of difficult subjects, one does not have to use technological facilities in order to be successful in life, daily and yearly plans should be prepared by teachers using computers, lessons should often include computer-assisted instruction, students should get advanced information on the usage of new technologies, the usage of new technologies in teacher training should be increased, technological tools could only succeed when they address all the sense organs, in order to be able to graduate from high school, the ability to use the technological materials of the field should be rated, having Google Certifications impacts how I teach my students, and having Microsoft Office Certifications impacts how I teach.

Operational definition. Using a Likert scale of 1 to 5 creates an interval system wherein the respondent can score from 21 to 105. The totals are summed, and it will be interpreted that the higher the score, the more positive the attitude towards technology of a teacher.

Reference and factors. The survey questions were adapted from the survey *Attitudes Towards Technology Scale* (Hart & Laher, 2015), and *Scale of Attitude Towards Technology* by Yavuz (2005) (Akturk, et al , 2015; Harmandaoğlu Baz, 2016) . The instrument contains five dimensions: Not using technological tools in education (items 1, 2, 3, 4, and 5), using technological tools in education (items 6, 7, 8, and 9), the effects of technology in educational life (items 10, 11, 12, and 13), teaching how to use technological tools (items 14, 15, 16, and 17), and evaluating technological tools (items 18, 19, 20, and 21).

Use of Technology

Conceptual definition. The use of technology means the application of technical means within the education sector. Technology refers to content falling under the categories of computers, audio-visual, and internet-based content.

Instrumental definition. In this study, the conceptual definition of Appendix A references the instrument used in this study, and this variable of use of technology is determined using the following items: Writing board, graphics, book, internet, www page, e-mail, search engine, television, video, DVD, CD, video camera, paint, Windows Media Player, QuickTime, or iTunes, Microsoft Excel, Numbers, or Google Sheets, Microsoft Word, Pages, or Google Docs, Microsoft PowerPoint, Keynote, or Google Slides, NAD Resources like Reading A-Z, IXL Math, etc., supplemental websites for teaching like Khan Academy, Quizlet, etc., educational games like Kahoot, Quizlet Live, Smart board, browser, projection, CD-ROM, printer, laptop or Chromebook, iPad or tablet, I regularly use Flash Memory like flash drives and SD cards, and I regularly use a Digital Camera.

Operational definition. Using a Likert scale of 1 to 5 creates an interval system wherein the respondent can score from 29 to 145. The totals are summed, and it will be interpreted that the higher the score, the greater the teacher's use of technology.

Reference and factors. The survey questions were adapted from the survey The Questionnaire of Using Education Technologies (Ciftci & Aladag, 2017, Ozdemir, 2017). The instrument contains five dimensions: Technologies with flat surfaces (items 1, 2, and 3; internet based technologies, (items 4, 5, 6, 7, 18, 19, and 20), audio-visual technologies (items 8, 9, 10, 11, and 12), computer systems (items 13, 14, 15, 16, and

17), and computer technologies items (items 21, 22, 23, 24, 25, 26, 27, 28, and 29).

Burnout

Conceptual definition. Burnout is a deterioration of a person's mental health with negative impacts on their job performance, exhaustion, low personal accomplishment, and depersonalization.

Instrumental definition. In this study, the conceptual definition of Appendix A references the instrument used in this study, and this variable of burnout is determined using the following questions: I feel emotionally drained from my work, I feel used up at the end of the workday, I feel fatigued when I get up in the morning and have to face another day on the job, can easily understand how my recipients feel about things, I feel I treat some recipients as if they were impersonal objects, working with people all day is really a strain for me, I deal very effectively with the problems of my audience, I feel burned out from my work, I feel I'm positively influencing other people's lives through my work, I've become more callous toward people since I took this job, I worry that this job is hardening me emotionally, I feel very energetic, I feel frustrated by my job, I feel I'm working too hard on my job, I don't really care what happens to some audience, working with people directly puts too much stress on me, I can easily create a relaxed atmosphere with my audience, I feel exhilarated after working closely with my audience, I have accomplished many worthwhile things in this job, I feel like I'm at the end of my rope, and I feel recipients blame me for some of their problems.

Operational definition. Using a Likert scale of 1 to 5 creates an interval system wherein the respondent can score from 21 to 105. The totals are summed, and it will be interpreted that the higher the score, the higher the level of burnout in a teacher.

Reference and factors. The survey questions were adapted from the survey Maslach Burnout Inventory (García Padilla, et al., 2017; Irsay, et al., 2017; Ozkula & Durukan, 2017). The instrument contains three dimensions: Emotional fatigue (items 1, 2, 3, 11, 12, 13, 16, 17, and 19), personal fulfilment (items 6, 9, 10, 14, 15, and 20), and depersonalization (items 4, 7, 8, 18, and 21).

Self-efficacy

Conceptual definition. Self-efficacy is the belief that a person has in his/her ability to accomplish a task.

Instrumental definition. Appendix A references the instrument used in this study and this variable of self-efficacy is determined using the following questions: I am able to use a word processor to create edit, and format documents for specific purposes, I am able to use the internet to search for information and resources, I am able to use email for communication, I am able to use presentation software for classroom delivery, I am able to use a spreadsheet to record data, compute simple calculations, and represent data in the form of tables and graphs, I am able to use a spreadsheet to record data, compute simple calculations, and represent data in the form of tables and graphs, I am able to use graphic editors to create resources for teaching, I am able to use video editing software, I am able to use animation software, and I am able to use conferencing software for collaboration purposes.

Operational definition. Using a Likert scale of 1 to 5 creates an interval system wherein the respondent can score from 10 to 50. The totals are summed, and it will be interpreted that the higher the score, the greater the teacher's self-efficacy.

Reference and factors. The survey questions were adapted from the survey Computer Self-Efficacy scale developed in 2010 by Teo and Koh (Sarfo et al., 2017). The instrument contains three dimensions: Basic computer skills (items 1, 2, 3, 4, and 5), media-related skills (items 6, 7, and 8), and web-based skill (items 9 and10).

Null Hypothesis

Ho: Technology skills, attitude toward technology, burnout, and self-efficacy do not affect use of technology.

The independent or predictor variables are: technology skills, attitude toward technology, burnout, and self-efficacy. The dependent variable or criterion is use of technology. All these variables are measured using a metric level. To prove the hypothesis, we are using the Structural Equation Model (SEM) and the significance level to reject the hypothesis will be .05.

Data Collection

Before obtaining the data from the educators in Atlantic Union Conference, the researcher submitted the research proposal to the Universidad de Montemorelos to get approval to conduct the research. After obtaining approval, permission was requested of the Atlantic Union Conference Director of Education in South Lancaster, MA. The request was granted, and the researcher worked with the Atlantic Union Office of Education to distribute the surveys to the teachers across the six Conferences (See Appendix A). The researcher then worked with these individuals to obtain the needed data

concerning the privacy of the participants. The researcher did not share the data, except with the research methodology advisor. The data was kept on a private, personal laptop.

Data Analysis

The IBM Statistical Package for Social Science (SPSS) was used. Before proving the hypothesis, descriptive statistics like mean, standard deviation, histograms, and frequency tables were used to show the distribution of the variables to find out the behavior of them in the studied population. After, to prove the hypothesis, inferential statistics are used to explore relations between the principal variables with the demographic variables.

CHAPTER IV

ANALYSIS OF THE RESULTS

Introduction

The research focused on the relationship that technology skills, attitudes towards technology, burnout, and self-efficacy had on teachers' use of technology in the Atlantic Union Conference of Seventh-day Adventists, for a total of 356 people with 163 people responding to the survey representing 45% of the population. The surveys were distributed via Survey Monkey. The data was cleaned up and the sample of 149 was retained.

Demographic Description

In the following section, the demographic results were collected. This information included the Conference worked in, age, years of service, highest degree, gender, job role, and grade level taught. In Appendix B are the backing tables.

Conference

The highest percentage of respondents came from Northeastern Conference (61.1%). This was followed by 11.4% of the respondents coming from Bermuda Conference, and 9.4% coming from Greater New York Conference. An additional 8.1% came from Southern New England Conference, 7.4% from Northern New England Conference, and 2.7% came from New York Conference.

Age

The 51-60 age group is the highest with 30.9%. This is followed by the 41-50 age group with 26.8%. 20.1% of the teachers were over 61 years, the 31-40 age group was 18.1%, and the 21-30 age group was 4%.

Years of Service

Teachers working for 0-10 years was the highest with 38.9% followed closely by the 11-20 year group which accounted for 34.2%. The 21-30 year group is 14.1% and the 31 and more years of service is 12.8%.

Educational Level

The highest education level is the Master's Degree which was 57.7%. This was followed by Bachelor's Degree, which is 34.2%. 2% of the respondents held a Doctorate Degree.

Gender

When looking at gender, the distribution of participants in the research show that the female group represents 79.2% of the participants and the male group represents 20.8% of the participants.

Job Role

When looking at the roles that people work, 64.45 of the participants were teachers, 9.4% were principals, and 7.4% were Administrative Assistants. Of the participants, 12.8% were had a combination role of the teachers, principals, and/or Administrative

Assistants. Nine percent (9%) of the participants worked in the schools in other categories.

Grade Level Taught

When looking at the grade levels taught, 39.6% of the participants taught from Pre-Kindergarten to Grade 5. This was followed closely by 23.5% teaching in Grades 6-8, and 22.1% in Grades 9-12. Preschool teachers made up 3.4% of the participants and 10.1% were not classroom teachers but worked in the school. There was 1.3% who did not respond to this question.

Validity and Reliability

The exploratory factorial analysis procedure was used to evaluate the validity of the constructs of technology skills, attitudes towards technology, use of technology, burnout, and self-efficacy. The results of the validation of each variable are presented in the following paragraphs under the corresponding constructs. The statistical tests of the factor analysis for the constructs are presented below. In Appendix C are the backing tables.

Technology Skills

The factorial analysis procedure was used to analyze the validity of technology skills. In the analysis of the correlation matrix, it was found that 27 statements have a positive correlation coefficient greater than .3.

Regarding the sample adequacy measure KMO, a value very close to the unit (KMO = .942) was found. For the Bartlett sphericity test, it was found that the results (X^2 = 3,973.393, *df* = 351, *p* = .000) are significant. This means that there is good

correlation between the items in the construct.

For the extraction statistics by principal components and varimax rotation, it was found that the commonality values (Com_{min} = .611; Com_{max} = .848) are acceptable for the 27 items because they are higher than the extraction criterion (Com = .300). In relation to the total variance explained, an exploratory analysis was carried out with four factors, explaining 73.623% of the total variance, this value being greater than 50% established as a criterion.

Regarding the Rotated Component Matrix, the Varimax method was used. Table 2 presents information comparing the relative saturations, or factor loadings, of each indicator for the four factors of technology skills.

The first factor consists of 11 items and it is labelled, Basics (TSBA). These have high load factors in column 1, ranging from .306 to .811. TSBA had a Cronbach Alpha reliability coefficient of .951. This value is higher than .6 so it is considered persuasive with very good consistency.

Basic Technology Skills encompass the ability to access information from flash memory, insert and eject external memory, and create and delete folders. It also takes into account the ability to store files in folders, change font sizes and margins and connect peripheral devices. Within the Basic Skills, the item that had the most influence on technology skills was accessing information on CD-ROM, flash memory, and hard drives (r = .811). This influence is high as it is close to 1 and hence had the most importance in influencing Basic Technology Skill. Conversely, using an overhead projector device (r = .306) had the weakest influence on the variable as the value is closer to 0.

Table 2

Rotated Matrix for Technology Skills

	Component			
	BA	US	IP	WW
TS11BA Access information on CD-ROM, flash memory, or hard drive.	**.811**	.220	.176	.263
TS9BA Insert and eject external memory.	**.758**	.018	.239	.221
TS12BA Create and delete folders.	**.739**	.391	.308	.185
TS10BA Store files in a folder or subdirectory.	**.735**	.269	.344	.222
TS15BA Set margins.	**.682**	.496	.198	.099
TS14BA Connecting peripheral devices.	**.659**	.272	.449	.239
TS16BA Change font size and type.	**.633**	.323	.020	.462
TS17BA Cut, copy, and paste in and between documents.	**.627**	.422	.115	.305
TS18BA Insert files, graphics, and tables in a document.	**.602**	.540	.181	.350
TS25BA Share files electronically.	**.502**	.461	.294	.472
TSUS20US Move data within a spreadsheet.	.347	**.799**	.282	.101
TS21US Use formulas in a spreadsheet.	.240	**.760**	.353	.146
TS22US Create charts.	.250	**.738**	.344	.262
TS19US Enter data in cells.	.551	**.657**	.171	.215
TS24WW Work in a network environment.	.174	.546	.254	**.502**
TS34IP Have a knowledge of software piracy.	.205	.227	**.846**	.132
TS35IP Have a knowledge of intellectual property rights.	.245	.192	**.833**	.139
TS33IP Have a knowledge of copyright laws.	.158	.272	**.769**	.270
TS13IP Use of Virus protection.	.488	.291	**.498**	.199
TS32US Develop a presentation using sound.	.294	**.434**	.488	.439
TS27WW Navigate the World Wide Web.	.212	.002	.192	**.809**
TS26WW Send and receive e-mail.	.513	.162	.067	**.650**
TS23WW Log on to a network.	.313	.427	.147	**.575**
TS28WW Subscribe to a list-service.	.122	.343	.438	**.561**
TS29BA Use an overhead projection device.	**.306**	.210	.448	.525
TS31US Develop a presentation using graphics.	.302	**.426**	.432	.476
TS30US Develop an electronic slide show.	.422	**.366**	.367	.456

The second factor consists of seven items and it is called, Using Software (TSUS). These have high load factors in column 2, ranging from .366 to .799. TSUS had a Cronbach Alpha reliability coefficient of .935. This value is higher than .6 so it is considered persuasive with very good consistency.

Using Software looked at the ability to move data around in a spreadsheet, create charts and enter data into cells. It also took into account the ability to create an electronic slideshow. Within Software Usage, the item that had the most influence on

technology skills was moving data within a spreadsheet (*r* = .799). This influence is high as it is close to 1 and hence had the most importance in Software Usage. Conversely, developing an electronic slideshow (*r* = .366) had the weakest influence on the variable as the value is closer to 0.

The third factor consists of four items and it is called, Intellectual Property (TSIP). These have high load factors in column 3, ranging from .498 to .846. TSIP had a Cronbach Alpha reliability coefficient of .891. This value is higher than .6 so it is considered persuasive with good consistency.

Intellectual Property encompasses having a knowledge of software piracy, intellectual property rights, copyright laws and virus protection. Within Intellectual Property, the item that had the most influence on technology skills was having a knowledge of software piracy (*r* = .846). This influence is high as it is close to 1 and hence had the most importance in intellectual property. Conversely, using virus protection (*r* = .498) had the weakest influence on the variable as the value is closer to 0.

The fourth factor consists of five items and it is called World Wide Web. These have high load factors in column 4, ranging from .502 to .809. TSWW had a Cronbach Alpha reliability coefficient of .843. This value is higher than .6 so it is considered persuasive with good consistency.

When referring to the World Wide Web, teachers are looking at the ability to navigate the World Wide Web, sending and receiving emails, logging on to a network, and subscribing to a list-service. Within the World Wide Web, the item that had the most influence on technology skills was navigating the World Wide Web (*r* = .809). This influence is high as it is close to 1 and hence had the most importance in World Wide

Web. Conversely, working in a network environment using virus protection (r = .502) had the weakest influence on the variable as the value is closer to 0.

Attitudes towards Technology

The factorial analysis procedure was used to analyze the validity of attitudes towards technology. In the analysis of the correlation matrix, it was found that 21 statements have a positive correlation coefficient greater than .3.

Regarding the sample adequacy measure KMO, a value very close to the unit (KMO = .816) was found. For the Bartlett sphericity test, it was found that the results (X^2 = 1,156.430, df = 210, p = .000) are significant. Bartlett's Test is significant at .000 because the probability is less than .05. This means that there is good correlation between the items in the construct.

For the extraction statistics by principal components and varimax rotation, it was found that the commonality values (Com_{min} = .306; Com_{max} = .865), are acceptable for the 21 items because they are higher than the extraction criterion (Com = .300). In relation to the total variance explained, a confirmatory analysis was carried out with four factors, explaining 52.806% of the total variance, this value being greater than 50% established as a criterion.

Regarding the Rotated Component Matrix, the Varimax method was used. Table 3 presents information comparing the relative saturations of each indicator for the four factors of attitudes towards technology.

Table 3

Rotated Matrix for Attitudes towards Technology

	Component			
	PA	NA	CN	IT
AT47PA Using technology would facilitate the understanding of…	**.714**	-.196	.201	.104
AT46PA Technological facilities have a positive effect on productive…	**.703**	-.243	.242	.213
AT42PA Because video recordings could be watched again, student…	**.701**	-.159	-.007	.159
AT41PA Recording some parts of the lesson via video could provide…	**.694**	-.207	-.161	.094
AT50PA Lessons should often include computer-assisted instruction.	**.611**	-.146	.110	.230
AT43PA Technological tools could be used for practice or revision.	**.599**	-.306	-.132	.014
AT49PA Daily and yearly plans should be prepared by teachers…	**.536**	-.035	.126	.340
AT48CN One does not have to use technological facilities in order to…	-.491	-.250	**-.432**	.268
AT44PA Students should receive basic education on computer…	**.445**	-.443	.090	.078
AT37NA Overhead projectors and slides should not be preferred as…	-.055	**.730**	.216	-.093
AT39NA Using technological tools does not affect students'…	-.250	**.652**	-.178	-.174
AT38NA Using the Internet in the learning process is a waste of time.	-.123	**.620**	-.224	.030
AT36NA Email is only for communication; it cannot be used in…	-.204	**.507**	.085	-.004
AT40NA Technological tools do not need to be used in instruction.	-.381	**.501**	-.001	.011
AT55CN Having Google Certifications impacts how I teach my…	-.046	-.071	**.896**	.236
AT56CN Having Microsoft Office Certifications impacts how I teach.	.114	-.011	**.867**	.173
AT51IT Students should get advanced information on the usage of…	.076	-.020	.097	**.774**
AT54IT In order to be able to graduate from high school, the ability…	.224	-.092	.315	**.555**
AT52IT The usage of new technologies in teacher training should be…	.420	-.210	.086	**.553**
AT45IT Using current technologies would promote the improvement…	.357	-.363	.078	**.512**
AT53IT Technological tools could only succeed when they address…	.027	.340	.000	**.445**

The first factor consists of eight items and it is labelled, Positive Attitude (ATPA). These have high load factors in column 1, ranging from .445 to .714. ATPA had a Cronbach Alpha reliability coefficient of .840. This value is higher than .6 so it is considered persuasive with good consistency.

When looking at Positive Attitude, items like using technology to facilitate understanding, technology having a positive effect on studying and learning, and using video recordings to provide feedback were addressed. Additionally, this factor includes using computer-assisted instruction for practice and revision and using computers to prepare

plans. Within Positive Attitudes towards technology, the item that had the most influence on attitudes towards technology was using technology to understand difficult subjects (r = .714). This influence is high as it is close to 1 and hence had the most importance in Positive Attitudes. Conversely, using computers to produce daily and yearly plans (r = .445) had the weakest influence on the variable as the value is closer to 0.

The second factor consists of five items and it is labelled, Negative Attitude (ATNA). These have high load factors in column 2, ranging from .501 to .730. ATNA had a Cronbach Alpha reliability coefficient of .688. This value is higher than .6 so it is considered persuasive with good consistency.

When looking at Negative Attitudes towards technology, items looked at included using overhead projectors and slides as taking up too much time, technological tools not affecting student motivation, and internet usage as a waste of time. It also considered the concept of email usage not benefitting education and there not being a need to use technological tools in instruction. When looking at Negative Attitudes, the item that had the most influence on attitudes towards technology was overhead projectors and slides should not be preferred as they take too much time to be used (r = .730). This influence is high as it is close to 1 and hence had the most importance in Negative Attitudes. Conversely, technological tools do not need to be used in instruction (r = .501) had the weakest influence on the variable as the value is closer to 0.

The third factor consists of three items and it is labelled, Certification (ATCN). These have high load factors in column 3, ranging from .432 to .896. ATCN had a Cronbach Alpha reliability coefficient of .668. This value is higher than .6 so it is considered persuasive with good consistency.

Certifications include obtaining Google or Microsoft certifications to enhance teaching. It also looked at the concept of certifications as not being beneficial to teaching. Within Certification, the item that had the most influence on attitudes towards technology was having Google Certifications impacts how I teach my students (r = .896). This influence is high as it is close to 1 and hence had the most importance in Certification. Conversely, one does not have to use technological facilities in order to be successful in life (r = .432) had the weakest influence on the variable as the value is closer to 0.

The fourth factor consists of five items and it is labelled, Improvement of Technology (ATIT). These have high load factors in column 4, ranging from .445 to .774. ATIT had a Cronbach alpha reliability coefficient of .616. This value is higher than .6 so it is considered persuasive with good consistency.

When looking at Improvement of Technology, it refers to students getting advanced training in using new technologies as well as obtaining technology training in high school to meet the real-world demands. Additionally, it looked at increasing teacher training and using current technologies to promote the improvement of new ones. Within the Improvement of Technology, the item that had the most influence on attitudes towards technology was students should get advanced information on the usage of new technologies (r = .774). This influence is high as it is close to 1 and hence had the most importance on Improvement in Technology. Conversely, technological tools could only succeed when they address all the sense organs (r = .445) had the weakest influence on the variable as the value is closer to 0.

Use of Technology

The factorial analysis procedure was used to analyze the validity of use of technology. In the analysis of the correlation matrix, it was found that the 21 statements have a positive correlation coefficient greater than .3.

Regarding the sample adequacy measure KMO, a value very close to the unit (KMO = .897) was found. For the Bartlett sphericity test, it was found that the results (X^2 = 1,550.807, *df* = 210, *p* = .000) are significant. Bartlett's Test is significant at .000 because the probability is less than .05. This means that there is good correlation between the items in the construct.

For the extraction statistics by principal components and varimax rotation, it was found that the commonality values (Com_{min} = .393; Com_{max} = .782), are acceptable for the 21 items because they are higher than the extraction criterion (Com = .300). In relation to the total variance explained, a confirmatory analysis was carried out with four factors, explaining 59.908% of the total variance, this value being greater than 50% established as a criterion.

Regarding the Rotated Component Matrix, the Varimax method was used. Table 4 presents information comparing the relative saturations of each indicator for the five factors of use of technology.

The first factor consists of seven items and it is labelled, Internet Items (UTII). These have high load factors in column 1, ranging from .509 to .819. UTII had a Cronbach alpha reliability coefficient of .879. This value is higher than .6 so it is considered persuasive with good consistency.

Table 4

Rotated matrix for Use of Technology

	Component			
	II	HI	EI	TV
UT60II Internet	**.819**	.168	.200	.208
UT62II E-mail	**.805**	.128		.147
UT63II Search engine	**.792**	.236	.190	.244
UT61II www page	**.759**	.185	.266	.260
UT72II Microsoft Word, Pages, or Google Docs	**.665**	.374	.256	-.119
UT78II Browser	**.571**	.285	.351	
UT71II Microsoft Excel, Numbers, or Google Sheets	**.509**	.302	.109	-.339
UT83HI iPad or Tablet		**.773**	.118	.204
UT85HI Digital camera	.188	**.706**	.153	
UT84HI Flash memory like flash drives and SD cards	.229	**.679**	.201	
UT82HI Laptop or Chromebook	.313	**.629**	.286	
UT81HI Printer	.375	**.595**		.148
UT70HI Windows Media Player, QuickTime, or iTunes	.396	**.415**	.249	
UT75EI Supplemental websites for teaching like Khan Academy…	.107		**.763**	.272
UT76EI Educational games like Kahoot, Quizlet Live, etc.	.128	.270	**.662**	.230
UT74EI NAD Resources like Reading A-Z, IXL Math, etc.			**.656**	.107
UT79EI Projection	.193	.147	**.651**	-.226
UT73EI Microsoft PowerPoint, Keynote, or Google Slides	.277	347	**.650**	-.207
UT58EI Graphics	.328	.444	**.449**	
UT64TV Television	.291	.151		**.705**
UT65TV Video	.406	.191	.376	**.537**

When looking at Internet Items, they refer to the use of items like the internet, search engines, email, Google Docs and Google Sheets. Within Internet Items, the item that had the most influence on use of technology internet (r = .819). This influence is high as it is close to 1 and hence had the most importance in Internet Items. Conversely, Microsoft Excel, Numbers, or Google Sheets (r = .509) had the weakest influence on the variable as the value is closer to 0.

The second factor consists of six items and it is labelled, Hardware Items (UTHI). These have high load factors in column 2, ranging from .415 to .773. UTHI had a

Cronbach Alpha reliability coefficient of .812. This value is higher than .6 so it is considered persuasive with good consistency.

When looking at Hardware Items, they refer to the use of iPads, tablets, digital cameras, flash memory, laptops, Chromebooks, printers, and iTunes. Within the Hardware Items, the item that had the most influence on use of technology was iPads and tablets (r = .773). This influence is high as it is close to 1 and hence had the most importance in Hardware Items. Conversely, Windows Media Player, QuickTime, or iTunes (r = .415) had the weakest influence on the variable as the value is closer to 0.

The third factor consists of six items and it is labelled, Educational Items (UTEI). These have high load factors in column 3, ranging from .449 to .763. UTEI had a Cronbach Alpha reliability coefficient of .690. This value is higher than .6 so it is considered persuasive with good consistency.

When looking at Educational Items, they refer to supplemental websites like Khan Academy and Quizlet, education games like Kahoot, graphics, Google slides, projection, and NAD resources like Reading A-Z. Within the Educational Items, the items that had the most influence on use of technology was supplemental websites for teaching like Khan Academy and Quizlet (r = .763). This influence is high as it is close to 1 and hence had the most importance in Educational Items. Conversely, graphics (r = .449) had the weakest influence on the variable as the value is closer to 0.

The fourth factor consists of two items and it is labelled, Television (UTTV). These have high load factors in column 4, ranging from .537 to .705. UTTV had a Cronbach alpha reliability coefficient of .843. This value is higher than .6 so it is considered persuasive with good consistency.

When looking at Television, it refers to the use of televisions and videos. Within Television, the item that had the most influence on use of technology was televisions (r = .705). This influence is high as it is close to 1 and hence had the most importance in Television Items. Conversely, videos (r = .537) had the weakest influence on the variable as the value is closer to 0.

From this construct, eight items were removed. These items were: UT57 – Writing Board; UT59 – Book; UT66 – DVD; UT67 - CD; UT68 – Video Camera; UT69 – Paint; UT77 – Smart Board; UT80 – CD-ROM. These did not correctly fall under any of the factor categories. These items are either more outdated or fewer schools have them, and it did not accurately reflect what is generally available for use in the classrooms.

Burnout

The factorial analysis procedure was used to analyze the validity of burnout. In the analysis of the correlation matrix, it was found that the 21 statements have a positive correlation coefficient greater than .3.

Regarding the sample adequacy measure KMO, a value very close to the unit (KMO = .837) was found. For the Bartlett sphericity test, it was found that the results (X^2 = 1,334.214, df = 210, p = .000) are significant. Bartlett's Test is significant at .000 because the probability is less than .05. This means that there is good correlation between the items in the construct.

For the extraction statistics by principal components and varimax rotation, it was found that the commonality values (Com_{min} = .305; Com_{max} = .797), are acceptable for the 21 items because they are higher than the extraction criterion (Com = .300). In

relation to the total variance explained, a confirmatory analysis was carried out with three factors, explaining 50.763% of the total variance, this value being greater than 50% established as a criterion. Regarding the Rotated Component Matrix, the Varimax method was used. Table 5 presents information comparing the relative saturations of each indicator for the three factors of burnout.

Table 5

Rotated Matrix for Burnout

	Component		
	EE	PA	DE
BU93EE I feel burnt out from my work.	**.829**	-.070	.148
BU86EE I feel emotionally drained from my work.	**.824**	-.117	-.071
BU88EE I feel fatigued when I get up in the morning and have to face…	**.811**	.009	.024
BU87EE I feel used up at the end of the workday.	**.811**	-.083	-.097
BU98EE I feel frustrated by my job.	**.770**	-.050	.217
BU99EE I feel I'm working too hard on my job.	**.617**	-.013	.098
BU105EE I feel like I'm at the end of the rope.	**.517**	-.459	.206
BU97PA I feel very energetic.	-.501	**.312**	-.200
BU106DE I feel recipients blame me for some of their problems.	.498	-.162	**.190**
BU91EE Working with people all day is really a strain for me.	**.487**	-.255	.333
BU90DE I feel I treat some in my audience as if they were impersonal objects.	.409	-.350	**.247**
BU102PA I can easily create a relaxed atmosphere with my audience.	-.038	**.701**	-.029
BU104PA I have accomplished many worthwhile things in this job.	-.033	**.659**	-.131
BU94PA I feel I'm positively influencing other peoples' lives through my work.	.007	**.575**	-.019
BU92PA I deal very effectively with the problems of my audience.	-.080	**.563**	-.142
BU103PA I feel exhilarated after working closely with my audience.	-.218	**.553**	-.124
BU95DE I've become more callous toward people since I took this job.	.181	.046	**.873**
BU100DE I don't really care what happens to some people in my audience.	.068	-.370	**.652**
BU96DE I worry that this job is hardening me emotionally.	.556	.030	**.640**
BU101EE Working with people directly puts too much stress on me.	**.221**	-.314	**.613**
BU89PA I can easily understand how my audience feels about things.	.315	**.180**	-.417

The first factor consists of nine items and it is labelled, Emotional Exhaustion (BUEE). These have high load factors in column 1, ranging from .221 to .829. BUEE had a Cronbach Alpha reliability coefficient of .879. This value is higher than .6 so it is considered persuasive with good consistency.

When looking at Emotional Exhaustion, it refers to items like being drained from work, being fatigued in the mornings, feeling used up at the end of the day, feeling frustrated from your job, and feeling like one working too hard. Within Emotional Exhaustion, the item that had the most influence on use of burnout was I feel burnt out from my work (r = .829). This influence is high as it is close to 1 and hence had the most importance in Emotional Exhaustion. Conversely, working with people directly puts too much stress on me (r = .221) had the weakest influence on the variable as the value is closer to 0.

The second factor consists of seven items and it is labelled, Personal Accomplishment (BUPA). These have high load factors in column 2, ranging from .180 to .701. BUPA had a Cronbach alpha reliability coefficient of .634. This value is higher than .6 so it is considered persuasive with good consistency.

When looking at Personal Accomplishment, it refers to feeling energetic, creating a relaxed atmosphere, accomplishing much on your job, feeling as positively influence others, and feeling exhilarated after working. Within Personal Accomplishment, the item that had the most influence on burnout was I feel very energetic (r = .701). This influence is high as it is close to 1 and hence had the most importance in personal accomplishment. Conversely, I can easily understand how my audience feels about things (r = .180) had the weakest influence on the variable as the value is closer to 0.

The third factor consists of six items and it is labelled, Depersonalization (BUDE). These have high load factors in column 3, ranging from .190 to .873. BUDE had a Cronbach alpha reliability coefficient of .722. This value is higher than .6 so it is considered persuasive with good consistency.

When looking at Depersonalization, it refers to people blaming others for their problems, treating others like impersonal objects, becoming callous towards others, and not caring about others. Within Depersonalization, the item that had the most influence on burnout was I feel recipients blame me for some of their problems (r = .873). This influence is high as it is close to 1 and hence had the most importance in Depersonalization. Conversely, working with people directly puts too much stress on me (r = .190) had the weakest influence on the variable as the value is closer to 0.

It should be noted that while in the original Burnout survey, working with people directly puts too much stress on me leaded under emotional exhaustion, due to hoe how the surveyed teachers interpreted and answered this item, it loaded much better Depersonalization.

Self-efficacy

The factorial analysis procedure was used to analyze the validity of self-efficacy. In the analysis of the correlation matrix, it was found that the 10 statements have a positive correlation coefficient greater than .3.

Regarding the sample adequacy measure KMO, a value very close to the unit (KMO = .844) was found. For the Bartlett sphericity test, it was found that the results (X^2 = 906.935, df = 45, p = .000) are significant. Bartlett's Test is significant at .000

because the probability is less than .05. This means that there is good correlation between the items in the construct.

For the extraction statistics by principal components and varimax rotation, it was found that the commonality values (Com_{min} = .401; Com_{max} = .843), are acceptable for the 10 items because they are higher than the extraction criterion (Com = .300). In relation to the total variance explained, a confirmatory analysis was carried out with two factors, explaining 67.904% of the total variance, this value being greater than 50% established as a criterion.

Regarding the Rotated Component Matrix, the Varimax method was used. Table 6 presents information comparing the relative saturations of each indicator for the two factors of burnout.

Table 6

Rotated Matrix for Self-efficacy

	Component	
	SI	BI
SE113SI I am able to use video editing software.	**.886**	.070
SE112SI I am able to use graphic editors to create resources for teaching.	**.841**	.232
SE114SI I am able to use animation software.	**.837**	.039
SE115SI I am able to use conferencing software for collaboration purposes.	**.797**	.294
SE116SI I am able to use learning management systems, like Blackboard and…	**.610**	.169
SE111SI I am able to use a spreadsheet to record data, compute simple…	**.597**	.442
SE109BI I am able to use email for communication.	.052	**.917**
SE108BI I am able to use the internet to search for information and resources.	.075	**.891**
SE107BI I am able to use a word processor to create, edit, and format…	.313	**.680**
SE110BI I am able to use presentation software for classroom delivery.	.521	**.626**

The first factor consists of six items and it is labelled, Sophisticated (SESI). These have high load factors in column 1, ranging from .597 to .886. SESI had a Cronbach alpha reliability coefficient of .885. This value is higher than .6 so it is considered persuasive with good consistency.

When looking at Sophisticated Skills, they refer to the ability to use video editing software, graphic editors, animation software, conferencing software, and learning management systems. Within Sophisticated Skills, the item that had the most influence on self-efficacy was I am able to use video editing software (r = .886). This influence is high as it is close to 1 and hence had the most importance in sophisticated efficacy. Conversely, I am able to use a spreadsheet to record data, compute simple calculations, and represent data in the form of tables and graphs (r = .597) had the weakest influence on the variable as the value is closer to 0.

The second factor consists of four items and it is labelled, Basic (SEBI). These have high load factors in column 2, ranging from .626 to .917. SEBI had a Cronbach Alpha reliability coefficient of .796. This value is higher than .6 so it is considered persuasive with good consistency.

When looking at basic skills, they refer to being able to use email for communication, being able to use the internet to search for information and being able to use word processors to create and edit documents. Within Basic Skills, the item that had the most influence on self-efficacy was I am able to use email for communication (r = .917). This influence is high as it is close to 1 and hence had the most importance in basic efficacy. Conversely, I am able to use presentation software for classroom delivery (r = .626) had the weakest influence on the variable as the value is closer to 0.

Descriptive about Constructs

Descriptive results for the variables studied and their factors are presented below**.** In Appendix D are the backing tables.

Technology Skills

In Technology Skills the mean was 3.9 (*SD* = 0.781), indicating that the skills are satisfactory, since the scale is from 1 to 5, where 5 indicates very satisfactory or developed. Figure 1 shows that the distribution is quite close to normality since the skewness and kurtosis values are less than the absolute value unit. Within this distribution, it is seen that a significant grouping of teachers is perceived between the values of 4.5 and 5; and very few teachers with values lower than 2.5.

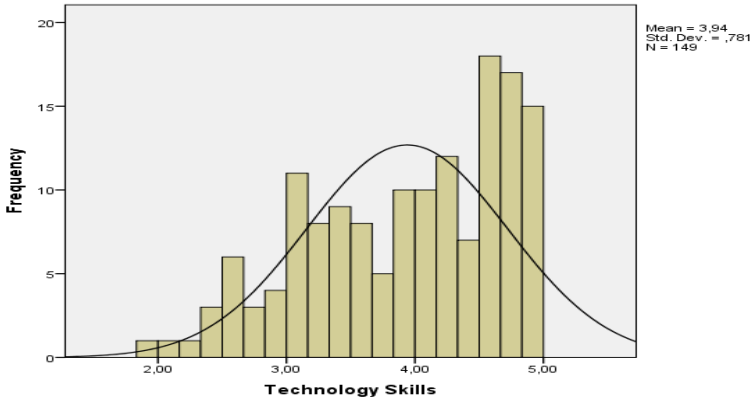


Figure 1. Histogram with Normal Curve Technology Skills.

When considering the factors of Technology Skills (see Table 7), the basic skills and use of the World Wide Web can be identified as the most developed, while at the same time there is some lack of knowledge or practice regarding Intellectual Property. It is notable that the only items that obtained an average above 4.5, showing a high

level of development, are those that refer to the use of email and browsing in the web, as well as copying and pasting between documents and accessing information on external memory hardware. The factors where the greatest difference of opinion is perceived, is in the use of software since it presents the highest standard deviation.

Table 7

Descriptive for Technology Skills and the Factors

Code	Variable	*M*	*SD*	Skewness	Kurtosis
TSBA	Basic	4.2	0.792	-0.766	-0.493
TSUS	Using software	3.7	1.015	-0.412	-0.890
TSIP	Intellectual property	3.4	0.983	-0.150	-0.624
TSWW	World Wide Web	4.2	0.679	-0.598	-0.707
TS	Technology Skills	3.9	0.781	-0.515	-0.790

Attitudes towards Technology

In Attitudes Towards Technology the mean was 4.0 (*SD* = 0.406), indicating that the attitudes are satisfactory, since the scale is from 1 to 5, where 5 indicates very satisfactory. Figure 2 shows that the distribution is quite close to normality due to the skewness value being less than the absolute value unit. However, the kurtosis value is greater than 3 indicating that the distribution has a heavier tail than an actual normal distribution. Within the distribution, it is seen that a significant grouping of teachers are perceived between the values of 3.5 and 4.5; and very few teachers had values lower than 2.0.

When considering the factors of Attitudes Towards Technology (see Table 8), having a positive attitude was shown the most while at the same time few teachers

were shown to have a negative attitude. It is notable that the only items that obtained an average above 4.5, showing a high attitude, are those that refer to students receiving basic education in computer literacy. The factors where the greatest difference of opinion is perceived, is in having certifications, since it presents the highest standard deviation.

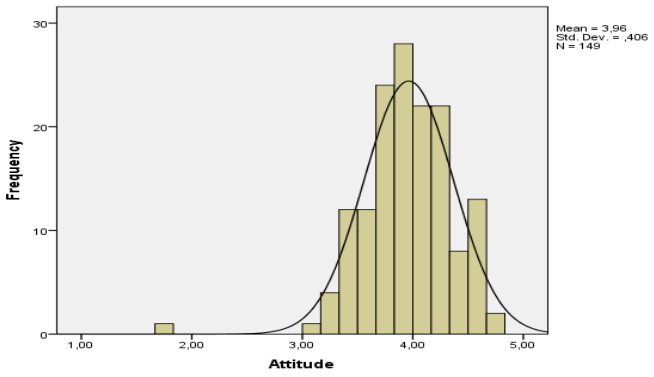


Figure 2. Histogram with Normal Curve Attitude.

Table 8

Descriptive for Attitudes towards Technology and the Factors

Code	Variable	*M*	*SD*	Skewness	Kurtosis
ATNA	Negative	1.6	0.545	1.094	2.273
ATPA	Positive	4.2	0.519	-1.258	6.775
ATIT	Improvement of Technology	3.8	0.491	0.040	0.226
ATCN	Certification	3.0	0.829	0.046	-0.231
AT	Attitudes	4.0	0.406	-0.922	4.194

Use of Technology

In Use of Technology the mean was 3.3 (*SD* = 0.676), indicating that the technology use is satisfactory, since the scale is from 1 to 5, where 5 indicates very satisfactory or developed. Figure 3 shows that the distribution is quite close to normality,

since the skewness and kurtosis values are less than the absolute value unit.

When considering the factors of Use of Technology (see Table 9), the internet is used the most while at the same time there is some lack in the use of educational items. It is notable that the items that obtained an average above 3.5, were the use of search engines, emails, internet, Microsoft Word, web pages, printers, browsers, and laptops/Chromebooks. The factors where the greatest difference of opinion is perceived, is in the use of television items, since it presents the highest standard deviation.

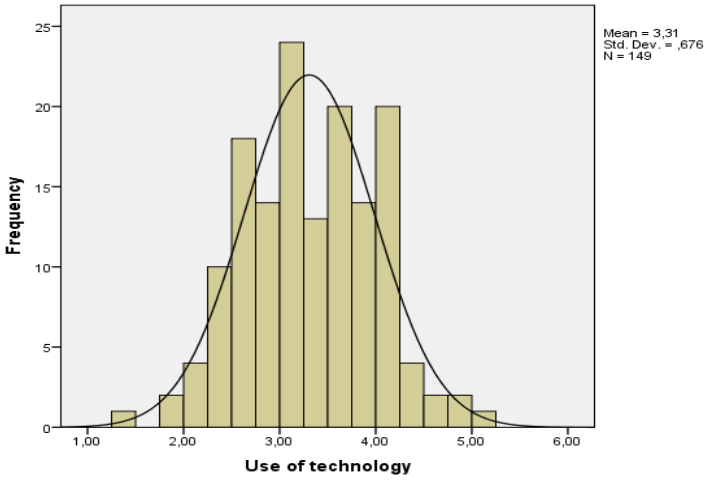


Figure 3. Histogram with Normal Curve Use of Technology.

Table 9

Descriptive for Use of Technology and the Factors

Code	Variable	M	SD	Skewness	Kurtosis
UTII	Internet	3.7	0.803	-0.358	-0.655
UTHI	Hardware	3.3	0.855	0.080	-0.664
UTEI	Educational	2.9	0.782	0.281	0.118
UTTV	Television	3.1	0.914	0.576	-0.037
UT	Use of Technology	3.3	0.676	0.027	0.452

Burnout

In Burnout the mean was 2.31 (*SD* = 0.531), indicating that the burnout levels are satisfactory, since the scale is from 1 to 5, where 5 indicates very unsatisfactory. Figure 4 shows that the distribution is quite close to normality, since the skewness and kurtosis values are less than the absolute value unit. Very few teachers have values higher than 3.5.

When considering the factors of Burnout (see Table 10), personal accomplishment was felt the most while at the same time depersonalization was felt the least. In fact, the items that obtained an average above 4.0, were that teachers felt that they were positively influencing the lives of other people and that they felt they had accomplished many worthwhile things in their job. The factors where the greatest difference of opinion is perceived, is in emotional exhaustion, since it presents the highest standard deviation.

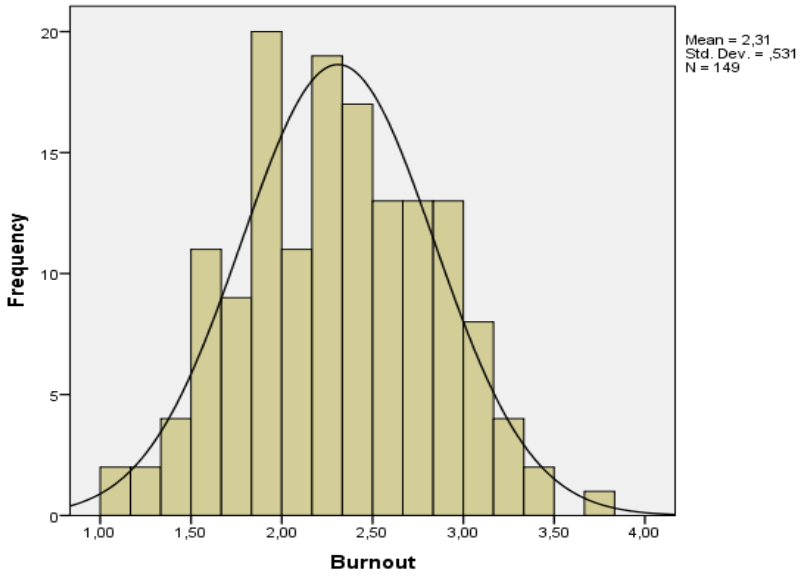


Figure 4. Histogram with Normal Curve Burnout.

Table 10

Descriptive for Burnout and the Factors

Code	Variable	*M*	*SD*	Skewness	Kurtosis
BUEE	Emotional Exhaustion	2.6	0.783	0.162	-0.509
BUPA	Personal Accomplishment	3.8	0.464	0.078	0.638
BUDE	Depersonalization	2.0	0.636	0.429	-0.298
BU	Burnout	2.3	0.531	-0.020	-0.385

Self-efficacy

In Self-efficacy the mean was 3.9 (*SD* = 0.704), indicating that the skills are satisfactory, since the scale is from 1 to 5, where 5 indicates very satisfactory or developed. Figure 5 shows that the distribution is quite close to normality, since the skewness and kurtosis values are less than the absolute value unit, although an important grouping of teachers is perceived between the values of 4.5 and 5; and very few teachers with values lower than 2.5.

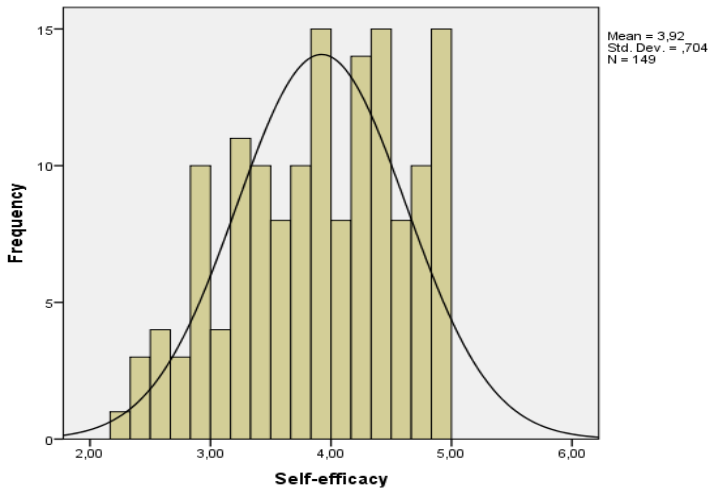


Figure 5. Histogram with Normal Curve Self-efficacy.

When considering the factors of Self-efficacy (see Table 11), basic self-efficacy was felt the most and sophisticated self-efficacy was felt the least. It is notable that the only items that obtained an average above 4.0, were the ability to use email for communication, to use word processors to create, edit, and format documents and presentation software for classroom delivery. The factors where the greatest difference of opinion is perceived, is in sophisticated self-efficacy since it presents the highest standard deviation.

Table 11

Descriptive for Self-efficacy and the Factors

Code	Variable	*M*	*SD*	Skewness	Kurtosis
SEBI	Basic	4.6	0.534	-0.929	-0.462
SESI	Sophisticated	3.5	0.939	-0.184	-0.902
SE	Self-efficacy	3.9	0.704	-0.311	-0.846

Hypothesis Testing

Given that all the variables considered in the study are metric, it was decided to use a structural equation model to identify the potential of the predictors, both direct and indirect, of the integration of technology in the classroom. In this sense, a model was sought with the best level of adjustment and at the same time supported by theory.

The identified model is shown in Figure 6. The model achieves three of the five adjustment measures used: Relative Chi Square less than 3, *CFI* greater than .9 and *RMSEA* less than .08. Based on these criteria, it was decided to accept the model to make a decision regarding the null hypothesis. In Appendix E are the backing tables.

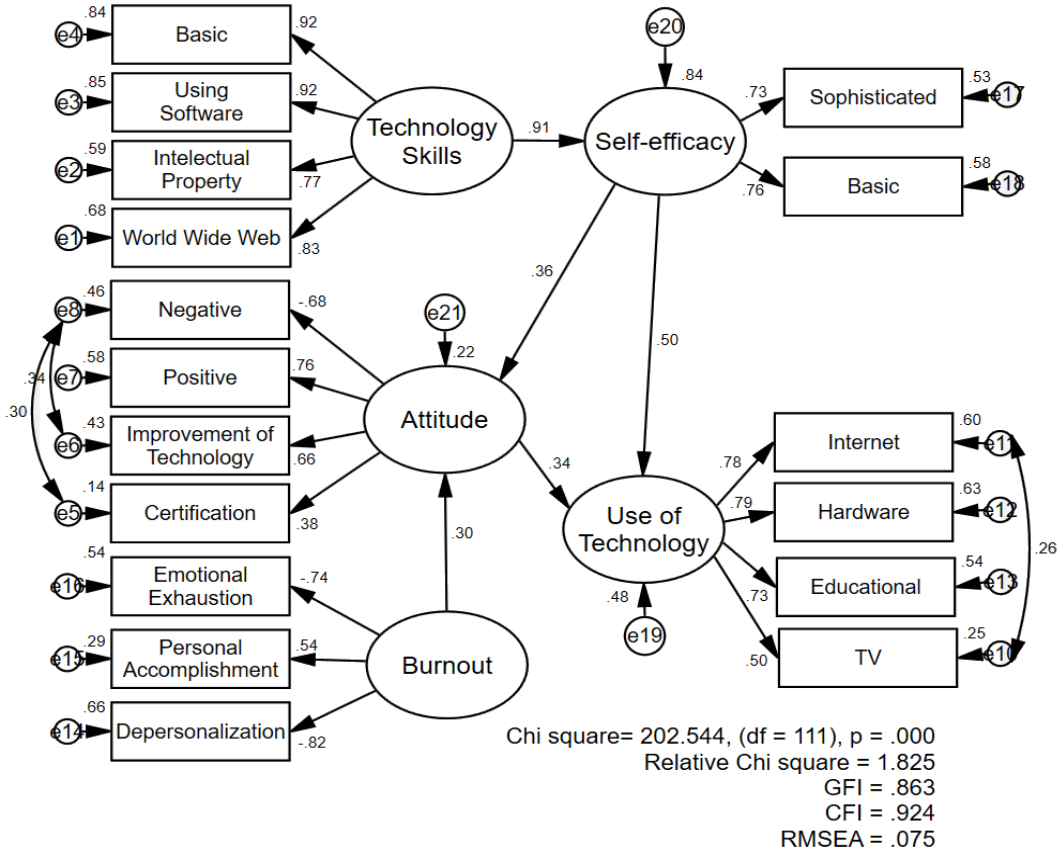


Figure 6. Structural Model with Standardized Estimates.

The null hypothesis (Ho) establishes that the technology skills, self-efficacy, attitude towards technology and Burnout do not significantly explain the use of technology. Considering the structure model, the self-efficacy factors (β = .50, p < .001) and Attitude (β = .34, p < .001) directly explain the use of technology. Technology skills (γ = .91, p < .001) and Burnout (γ = .30, p = .006) indirectly through self-efficacy and attitude, respectively. Furthermore, Self-efficacy (β = .36, p < .001) also indirectly explains through Attitude, the Use of technology. Based on this evidence, sufficient evidence is considered to reject the null hypothesis and accept the research hypothesis. The explanatory power of the variables is 48% of the variance in the use of technology.

Regarding the measurement model, very good consistency is observed between the factors, since the parameters are quite similar, with the exception of certification (λ = .38) in attitude towards technology. Technology skills highlight basic (λ = .92) and software usage skills (λ = .92). Attitude is the positive (λ = .76) aspect as the most important. The aspect of depersonalization (λ = -.82) is the one that contributes the most to the concept of Burnout. Self-efficacy is balanced in both the basic (λ = .76) and sophisticated (λ = .72) aspects. Finally, the use of technology is defined by all its factors with the exception of the use of TV (λ = .50).

Other Results

Having received the results that were directly related to the hypothesis, additional results were also seen during an independent samples test. In Appendix F are the backing tables.

Conference

The first independent sample compared the teachers in the largest group (Northeastern Conference – 91 participants) with the combination of all the other conferences (n = 58). Across most items, the other conferences had a mean response similar to those in Northeastern Conference. However, it should be noted that when it came to the use of TV items, the mean in the other conferences (M = 2.8, SD = .830) is lower ($t_{(147)}$ = 2.433, p = .016) than in NEC (M = 3.2, SD = .940). The effect size, using Cohen, is of low importance (d = .41).

Age

Independent sampling was also done to look at the technology use across the age groups. This took into account educators that were under 50 years old and those who were 50 years old and above. Regarding age, differences were found in technology skills and self-efficacy and all its factors. Difference was also found in the educational use of technology (see Figure 7). In all cases, teachers under the age of 50 obtained higher averages. The most important effect sizes are in: Using software (d = .60), technology skills (d = .53), self-efficacy (d = .51), self-efficacy in the sophisticated abilities (d = .50) and basic technology skills (d = .50).

Years of Service

The years of service of the respondents were looked at and compared across the factors. Educators who have worked for 0-10 years had the highest level of basic technology skills ($F_{(2,146)}$ = 3.711, p = .027), use of software ($F_{(2,146)}$ = 4.695, p = .011), use of the world wide web ($F_{(2,146)}$ = 4.970, p = .008), and overall technology skills ($F_{(2,146)}$ = 4.356, p = .015) (see Table 12). As you can see, the effect size is moderately important, mainly among extreme groups.

Gender

While gender did not have an effect on most of the factors, males were seen to have a higher mean in intellectual property ($t_{(147)}$ = 2.711, p = .008), feelings of depersonalization ($t_{(147)}$ = 2.126, p = .035), and sophisticated skills ($t_{(147)}$ = 2.547, p = 0.12). Overall, males had a higher level of self-efficacy ($t_{(147)}$ = 2.278, p = 0.024) (see Table 13).

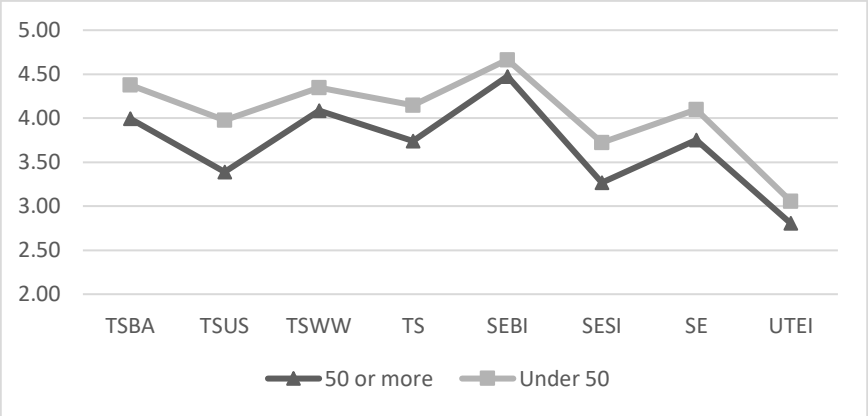


Figure 7. Profile of Means for Variables According to the Age of Teachers.

Table 12

Descriptive for Variables According to Years of Service

Variable	Years of service	N	M	SD	d
TSBA Basic	0-10	58	4.3	0.763	0.53
	11-20	51	4.2	0.750	
	21 or more	40	3.9	0.833	
TSUS Using software	0-10	58	3.9	1.052	0.61
	11-20	51	3.7	0.920	
	21 or more	40	3.3	0.985	
TSWW World Wide Web	0-10	58	4.4	0.612	0.62
	11-20	51	4.3	0.671	
	21 or more	40	3.9	0.716	
TS Technology Skills	0-10	58	4.1	0.776	0.58
	11-20	51	4.0	0.718	
	21 or more	40	3.6	0.802	

Note: The value of Cohen's d is for the comparison of the extreme groups

Table 13

Descriptive for Variables According to Gender

	Gender	*N*	*M*	*SD*	*d*
TSIP Intellectual property	Male	31	3.8	0.921	0.56
	Female	118	3.3	0.973	
BUDE Depersonalization	Male	31	2.2	0.663	0.42
	Female	118	1.9	0.619	
SESI Sophisticated	Male	31	3.9	0.868	0.53
	Female	118	3.4	0.936	
SE Self-efficacy	Male	31	4.2	0.654	0.47
	Female	118	3.9	0.704	

Role at Work

The respondents were divided into two categories based on their job roles. These categories included those that were specifically teachers and those that had additional roles within the school. Specific factors in which this combined group scored significantly higher than the teachers were on the use of internet ($t_{(147)}$ = 2.893, p = .004) and on the use of technology ($t_{(147)}$ = 2.018, p = .045) (see Table 14).

Table 14

Descriptive for Variables According to Job Role

	Job Role	*N*	*M*	*SD*	*d*
UTII Internet	Other	53	4.0	0.757	0.50
	Teacher	96	3.6	0.798	
UT Use of technology	Other	53	3.5	0.662	0.35
	Teacher	96	3.2	0.674	

Grade Level Taught

Independent sampling was also done on the group, dividing the respondents by the grade levels taught. The categories were Pre-Kindergarten to Grade 5 and Grades 6 to 12. While generally, there was not a large difference across the grade levels, educators teaching Grades 6 to 12 scored notably higher in basic technology skills ($t_{(145)}$ = 4.194, p = .000, d = .69), using software ($t_{(145)}$ = 1.4.952, p = .000, d = .82), knowledge of intellectual property ($t_{(145)}$ = 4.875, p = .000, d = .81), knowledge of the world wide web ($t_{(145)}$ = 3.675, p = .000, d = .61), technology skills ($t_{(145)}$ = 4.968, p = .000, d = .82), basic ($t_{(125.404)}$ = 4.4992.461, p = .015, d = .41) and sophisticated self-efficacy ($t_{(145)}$ = 2.945, p = .004, d = .49), and self-efficacy ($t_{(145)}$ = 3.138, p = .002, d = .52). Educators

in grades pre-kindergarten to grade 5 scored higher on their use of TV items ($t_{(145)}$ = 1.993, p = .048, d = .33) (see Figure 8).

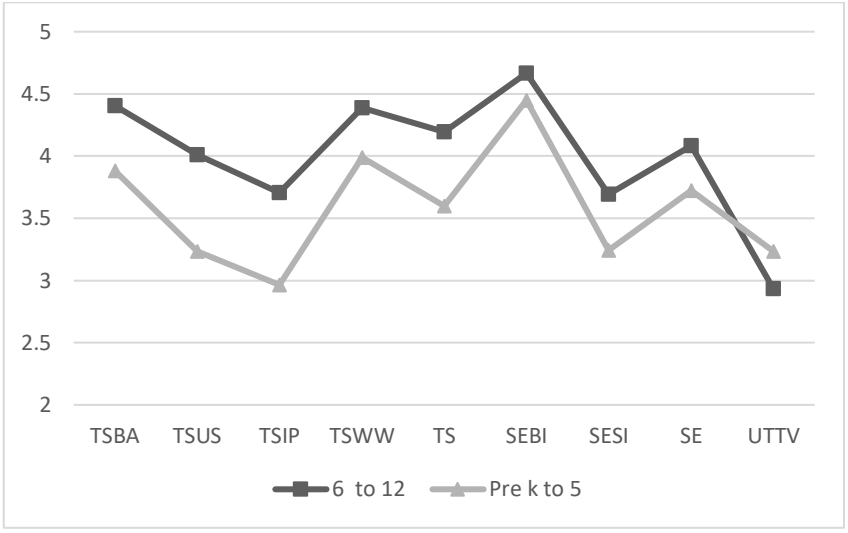


Figure 8. Profile of Means for Variables According to the Grade Level Taught.

CHAPTER V

SUMMARY, CONCLUSIONS, DISCUSSIONS AND RECOMMENDATIONS

Introduction

The research focused on the relationship that technology skills, attitudes towards technology, use of technology, burnout, and self-efficacy had on teachers' technology integration in the Atlantic Union Conference of Seventh-day Adventists. There were 163 people responding to the survey representing 45% of the population. The surveys were distributed via Survey Monkey. The data was cleaned up and the sample of 149 was retained.

Summary

Within the United States of American's educational system, the integration of technology is one of great debate and study. The curriculum is becoming more technology-infused and there is a need for teachers to be versed in adding it to the various subjects taught. While traditional teaching still dominates the system, there is a greater movement towards the addition of technology. This addition of technology allows students different avenues to master content. With this momentum for integration comes the challenge that is faced with teachers who are not as knowledgeable in 21st Century technology aspects. Teachers need to be able to meet the needs of their students and be able to prepare them for the job market that they are going to face upon graduation.

Problem

The problem involves inquiring how teachers' technology skills, attitudes towards technology, use of technology, burnout, and self-efficacy impact technology integration in the Seventh-day Adventist schools of the Atlantic Union Conference.

The problem statement of the present investigation is as follows:

How do teachers' technology skills, attitudes towards technology, use of technology, burnout, and self-efficacy impact teachers' attitudes towards the use of technology in the Seventh-day Adventist schools of the Atlantic Union Conference?

Methodology

This quantitative research is using the Ex Post Facto research design which is used as a replacement for experimental designs when cause and effect hypotheses have to be tested. Within this research, surveys were sent to all the teachers in the schools of the Atlantic Union Conference to determine what effect technology skills, attitude toward technology, use of technology, burnout, and self-efficacy have on the independent variable technology integration. As some of the school populations are small, it was advised to survey everyone to get a better number of respondents.

The research used the Instrument on Aspects Influencing Technology Integration survey as the main instrument for the study. The survey explored age, years of service, highest degree, gender, job role, and grade level taught.

The research focused on the relationship that technology skills, attitudes towards technology, use of technology, burnout, and self-efficacy had on teachers’ technology integration in the Atlantic Union Conference of Seventh-day Adventists.

The study looked at the distribution of the years of service given by teachers and volunteers. The 0 to 10 years' group is the highest category with 38.9%, followed closely by the 11 to 20 years' group which accounted for 34.2%. The 21 to 30 years' group contained 14.1% and the 31 and more years of service is 12.8%.

The study also looked at the distribution of the educational level of the teachers. The highest level is the Master's Degree which is 57.7%. This was followed by Bachelor's Degree, which is 34.2%. Only 2% of the respondents held a Doctorate Degree.

The participants who completed the responses teach across all subjects in Pre-Kindergarten to Grade 12. All teaching participants were chosen to be a part of the research. Ages ranged from 21 to 61+ years old with 73.1% of the participants serving from 0 to 20 years. The sample also consisted of 31 males and 118 females.

Hypothesis

The hypothesis for this research was the following:

H_1: Teachers' technology skills, attitudes towards technology, burnout, and self-efficacy impact use of technology in the Seventh-day Adventist schools of the Atlantic Union Conference.

Procedures for Data Analysis

Before proving the hypothesis, descriptive statistics like mean, standard deviation, histograms, and frequency tables were used to show the distribution of the variables to find out the behavior of the variables in the studied population. After, to prove the hypothesis, inferential statistics were used to explore relations between the principal variables with the demographic variables.

Prior to statistical analysis, certain statistical procedures were applied for the detection of outliers and missing data to ensure that the information was well supplied.

Results

Upon completion of the analysis, several factors were seen to affect each variable. Technology skills were primarily influenced by the use of both basic technology and software. The World Wide Web and intellectual property were also influential in the technology skills of the teachers. People who had a positive attitude towards technology had the greatest influence on actually using technology. Similarly, it was also seen that people who had a generally negative attitude also had a negative attitude towards the use of technology and did not want to integrate it efficiently into their lessons.

Independent sample showed that when Northeastern Conference was compared to a combination of the other conferences, the use of TV items was higher in the other conferences than in Northeastern Conference. It was also seen that teachers under 50 years old have a higher level of technology skills than those over 50. This trend held true also for the use of software, intellectual property, World Wide Web skills, educational information, basic and sophisticated self-efficacy.

Further independent samples were carried out revealing that educators who had worked 0 to 10 years had the highest level of basic technology skills, use of software, and use of the World Wide Web. It was also seen that those who had worked 11 to 20 years showed the highest improvement towards technology and had the highest basic self-efficacy.

Education level did not play a part in the response of the educators except that those in the pre-graduate group had higher levels of negative attitude and internet technology usage.

Independent sampling related to gender showed that males have higher basic technology skills. They also had higher level of software usage, intellectual property, software skills, and sophisticated skills. This group also had higher feelings of depersonalization. Males portrayed a higher level of self-efficacy than females.

Further independent sampling looked at the roles that educators had in the school. This was divided into teachers and other workers who had additional roles aside from teaching. The combined group was higher in their basic technology skills, positive attitude, internet usage, and overall use of technology.

The respondents were divided by the grade level taught. Educators in Grades 6 to 12 had higher basic technology skills, use of software, knowledge of intellectual property, and use of the World Wide Web. These teachers also had a higher level of basic self-efficacy than teachers in Pre-Kindergarten to Grade 5. However, teachers in Pre-Kindergarten to Grade 5 scored higher in TV items than did the educators in Grades 6 to 12.

Discussion of the Results

The hypothesis stated that technology skills, attitudes towards technology, burnout, and self-efficacy affect use of technology in the SDA schools of the Atlantic Union Conference of SDA.

Participants in the Pk-12 schools were unbiasedly given online surveys related to the aspects being tested. According to the statistical analysis applied, correlations were seen between the constructs as it related to technology integration.

Based on the research, it can be said that the use of technology is determined primarily by the self-efficacy of an educator and then by the attitude that he/she has towards technology in general. Additionally, it can be seen that there is a correlation between the level of burnout an educator faces and their technology attitude. Burnout had no significance on the use of technology. Similarly, technology skills also do not determine the teachers' use of technology.

When looking at the arithmetic means for technology skills, it suggests that while most of the population was not as strong on using software, they scored high in their usage of the internet and basic skills.

Looking at the arithmetic means for attitudes towards technology, it was seen that educators generally had a high attitude towards technology use. Breaking this down into components, most educators were positive and saw very little negatives as it related to technology. They saw improvement of technology to be a positive but were relatively neutral as it related to having technology certifications. Technology certifications are a newer aspect that is generally thought of as pertaining to those educators working directly with computers. Due to its less known relevance, teachers were generally neither positive nor negative towards this aspect, but they rather held a neutral ground in this aspect.

The first independent sample compared the teachers in the Northeastern Conference (NEC) with those in the other conferences (Other). Across most items, the other

conferences had a mean response similar to those in Northeastern Conference. However, it should be noted that when it came to the use of TV items, the variance between the conferences is higher with the combination of all the other conferences.

On the other hand, independent samplings were done to look at the technology use across the age groups. Many variances in means were seen during this sampling. When it came to using basic technology skills, teachers under 50 years old were seen to have a higher level of basic technology skills than those over 50 years old. Additionally, educators who have worked for 0 to 10 years had the highest level of basic technology skills and those who had worked 11 to 20 years showed the highest improvement towards technology as well as having the highest level of basic self-efficacy.

Educators were divided into two categories related to their level of education. The categories were pre-graduate (59 respondents) and post-graduate (89 respondents). When comparing these two groups, there were no significant differences between the groups. When compared across all the tested factors it was seen that the pre-graduate group had a higher use of the internet. This heightened level of internet use could come from the fact that pre-graduate educators spend more time on the internet completing classes for teacher certification or they are enrolled in school to further their degrees. Despite this group having a high internet use, they were also seen to have a higher negative attitude than the post-graduate group. This negativity is possibly from the fact that while the pre-graduate teachers are taking many online classes, they feel overwhelmed from the pressure of work-related internet use at the sacrifice of completing activities of their own personal interest.

While gender did not have an effect on most of the factors, there were some that did stand out as having a large variance in mean. It was significant to note that males showed higher technology skills and had a greater self-efficacy than their female colleagues. Additionally, males had higher feelings of depersonalization as well as they used software more than their female co-workers. Males also scored higher on having sophisticated skills and overall had higher technology skills.

Some educators worked only as teachers and others worked in combined roles within the school. The educators who worked only as a teacher scored lower across most factors than those who worked in combined positions. Nevertheless, there were some factors wherein the combined group of educators scored higher included having higher basic technology skills and having a more positive attitude. Overall, the combined group scored higher on their use of technology.

The educators were divided by the grade levels taught. These grade levels were divided into two categories which were Pre-Kindergarten to grade 5 and grades 6 to 12. While generally there were not many differences between the grade levels, educators in grades 6 to 12 were seen to score higher in basic technology skills, using software, knowledge of intellectual property, and the World Wide Web. Additionally, basic self-efficacy was also seen to be higher in the grades 6 to 12 teachers. On the other hand, educators in Pre-Kindergarten to grade 5 were seen to use more TV items in their classes.

Technology Skills

It was seen that basic technology skills were generally present among the educators. However, when it came to more technical aspects, educators who were older

and had been working longer did not have as much knowledge in software and technology skills as compared to their younger colleagues. Some of these specific technology skills included using software, intellectual property, and the use of the World Wide Web. Younger teachers are born into the technological age and have grown up with technological devices as a way of life. Younger teachers have been more exposed to these items more than the older teachers who were introduced to them later in life. Lei (2009) carried out a study wherein the younger educators were referred to as digital natives as they have grown up in the technological age and are used to having technology as a way of life. These digital natives were very proficient with basic technology and website usage. Lei also noted that systematic technology training was needed to increase both advanced technologies and classroom technologies within these digital natives.

Furthering this thought, Tayler and Rose (2005) also make the point that older learners are discouraged from learning technology due to them lacking basic computer skills and being a part of the digital divide. Lei further states that systematic technology training was needed to increase both advanced technologies and classroom technologies.

Attitudes towards Technology

It was seen that educators generally had a positive attitude towards technology. This concept is supported by Rana (2016) who notes that most teachers have a positive attitude towards the role of technology in the educational process.

Males educators also had a more positive attitude than female educators. This sentiment was mirrored in a study carried out by Broos (2005), where it was seen that

females had a less positive attitude towards both the internet and computers. In the study by Broos, the males were seen to have less computer anxiety which caused them to be have a more positive attitude. It seems that this occurs because males are more interested in technological artifacts than females and they hence spend more time with technology. Rosenbloom, Ash, Dupont, and Coder (2008) make note of the fact that over the years gender segregation and discrimination in the workforce has caused females not to be a part of technology jobs. This led to differences in education backgrounds between the genders which directly affected career choices of IT and non-IT professions. Rosenbloom, et. al. (2008) went on to say that over the years men and women on average value different aspect of work.

Use of Technology

The biggest use of technology was in the use of the internet and hardware. There are many online resources being produced to supplement the textbooks that teachers have to access on a daily basis. Additionally, online educational resources are made available to schools throughout the North American Division of Seventh-day Adventists which are intended to be used as learning supplements. It was also seen that teachers in Pre-Kindergarten to Grade 5 used more televisions and media while those in Grades 6 to 12 use more online supplements like Khan Academy and others. Lenhart, Simon, and Graziano (2001) carried out a study that revealed that not only are most teenagers using the internet for research and school assignments, parents also strongly believe that the internet aids their children in completing assignments for school. This can be a reason why the biggest use of technology is in the use of the internet. Parents see technology as essential to the education of their child.

In support of technology use, Tweed (2013) notes that teacher' technology use is significantly positively impacted by the self-efficacy and Ozdemir (2017) posits that an increase in teachers' technology competence causes an increase in their attitudes towards technology and hence will lead to using more technology in lessons.

Burnout

It was seen that male educators suffered from more burnout than the female educators. Nevertheless, burnout in educators is very difficult to investigate as there are not a lot of authors that have looked at this aspect in the educational field. However, it has been researched in depth as it relates to the medical field. Nevertheless, Brunsting, Sreckovic, and Lane (2014) state in a research that four factors attribute to teacher burnout. These factors are health issues, teacher attrition rates, poor student outcomes, and challenging student behavior. Adding to the commentary of the previous authors, Farber (1991) also noted that teacher burnout is further encouraged by an increase in public criticism and low pay. Schwab and Iwanicki (1982) looked at teacher burnout as a result of conflicts and ambiguity in teacher roles which lead to additional stress on the teacher and feelings of burnout. Antoniou, Polychroni, and Vlachakis (2006) looked at burnout across the genders in teachers. In their study, they noted that the females had very high levels of stress which lead to emotional exhaustion from interactions with their colleagues, students' progress and workload. Younger teachers were also seen to experience high levels of burnout due to emotional exhaustion along with disengagement. Older teachers were seen to have high stress due to a lack of support from the government.

Khan Yusoff, and Khan (2014) note that job demands create negative pressure on daily routine causing negative symptoms of burnout and an inability to function and Bakker, Le Blanc, and Schaufeli (2005) state that perceived burnout complaints were predicted primarily by emotional exhaustion and depersonalization.

The results of Antoniou, et al. (2006) were different from this research as while the females teachers in that study had higher levels of burnout, the males in this research were the ones that reflected the higher levels of burnout. It is possible that as there are fewer male educators, they feel that they do not have as large a support system because there are fewer males, as do their female counterparts who can easily find another female teacher to support them.

Self-efficacy

Younger educators had a higher self-efficacy than their older colleagues. This is due to the fact that they have grown up in the technological age and are accustomed to using various forms of technology in their daily lives. It was also seen that educators who have been working the longest, have the lowest level of self-efficacy possibly due to the fact that this group contains participants did not grow up with technology and also do not use technology as frequently on a daily basis. In a research carried out by Tweed (2013), it was noted that gender did not have an effect on teachers' self-efficacy. Reed, Doty, and May (2005) also make that point that age-related beliefs tend to be more negative for older people causing lower efficacy.

Conclusions

The purpose of this study was to identify the effects that technology skills, attitudes towards technology, use of technology, burnout, and self-efficacy had on technology integration.

The first conclusion from this study relates to technology skills and it is the fact that technology skills do not directly influence an educators' use of technology. It was also concluded that educators portrayed basic technology skills, but the more technical skills were seen less in older teachers.

The second conclusion drawn was that educators generally had a positive attitude towards the use of technology with male teachers being more positive than their female colleagues

The third conclusion that was made was that the use of technology is primarily determined by a teachers' self-efficacy followed by the attitude of the teacher. Related to this, it was also concluded that younger teachers displayed a higher level of self-efficacy that the older ones. It was concluded that internet and hardware were seen to the be biggest use of technology.

The fourth conclusion drawn is that burnout is seen to affect the attitude that a teacher has, but it has no impact on the use of technology. Additionally, male educators suffered from more burnout than their female colleagues.

Recommendations

The findings and conclusions gathered from this research have identified the following recommendations for implementation in the Seventh-day Adventist educational system in the Atlantic Union Conference.

1. Create a technology training program for all the teachers. Having identified the various needs of the teachers across the age groups and years of service, appropriate trainings should be developed to address the specific categorical needs. In doing this, the specific needs will be addressed, and teachers will receive professional developments and trainings that are designed to specifically address their problems.

2. Create a training database of technology resources. There are many self-directed videos and trainings that will give teachers the technology knowledge that they are lacking. However, these sites may only be known by some. In creating a training database, resources can be pooled, and various sources of information can be listed. This way, a teacher can browse the database as needed and categorically find items that fulfil the specific needs that they have.

For Future Research

Technology is a fluid item and it continues to be upgraded daily. Additionally, the requirements of the State and Conference educational systems also change. The survey instrument looked at items such as the teachers' use of technology as it relates to specific commonly used educational materials and equipment. As such the level of technology used in the classrooms should similarly be improved over time to match the evolving changes of the system.

The level of the quality of use of technology in the classroom could also be investigated. Investigating this will go beyond finding out if educators are integrating technology but will look deeper into how efficiently teachers are able to integrate the technology in order to meet the needs of their students.

Additionally, more in depth investigation should also be done into burnout in teachers. There is not a lot of recent research on the reasons that educators suffer from burnout. Uncovering the causes of teacher burnout will allow administration to put measures in place where possible to reduce the factors that are causing teachers to suffer from burnout. Looking deeper into the concept of teacher burnout, specific research should also be done into why male educators suffer more burnout that their female colleagues.

APPENDIX A

PERMIT AND INSTRUMENT

INSTRUMENT

Instrument on Aspects Influencing Technology Integration

Demographics

Choose the answer that correctly applies to you.

1. The Conference I work for is:	O Bermuda O New York O Northern New England	O Greater New York O Northeastern O Southern New England
2. Age in years:	O 21 – 30 years O 41 – 50 years O 61 years or over	O 31 – 40 years O 51 – 60 years
3. Years of service:	O 0 – 10 years O 21 – 30 years	O 11 – 20 years O 31 years or more
4. Highest degree:	O Associate Degree O Masters' Degree	O Bachelor's Degree O Doctoral Degree
5. Gender:	O Male	O Female
6. At my school I am:	O A teacher O An Administrative Assistant O None of the above	O A principal O A combination of the above
7. Do you teach any classes at your school?	O Yes	O No
8. Most of the teaching in my work week is done at the grade level:	O Pre School O Grade 6 – 8 O None of the above	O Pre Kindergarten – Grade 5 O Grade 9 – 12

Technology Skills

Rate each statement based on your ability to complete each mentioned activity.

1. Strongly Disagree 2. Disagree 3. Undecided 4. Agree 5.Strongly Agree

	1	2	3	4	5
9. Insert and eject external memory.					
10. Store files in a folder or subdirectory.					
11. Access information on CD-ROM, flash memory, or hard drive.					
12. Create and delete folders.					
13. Use of Virus protection.					
14. Connecting peripheral devices.					
15. Set margins.					
16. Change font size and type.					
17. Cut, copy, and paste in and between documents.					
18. Insert files, graphics, and tables in a document.					
19. Enter data in cells.					
20. Move data within a spreadsheet.					
21. Use formulas in a spreadsheet.					
22. Create charts.					
23. Log on to a network.					
24. Work in a network environment.					
25. Share files electronically.					
26. Send and receive e-mail.					
27. Navigate the World Wide Web.					
28. Subscribe to a list-service.					
29. Use an overhead projection device.					
30. Develop an electronic slide show.					
31. Develop a presentation using graphics.					
32. Develop a presentation using sound.					
33. Have a knowledge of copyright laws.					
34. Have a knowledge of software piracy.					
35. Have a knowledge of intellectual property rights.					

Attitudes Toward Technology

Rate each question based on how much you disagree or agree with each statement.

1. Strongly Disagree 2. Disagree 3. Undecided 4. Agree 5. Strongly Agree

	1	2	3	4	5
36. Email is only for communication; it cannot be used in education.					
37. Overhead projectors and slides should not be preferred as they take too much time to be used.					
38. Using the Internet in the learning process is a waste of time.					
39. Using technological tools does not affect students' motivation.					
40. Technological tools do not need to be used in instruction.					

41. Recording some parts of the lesson via video could provide the students with the opportunity to see their mistakes.					
42. Because video recordings could be watched again, students can provide feedback.					
43. Technological tools could be used for practice or revision.					
44. Students should receive basic education on computer literacy.					
45. Using current technologies would promote the improvement of new ones.					
46. Technological facilities have a positive effect on productive studying and learning.					
47. Using technology would facilitate the understanding of difficult subjects.					
48. One does not have to use technological facilities in order to be successful in life.					
49. Daily and yearly plans should be prepared by teachers using computers.					
50. Lessons should often include computer-assisted instruction.					
51. Students should get advanced information on the usage of new technologies.					
52. The usage of new technologies in teacher training should be increased.					
53. Technological tools could only succeed when they address all the sense organs.					
54. In order to be able to graduate from high school, the ability to use the technological materials of the field should be rated.					
55. Having Google Certifications impacts how I teach my students.					
56. Having Microsoft Office Certifications impacts how I teach.					

Use of Technology

Rate each statement based on your frequency of usage of each item.

1. Never 2. Almost Never 3. Regularly 4. Almost Always 5. Always

	1	2	3	4	5
57. Writing Board					
58. Graphics					
59. Book					
60. Internet					
61. www page					
62. E-mail					
63. Search engine					
64. Television					
65. Video					
66. DVD					
67. CD					
68. Video camera					
69. Paint					
70. Windows Media Player, QuickTime, or iTunes					
71. Microsoft Excel, Numbers, or Google Sheets					
72. Microsoft Word, Pages, or Google Docs					

73. Microsoft PowerPoint, Keynote, or Google Slides					
74. NAD Resources like Reading A-Z, IXL Math, etc					
75. Supplemental websites for teaching like Khan Academy, Quizlet, etc.					
76. Educational games like Kahoot, Quizlet Live					
77. Smart board					
78. Browser					
79. Projection					
80. CD-ROM					
81. Printer					
82. Laptop or Chromebook					
83. iPad or Tablet					
84. I regularly use Flash Memory like flash drives and SD cards					
85. I regularly use a Digital Camera					

Burnout

Rate each statement based on how you feel throughout the day as it relates to technology.

1. Strongly Disagree 2. Disagree 3. Undecided 4. Agree 5. Strongly Agree

	1	2	3	4	5
86. I feel emotionally drained from my work.					
87. I feel used up at the end of the workday.					
88. I feel fatigued when I get up in the morning and have to face another day on the job.					
89. I can easily understand how my recipients feel about things.					
90. I feel I treat some recipients as if they were impersonal objects.					
91. Working with people all day is really a strain for me.					
92. I deal very effectively with the problems of my audience.					
93. I feel burned out from my work.					
94. I feel I'm positively influencing other people's lives through my work.					
95. I've become more callous toward people since I took this job.					
96. I worry that this job is hardening me emotionally.					
97. I feel very energetic.					
98. I feel frustrated by my job.					
99. I feel I'm working too hard on my job.					
100. I don't really care what happens to some audience.					
101. Working with people directly puts too much stress on me.					
102. I can easily create a relaxed atmosphere with my audience.					
103. I feel exhilarated after working closely with my audience.					
104. I have accomplished many worthwhile things in this job.					
105. I feel like I'm at the end of rope.					
106. I feel recipients blame me for some of their problems.					

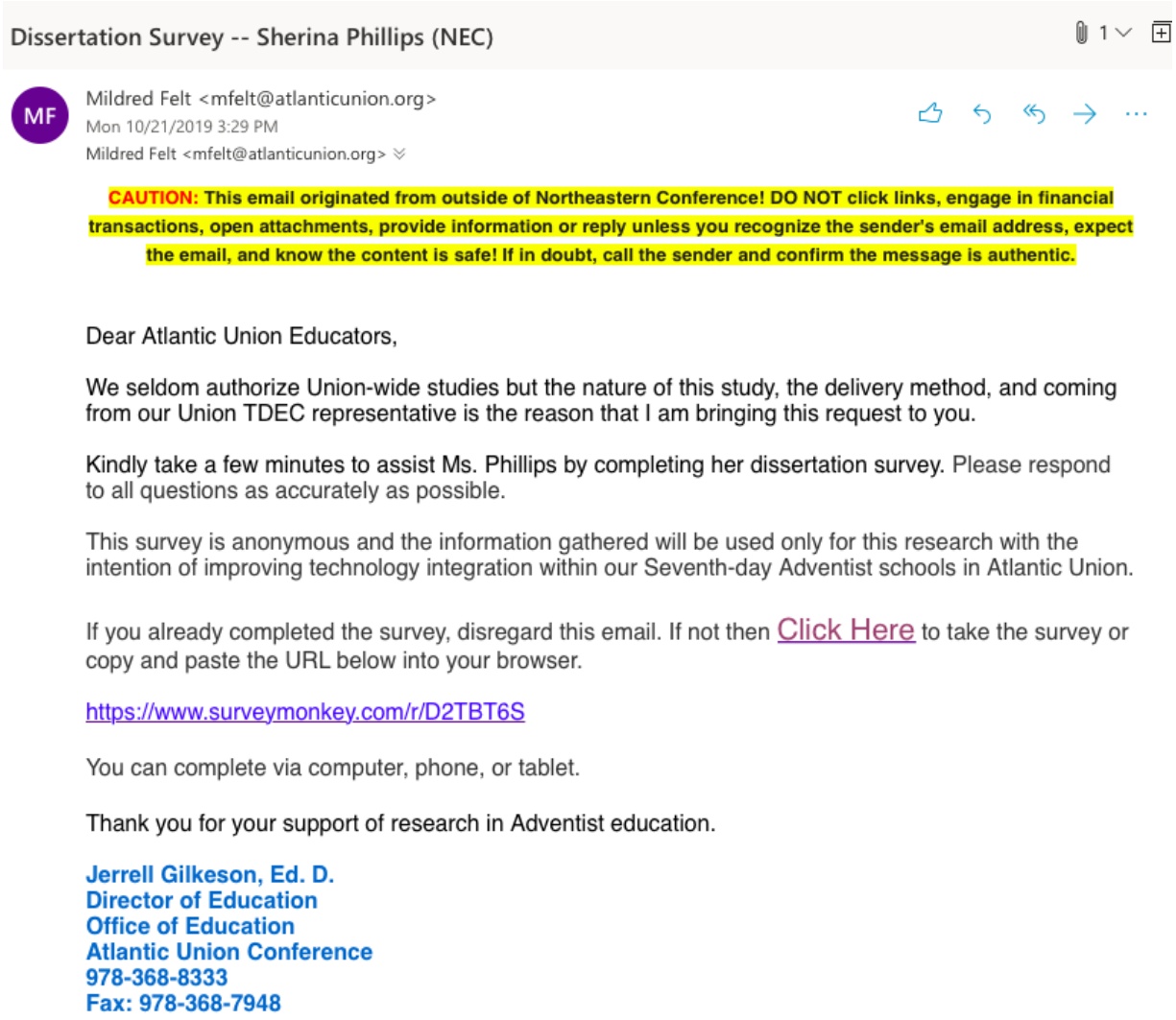
Self-Efficacy

Rate each question based on how much you disagree or agree with each statement.

1. Strongly Disagree 2. Disagree 3. Undecided 4. Agree 5. Strongly Agree

		1	2	3	4	5
107.	I am able to use word processor to create edit, and format documents for specific purposes.					
108.	I am able to use the internet to search for information and resources.					
109.	I am able to use email for communication.					
110.	I am able to use presentation software for classroom delivery.					
111.	I am able to use a spreadsheet to record data, compute simple calculations, and represent data in the form of tables and graphs.					
112.	I am able to use graphic editors to create resources for teaching.					
113.	I am able to use video editing software.					
114.	I am able to use animation software.					
115.	I am able to use conferencing software for collaboration purposes.					
116.	I am able to use learning management systems to support teaching.					

SURVEY PERMISSION LETTER



Dissertation Survey -- Sherina Phillips (NEC)

MF

Mildred Felt <mfelt@atlanticunion.org>
Mon 10/21/2019 3:29 PM
Mildred Felt <mfelt@atlanticunion.org>

CAUTION: This email originated from outside of Northeastern Conference! DO NOT click links, engage in financial transactions, open attachments, provide information or reply unless you recognize the sender's email address, expect the email, and know the content is safe! If in doubt, call the sender and confirm the message is authentic.

Dear Atlantic Union Educators,

We seldom authorize Union-wide studies but the nature of this study, the delivery method, and coming from our Union TDEC representative is the reason that I am bringing this request to you.

Kindly take a few minutes to assist Ms. Phillips by completing her dissertation survey. Please respond to all questions as accurately as possible.

This survey is anonymous and the information gathered will be used only for this research with the intention of improving technology integration within our Seventh-day Adventist schools in Atlantic Union.

If you already completed the survey, disregard this email. If not then Click Here to take the survey or copy and paste the URL below into your browser.

https://www.surveymonkey.com/r/D2TBT6S

You can complete via computer, phone, or tablet.

Thank you for your support of research in Adventist education.

Jerrell Gilkeson, Ed. D.
Director of Education
Office of Education
Atlantic Union Conference
978-368-8333
Fax: 978-368-7948

APPENDIX B

DEMOGRAPHIC DATA

DEMOGRAPHICS

Distribution of Participants by Conference

Conference	*n*	*%*
1. Bermuda	17	11.4
2. Greater New York	14	9.4
3. New York	4	2.7
4. Northeastern	91	61.1
5. Northern New England	11	7.4
6. Southern New England	12	8.1
Total	149	100.0

Distribution of Participants by Age

Age	*n*	*%*
1. 21-30 years	6	4.0
2. 31-40 years	27	18.1
3. 41-50 years	40	26.8
4. 51-60 years	46	30.9
5. 61 years or over	30	20.1
Total	149	100.0

Distribution of Participants by Years of Service

Years of Service	*n*	*%*
1. 0-10 years	58	38.9
2. 11-20 years	51	34.2
3. 21-30 years	21	14.1
4. 31 years or more	19	12.8
Total	149	100.0

Distribution of Participants by Education Level

Education Level	*n*	*%*
1. Associate Degree	8	5.4
2. Bachelor's Degree	51	34.5
3. Masters' Degree	86	58.1
4. Doctoral Degree	3	2.0
Total	148	100.0

Distribution of Participants by Gender

Gender	*n*	*%*
1. Male	31	20.8
2. Female	118	79.2
Total	149	100.0

Distribution of Participants by Job Role

Job Role	*n*	*%*
1. A teacher	96	64.4
2. A principal	14	9.4
3. An Administrative Assistant	11	7.4
4. A combination of the above	19	12.8
5. None of the above	9	6.0
Total	149	100.0

Distribution of Participants by Grade Level Taught

Grade Level Taught	*n*	*%*
1. Pre School	5	3.4
2. Pre Kindergarten - Grade 5	59	40.1
3. Grade 6-8	35	23.8
4. Grade 9-12	33	22.4
5. None of the above	15	10.2
Total	147	100.0

APPENDIX C

VALIDATION AND RELIABILITY

Factor Analysis TS TEACHER SKILLS

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		,942
Bartlett's Test of Sphericity	Approx. Chi-Square	3.973,393
	df	351
	Sig.	,000

Communalities

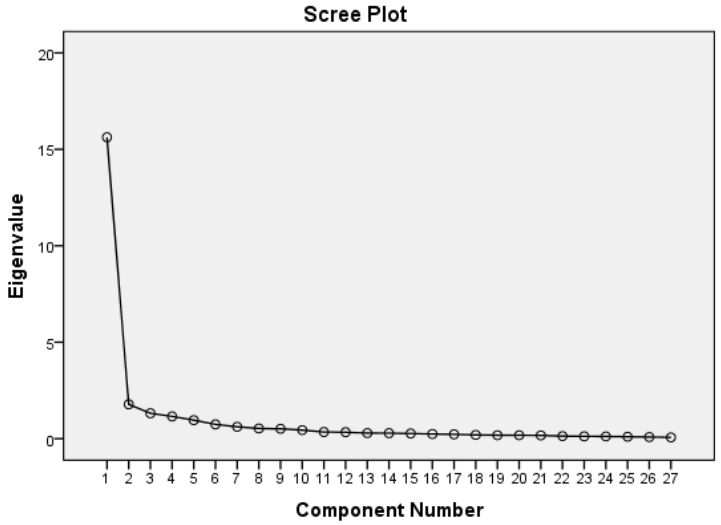
	Initial	Extraction
TS9 Insert and eject external memory.	1,000	,681
TS10 Store files in a folder or subdirectory.	1,000	,780
TS11 Access information on CD-ROM, flash memory, or hard drive.	1,000	,806
TS12 Create and delete folders.	1,000	,829
TS13 Use of Virus protection.	1,000	,611
TS14 Connecting peripheral devices.	1,000	,766
TS15 Set margins.	1,000	,760
TS16 Change font size and type.	1,000	,719
TS17 Cut, copy, and paste in and between documents.	1,000	,678
TS18 Insert files, graphics, and tables in a document.	1,000	,809
TS19 Enter data in cells.	1,000	,811
TS20 Move data within a spreadsheet.	1,000	,848
TS21 Use formulas in a spreadsheet.	1,000	,781
TS22 Create charts.	1,000	,793
TS23 Log on to a network.	1,000	,633
TS24 Work in a network environment.	1,000	,645
TS25 Share files electronically.	1,000	,774
TS26 Send and receive e-mail.	1,000	,717
TS27 Navigate the World Wide Web.	1,000	,737
TS28 Subscribe to a list-service.	1,000	,640
TS29 Use an overhead projection device.	1,000	,614
TS30 Develop an electronic slide show.	1,000	,654
TS31 Develop a presentation using graphics.	1,000	,685
TS32 Develop a presentation using sound.	1,000	,705
TS33 Have a knowledge of copyright laws.	1,000	,763
TS34 Have a knowledge of software piracy.	1,000	,826
TS35 Have a knowledge of intellectual property rights.	1,000	,810

Extraction Method: Principal Component Analysis.

Total Variance Explained

	Initial Eigenvalues			Rotation Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	15,626	57,873	57,873	6,436	23,837	23,837
2	1,782	6,600	64,473	4,993	18,492	42,330
3	1,318	4,880	69,352	4,354	16,127	58,456
4	1,153	4,270	73,623	4,095	15,166	73,623
5	,960	3,555	77,177			
6	,740	2,742	79,919			
7	,614	2,275	82,194			
8	,528	1,957	84,151			
26	,085	,315	99,753			
27	,067	,247	100,000			

Extraction Method: Principal Component Analysis.



Rotated Component Matrix[a]

	Component			
	BA	US	IP	WW
TS11BA Access information on CD-ROM, flash memory, or hard drive.	**.811**	.220	.176	.263
TS9BA Insert and eject external memory.	**.758**	.018	.239	.221
TS12BA Create and delete folders.	**.739**	.391	.308	.185
TS10BA Store files in a folder or subdirectory.	**.735**	.269	.344	.222
TS15BA Set margins.	**.682**	.496	.198	.099
TS14BA Connecting peripheral devices.	**.659**	.272	.449	.239
TS16BA Change font size and type.	**.633**	.323	.020	.462
TS17BA Cut, copy, and paste in and between documents.	**.627**	.422	.115	.305
TS18BA Insert files, graphics, and tables in a document.	**.602**	.540	.181	.350
TS25BA Share files electronically.	**.502**	.461	.294	.472
TSUS20US Move data within a spreadsheet.	.347	**.799**	.282	.101
TS21US Use formulas in a spreadsheet.	.240	**.760**	.353	.146
TS22US Create charts.	.250	**.738**	.344	.262
TS19US Enter data in cells.	.551	**.657**	.171	.215
TS24WW Work in a network environment.	.174	.546	.254	**.502**
TS34IP Have a knowledge of software piracy.	.205	.227	**.846**	.132
TS35IP Have a knowledge of intellectual property rights.	.245	.192	**.833**	.139
TS33IP Have a knowledge of copyright laws.	.158	.272	**.769**	.270
TS13IP Use of Virus protection.	.488	.291	**.498**	.199
TS32US Develop a presentation using sound.	.294	**.434**	.488	.439
TS27WW Navigate the World Wide Web.	.212	.002	.192	**.809**
TS26WW Send and receive e-mail.	.513	.162	.067	**.650**
TS23WW Log on to a network.	.313	.427	.147	**.575**
TS28WW Subscribe to a list-service.	.122	.343	.438	**.561**
TS29BA Use an overhead projection device.	**.306**	.210	.448	.525
TS31US Develop a presentation using graphics.	.302	**.426**	.432	.476
TS30US Develop an electronic slide show.	.422	**.366**	.367	.456

Reliability

Scale: TSBA BASICS

Case Processing Summary

		N	%
Cases	Valid	149	100,0
	Excluded[a]	0	,0
	Total	149	100,0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
,951	11

Item-Total Statistics

	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
TS9BA Insert and eject external memory.	,680	,950
TS10BA Store files in a folder or subdirectory.	,845	,943
TS11BA Access information on CD-ROM, flash memory, or hard drive.	,832	,945
TS12BA Create and delete folders.	,874	,942
TS14BA Connecting peripheral devices.	,813	,945
TS15BA Set margins.	,789	,945
TS16BA Change font size and type.	,747	,948
TS17BA Cut, copy, and paste in and between documents.	,783	,946
TS18BA Insert files, graphics, and tables in a document.	,843	,943
TS25BA Share files electronically.	,813	,945
TS29BA Use an overhead projection device.	,622	,953

Scale: TSUS USING SOFTWARE

Case Processing Summary

		N	%
Cases	Valid	149	100,0
	Excluded[a]	0	,0
	Total	149	100,0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
,935	7

Item-Total Statistics

	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
TS19US Enter data in cells.	,785	,926
TS20US Move data within a spreadsheet.	,824	,922
TS21US Use formulas in a spreadsheet.	,773	,928
TS22US Create charts.	,826	,922
TS30US Develop an electronic slide show.	,773	,927
TS31US Develop a presentation using graphics.	,781	,926
TS32US Develop a presentation using sound.	,782	,926

Scale: TSIP INTELLECTUAL PROPERTY

Case Processing Summary

		N	%
Cases	Valid	149	100,0
	Excluded[a]	0	,0
	Total	149	100,0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
,891	4

Item-Total Statistics

	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
TS13IP Use of Virus protection.	,604	,917
TS33IP Have a knowledge of copyright laws.	,789	,849
TS34IP Have a knowledge of software piracy.	,833	,833
TS35IP Have a knowledge of intellectual property rights.	,829	,833

Scale: TSWW WORLD WIDE WEB

Case Processing Summary

		N	%
Cases	Valid	149	100,0
	Excluded[a]	0	,0
	Total	149	100,0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
,843	5

Item-Total Statistics

	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
TS26WW Send and receive e-mail.	,623	,824
TS27WW Navigate the World Wide Web.	,633	,819
TS28WW Subscribe to a list-service.	,640	,824
TS23WW Log on to a network.	,726	,789
TS24WW Work in a network environment.	,706	,795

Factor Analysis ATTITUDE TO TECHNOLOGY

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		,816
Bartlett's Test of Sphericity	Approx. Chi-Square	1.156,430
	df	210
	Sig.	,000

Communalities

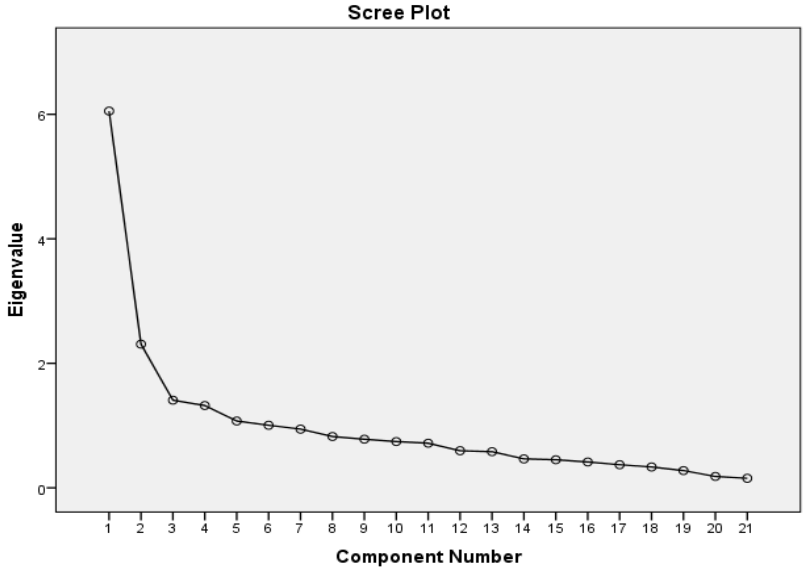
	Initial	Extraction
AT36 Email is only for communication; it cannot be used in education.	1,000	,306
AT37 Overhead projectors and slides should not be preferred as they take too much time to be used.	1,000	,591
AT38 Using the Internet in the learning process is a waste of time.	1,000	,451
AT39 Using technological tools does not affect students' motivation.	1,000	,550
AT40 Technological tools do not need to be used in instruction.	1,000	,396
AT41 Recording some parts of the lesson via video could provide the students with the opportunity to see their mistakes.	1,000	,560
AT42 Because video recordings could be watched again, students can provide feedback.	1,000	,542
AT43 Technological tools could be used for practice or revision.	1,000	,470
AT44 Students should receive basic education on computer literacy.	1,000	,408
AT45 Using current technologies would promote the improvement of new ones.	1,000	,528
AT46 Technological facilities have a positive effect on productive studying and learning.	1,000	,658
AT47 Using technology would facilitate the understanding of difficult subjects.	1,000	,599
AT48 One does not have to use technological facilities in order to be successful in life.	1,000	,563
AT49 Daily and yearly plans should be prepared by teachers using computers.	1,000	,420
AT50 Lessons should often include computer-assisted instruction.	1,000	,459
AT51 Students should get advanced information on the usage of new technologies.	1,000	,614
AT52 The usage of new technologies in teacher training should be increased.	1,000	,533
AT53 Technological tools could only succeed when they address all the sense organs.	1,000	,314
AT54 In order to be able to graduate from high school, the ability to "use the technological materials of the field" should be rated.	1,000	,466
AT55 Having Google Certifications impacts how I teach my students.	1,000	,865
AT56 Having Microsoft Office Certifications impacts how I teach.	1,000	,794

Extraction Method: Principal Component Analysis.

Total Variance Explained

Component	Initial Eigenvalues			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	6,052	28,818	28,818	4,079	19,424	19,424
2	2,308	10,989	39,807	2,697	12,845	32,269
3	1,408	6,704	46,511	2,177	10,366	42,635
4	1,322	6,294	52,806	2,136	10,171	52,806
5	1,073	5,108	57,914			
6	1,005	4,786	62,700			
7	,943	4,491	67,191			
21	,153	,728	100,000			

Extraction Method: Principal Component Analysis.



Rotated Component Matrix[a]

	Component			
	PA	NA	CN	IT
AT47PA Using technology would facilitate the understanding of difficult subjects.	**.714**	-.196	.201	.104
AT46PA Technological facilities have a positive effect on productive studying and learning.	**.703**	-.243	.242	.213
AT42PA Because video recordings could be watched again, students can provide feedback.	**.701**	-.159	-.007	.159
AT41PA Recording some parts of the lesson via video could provide the students with the opportunity to see their mistakes.	**.694**	-.207	-.161	.094
AT50PA Lessons should often include computer-assisted instruction.	**.611**	-.146	.110	.230
AT43PA Technological tools could be used for practice or revision.	**.599**	-.306	-.132	.014
AT49PA Daily and yearly plans should be prepared by teachers using computers.	**.536**	-.035	.126	.340
AT48CN One does not have to use technological facilities in order to be successful in life.	-.491	-.250	**-.432**	.268
AT44PA Students should receive basic education on computer literacy.	**.445**	-.443	.090	.078

AT37NA Overhead projectors and slides should not be preferred as they take too much time to be used.	-.055	**.730**	.216	-.093
AT39NA Using technological tools does not affect students' motivation.	-.250	**.652**	-.178	-.174
AT38NA Using the Internet in the learning process is a waste of time.	-.123	**.620**	-.224	.030
AT36NA Email is only for communication; it cannot be used in education.	-.204	**.507**	.085	-.004
AT40NA Technological tools do not need to be used in instruction.	-.381	**.501**	-.001	.011
AT55CN Having Google Certifications impacts how I teach my students.	-.046	-.071	**.896**	.236
AT56CN Having Microsoft Office Certifications impacts how I teach.	.114	-.011	**.867**	.173
AT51IT Students should get advanced information on the usage of new technologies.	.076	-.020	.097	**.774**
AT54IT In order to be able to graduate from high school, the ability to "use the technological materials of the field" should be rated.	.224	-.092	.315	**.555**
AT52IT The usage of new technologies in teacher training should be increased.	.420	-.210	.086	**.553**
AT45IT Using current technologies would promote the improvement of new ones.	.357	-.363	.078	**.512**
AT53IT Technological tools could only succeed when they address all the sense organs.	.027	.340	.000	**.445**

Reliability

Scale: ATNA NEGATIVE

Case Processing Summary

		N	%
Cases	Valid	149	100,0
	Excluded[a]	0	,0
	Total	149	100,0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
,688	5

Item-Total Statistics

	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
AT36NA Email is only for communication; it cannot be used in education.	,366	,676
AT37NA Overhead projectors and slides should not be preferred as they take too much time to be used.	,442	,638
AT38NA Using the Internet in the learning process is a waste of time.	,426	,654
AT39NA Using technological tools does not affect students' motivation.	,537	,593
AT40NA Technological tools do not need to be used in instruction.	,479	,621

Scale: ATPA POSITIVE

Case Processing Summary

		N	%
Cases	Valid	149	100,0
	Excluded[a]	0	,0
	Total	149	100,0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
,840	8

Item-Total Statistics

	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
AT41PA Recording some parts of the lesson via video could provide the students with the opportunity to see their mistakes.	,578	,820
AT42PA Because video recordings could be watched again, students can provide feedback.	,615	,818
AT43PA Technological tools could be used for practice or revision.	,527	,826
AT44PA Students should receive basic education on computer literacy.	,468	,833
AT46PA Technological facilities have a positive effect on productive studying and learning.	,715	,802
AT47PA Using technology would facilitate the understanding of difficult subjects.	,672	,808
AT49PA Daily and yearly plans should be prepared by teachers using computers.	,485	,837
AT50PA Lessons should often include computer-assisted instruction.	,567	,822

Scale: ATIT IMPROVEMENT OF TECHNOLOGY

Case Processing Summary

		N	%
Cases	Valid	149	100,0
	Excluded[a]	0	,0
	Total	149	100,0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
,616	5

Item-Total Statistics

	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
AT45IT Using current technologies would promote the improvement of new ones.	,419	,543
AT51IT Students should get advanced information on the usage of new technologies.	,488	,508
AT52IT The usage of new technologies in teacher training should be increased.	,426	,546
AT53IT Technological tools could only succeed when they address all the sense organs.	,174	,686
AT54IT In order to be able to graduate from high school, the ability to “use the technological materials of the field” should be rated.	,451	,515

Scale: ATCN CERTIFICATION

Case Processing Summary

		N	%
Cases	Valid	148	99,3
	Excluded[a]	1	,7
	Total	149	100,0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
,668	3

Item-Total Statistics

	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
AT55CN Having Google Certifications impacts how I teach my students.	,616	,400
AT56CN Having Microsoft Office Certifications impacts how I teach.	,646	,339
AT48CNR	,242	,884

Factor Analysis UT Use of Technology

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		,897
Bartlett's Test of Sphericity	Approx. Chi-Square	1.550,807
	df	210
	Sig.	,000

Communalities

	Initial	Extrac-tion
UT58EI Graphics	1,000	,513
UT60II Internet	1,000	,782
UT61II www page	1,000	,749
UT62II E-mail	1,000	,686
UT63II Search engine	1,000	,778
UT64TV Television	1,000	,606
UT65TV Video	1,000	,631
UT70HI Windows Media Player, QuickTime, or iTunes	1,000	,393
UT71II Microsoft Excel, Numbers, or Google Sheets	1,000	,477
UT72II Microsoft Word, Pages, or Google Docs	1,000	,662
UT73EI Microsoft PowerPoint, Keynote, or Google Slides	1,000	,662
UT74EI NAD Resources like Reading A-Z, IXL Math, etc.	1,000	,450
UT75EI Supplemental websites for teaching like Khan Academy, Quizlet, etc.	1,000	,678
UT76EI Educational games like Kahoot, Quizlet Live, etc.	1,000	,580
UT78II Browser	1,000	,537
UT79EI Projection	1,000	,534
UT81HI Printer	1,000	,517
UT82HI Laptop or Chromebook	1,000	,575
UT83HI iPad or Tablet	1,000	,654
UT84HI Flash memory like flash drives and SD cards	1,000	,559
UT85HI Digital camera	1,000	,558

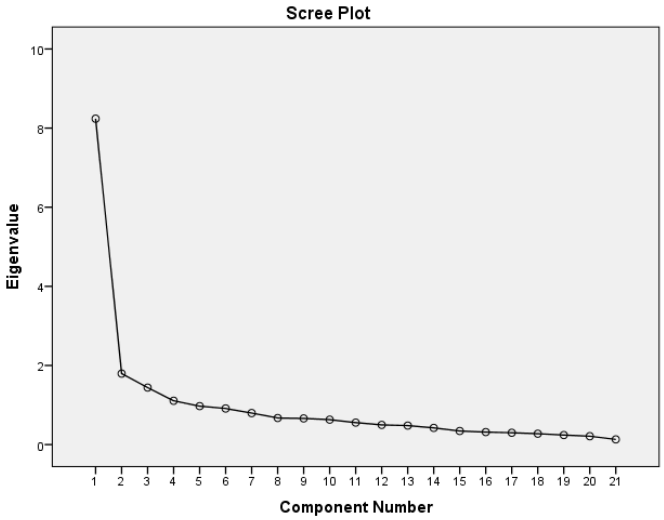
Extraction Method: Principal Component Analysis.

Total Variance Explained

	Initial Eigenvalues			Rotation Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	8,238	39,228	39,228	4,538	21,610	21,610
2	1,795	8,546	47,774	3,410	16,239	37,849
3	1,441	6,863	54,637	3,212	15,294	53,143
4	1,107	5,271	59,908	1,421	6,765	59,908
5	,972	4,627	64,535			
6	,913	4,346	68,881			
7	,797	3,794	72,676			
8	,672	3,202	75,878			
9	,661	3,149	79,026			
10	,630	3,001	82,027			
11	,555	2,643	84,671			
12	,498	2,370	87,040			
13	,481	2,291	89,331			
14	,422	2,009	91,340			
15	,343	1,633	92,974			
16	,317	1,509	94,482			

17	,300	1,427	95,909
18	,275	1,312	97,221
19	,241	1,147	98,368
20	,212	1,010	99,379
21	,130	,621	100,000

Extraction Method: Principal Component Analysis.



Rotated Component Matrix[a]

	Component			
	II	HI	EI	TV
UT60II Internet	**.819**	.168	.200	.208
UT62II E-mail	**.805**	.128		.147
UT63II Search engine	**.792**	.236	.190	.244
UT61II www page	**.759**	.185	.266	.260
UT72II Microsoft Word, Pages, or Google Docs	**.665**	.374	.256	-.119
UT78II Browser	**.571**	.285	.351	
UT71II Microsoft Excel, Numbers, or Google Sheets	**.509**	.302	.109	-.339
UT83HI iPad or Tablet		**.773**	.118	.204
UT85HI Digital camera	.188	**.706**	.153	
UT84HI Flash memory like flash drives and SD cards	.229	**.679**	.201	
UT82HI Laptop or Chromebook	.313	**.629**	.286	
UT81HI Printer	.375	**.595**		.148
UT70HI Windows Media Player, QuickTime, or iTunes	.396	**.415**	.249	
UT75EI Supplemental websites for teaching like Khan Academy, Quizlet, etc.	.107		**.763**	.272
UT76EI Educational games like Kahoot, Quizlet Live, etc.	.128	.270	**.662**	.230
UT74EI NAD Resources like Reading A-Z, IXL Math, etc.			**.656**	.107
UT79EI Projection	.193	.147	**.651**	-.226
UT73EI Microsoft PowerPoint, Keynote, or Google Slides	.277	347	**.650**	-.207
UT58EI Graphics	.328	.444	**.449**	
UT64TV Television	.291	.151		**.705**
UT65TV Video	.406	.191	.376	**.537**

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.[a]
a. Rotation converged in 6 iterations.

Reliability
Scale: UTII INTERNET ITEMS

Case Processing Summary

		N	%
Cases	Valid	149	100,0
	Excluded[a]	0	,0
	Total	149	100,0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
,888	7

Item-Total Statistics

	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
UT60II Internet	,794	,858
UT61II www page	,763	,861
UT62II E-mail	,681	,871
UT63II Search engine	,794	,858
UT71II Microsoft Excel, Numbers, or Google Sheets	,445	,901
UT72II Microsoft Word, Pages, or Google Docs	,702	,868
UT78II Browser	,626	,878

Scale: UTHI HARDWARE ITEMS

Case Processing Summary

		N	%
Cases	Valid	149	100,0
	Excluded[a]	0	,0
	Total	149	100,0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
,809	6

Item-Total Statistics

	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
UT81HI Printer	,576	,778
UT82HI Laptop or Chromebook	,631	,765
UT83HI iPad or Tablet	,559	,782
UT84HI Flash memory like flash drives and SD cards	,597	,772

UT85HI Digital camera	,576	,777
UT70HI Windows Media Player, QuickTime, or iTunes	,474	,798

Scale: UTEI EDUCATIONAL ITEMS

Case Processing Summary

		N	%
Cases	Valid	149	100,0
	Excluded[a]	0	,0
	Total	149	100,0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
,803	6

Item-Total Statistics

	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
UT73EI Microsoft PowerPoint, Keynote, or Google Slides	,634	,757
UT74EI NAD Resources like Reading A-Z, IXL Math, etc.	,464	,794
UT75EI Supplemental websites for teaching like Khan Academy, Quizlet, etc.	,625	,756
UT76EI Educational games like Kahoot, Quizlet Live, etc.	,592	,765
UT79EI Projection	,510	,784
UT58EI Graphics	,548	,775

Scale: UTTV TELEVISION ITEMS

Case Processing Summary

		N	%
Cases	Valid	149	100,0
	Excluded[a]	0	,0
	Total	149	100,0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
,637	2

Item-Total Statistics

	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
UT64TV Television	,470	.
UT65TV Video	,470	.

Factor Analysis BURNOUT

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		,837
Bartlett's Test of Sphericity	Approx. Chi-Square	1.334,214
	df	210
	Sig.	,000

Communalities

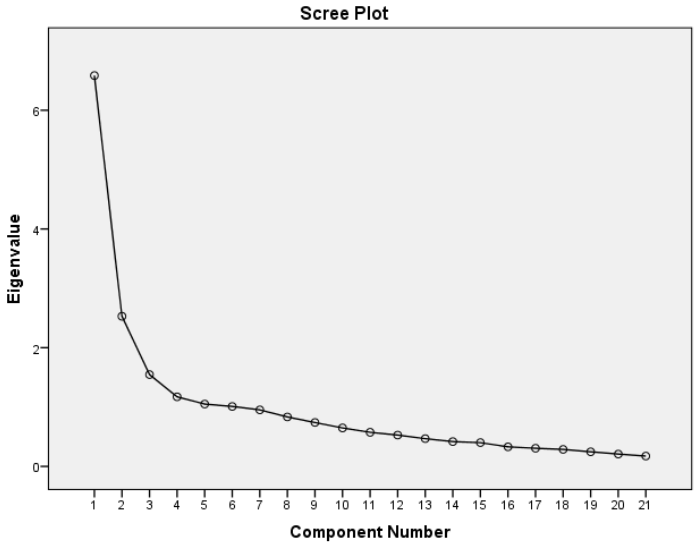
	Initial	Extraction
BU86EE I feel emotionally drained from my work.	1,000	,697
BU87EE I feel used up at the end of the workday.	1,000	,673
BU88EE I feel fatigued when I get up in the morning and have to face another day on the job.	1,000	,659
BU89PA I can easily understand how my audience feels about things.	1,000	,305
BU90DE I feel I treat some in my audience as if they were impersonal objects.	1,000	,351
BU91EE Working with people all day is really a strain for me.	1,000	,413
BU92PA I deal very effectively with the problems of my audience.	1,000	,343
BU93EE I feel burnt out from my work.	1,000	,714
BU94PA I feel I'm positively influencing other peoples' lives through my work.	1,000	,331
BU95DE I've become more callous toward people since I took this job.	1,000	,797
BU96DE I worry that this job is hardening me emotionally.	1,000	,719
BU97PA I feel very energetic.	1,000	,389
BU98EE I feel frustrated by my job.	1,000	,642
BU99EE I feel I'm working too hard on my job.	1,000	,391
BU100DE I don't really care what happens to some people in my audience.	1,000	,566
BU101EE Working with people directly puts too much stress on me.	1,000	,523
BU102PA I can easily create a relaxed atmosphere with my audience.	1,000	,494
BU103PA I feel exhilarated after working closely with my audience.	1,000	,368
BU104PA I have accomplished many worthwhile things in this job.	1,000	,452
BU105EE I feel like I'm at the end of the rope.	1,000	,521
BU106DE I feel recipients blame me for some of their problems.	1,000	,310

Extraction Method: Principal Component Analysis.

Total Variance Explained

	Initial Eigenvalues			Rotation Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	6,585	31,355	31,355	5,378	25,610	25,610
2	2,529	12,042	43,397	2,699	12,852	38,462
3	1,547	7,366	50,763	2,583	12,301	50,763
4	1,172	5,581	56,344			
5	1,050	5,001	61,345			
6	1,010	4,812	66,156			
7	,952	4,533	70,690			
8	,833	3,968	74,657			
9	,739	3,521	78,179			
10	,648	3,087	81,266			
20	,207	,988	99,173			
21	,174	,827	100,000			

Extraction Method: Principal Component Analysis.



Rotated Component Matrix[a]

	Component		
	EE	PA	DE
BU93EE I feel burnt out from my work.	**.829**	-.070	.148
BU86EE I feel emotionally drained from my work.	**.824**	-.117	-.071
BU88EE I feel fatigued when I get up in the morning and have to face another day on the job.	**.811**	.009	.024
BU87EE I feel used up at the end of the workday.	**.811**	-.083	-.097
BU98EE I feel frustrated by my job.	**.770**	-.050	.217
BU99EE I feel I'm working too hard on my job.	**.617**	-.013	.098
BU105EE I feel like I'm at the end of the rope.	**.517**	-.459	.206
BU97PA I feel very energetic.	-.501	**.312**	-.200
BU106DE I feel recipients blame me for some of their problems.	.498	-.162	**.190**
BU91EE Working with people all day is really a strain for me.	**.487**	-.255	.333
BU90DE I feel I treat some in my audience as if they were impersonal objects.	.409	-.350	**.247**
BU102PA I can easily create a relaxed atmosphere with my audience.	-.038	**.701**	-.029
BU104PA I have accomplished many worthwhile things in this job.	-.033	**.659**	-.131
BU94PA I feel I'm positively influencing other peoples' lives through my work.	.007	**.575**	-.019
BU92PA I deal very effectively with the problems of my audience.	-.080	**.563**	-.142
BU103PA I feel exhilarated after working closely with my audience.	-.218	**.553**	-.124
BU95DE I've become more callous toward people since I took this job.	.181	.046	**.873**
BU100DE I don't really care what happens to some people in my audience.	.068	-.370	**.652**
BU96DE I worry that this job is hardening me emotionally.	.556	.030	**.640**
BU101EE Working with people directly puts too much stress on me.	**.221**	-.314	**.613**
BU89PA I can easily understand how my audience feels about things.	.315	**.180**	-.417

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.[a]
a. Rotation converged in 5 iterations.

Reliability
Scale: BUEE EMOTIONAL EXHAUSTION

Case Processing Summary

		N	%
Cases	Valid	149	100,0
	Excluded[a]	0	,0
	Total	149	100,0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
,879	9

Item-Total Statistics

	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
BU86EE I feel emotionally drained from my work.	,741	,855
BU87EE I feel used up at the end of the workday.	,712	,858
BU88EE I feel fatigued when I get up in the morning and have to face another day on the job.	,716	,857
BU91EE Working with people all day is really a strain for me.	,506	,875
BU93EE I feel burnt out from my work.	,773	,852
BU98EE I feel frustrated by my job.	,700	,859
BU99EE I feel I'm working too hard on my job.	,547	,874
BU101EE Working with people directly puts too much stress on me.	,338	,886
BU105EE I feel like I'm at the end of the rope.	,541	,873

Scale: BUPA PERSONAL ACCOMPLISHMENT

Case Processing Summary

		N	%
Cases	Valid	149	100,0
	Excluded[a]	0	,0
	Total	149	100,0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
,634	7

Item-Total Statistics

	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
BU89PA I can easily understand how my audience feels about things.	,141	,653
BU92PA I deal very effectively with the problems of my audience.	,394	,586
BU94PA I feel I'm positively influencing other peoples' lives through my work.	,338	,599
BU97PA I feel very energetic.	,294	,623
BU102PA I can easily create a relaxed atmosphere with my audience.	,456	,561
BU103PA I feel exhilarated after working closely with my audience.	,395	,580
BU104PA I have accomplished many worthwhile things in this job.	,449	,569

Scale: BUDE DESPERSONALIZATION

Case Processing Summary

		N	%
Cases	Valid	149	100,0
	Excluded[a]	0	,0
	Total	149	100,0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
,722	5

Item-Total Statistics

	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
BU90DE I feel I treat some in my audience as if they were impersonal objects.	,429	,695
BU95DE I've become more callous toward people since I took this job.	,580	,636
BU96DE I worry that this job is hardening me emotionally.	,640	,602
BU100DE I don't really care what happens to some people in my audience.	,415	,704
BU106DE I feel recipients blame me for some of their problems.	,404	,720

Factor Analysis SELF EFFICACY

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		,844
Bartlett's Test of Sphericity	Approx. Chi-Square	906,935
	df	45
	Sig.	,000

Communalities

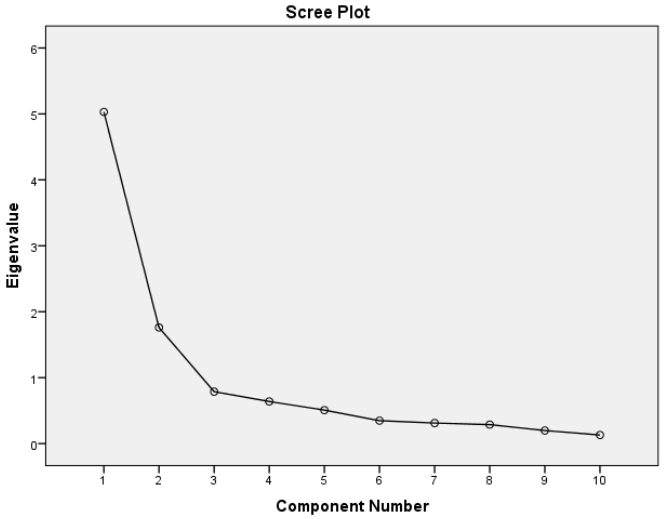
	Initial	Extraction
SE107BI I am able to use a word processor to create, edit, and format documents for specific purposes.	1,000	,560
SE108BI I am able to use the internet to search for information and resources.	1,000	,800
SE109BI I am able to use email for communication.	1,000	,843
SE110BI I am able to use presentation software for classroom delivery.	1,000	,663
SE111SI I am able to use a spreadsheet to record data, compute simple calculations, and represent data in the form of tables and graphs.	1,000	,551
SE112SI I am able to use graphic editors to create resources for teaching.	1,000	,761
SE113SI I am able to use video editing software.	1,000	,790
SE114SI I am able to use animation software.	1,000	,701
SE115SI I am able to use conferencing software for collaboration purposes.	1,000	,721
SE116SI I am able to use learning management systems, like Blackboard and Google Classroom, to support teaching.	1,000	,401

Extraction Method: Principal Component Analysis.

Total Variance Explained

	Initial Eigenvalues			Rotation Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	5,029	50,294	50,294	3,931	39,312	39,312
2	1,761	17,610	67,904	2,859	28,593	67,904
3	,787	7,874	75,778			
4	,639	6,385	82,163			
5	,508	5,078	87,241			
6	,347	3,473	90,714			
7	,312	3,117	93,831			
8	,288	2,880	96,710			
9	,198	1,982	98,693			
10	,131	1,307	100,000			

Extraction Method: Principal Component Analysis.



Rotated Component Matrix[a]

	Component	
	SI	BI
SE113SI I am able to use video editing software.	**.886**	.070
SE112SI I am able to use graphic editors to create resources for teaching.	**.841**	.232
SE114SI I am able to use animation software.	**.837**	.039
SE115SI I am able to use conferencing software for collaboration purposes.	**.797**	.294
SE116SI I am able to use learning management systems, like Blackboard and Google Classroom, to support teaching.	**.610**	.169
SE111SI I am able to use a spreadsheet to record data, compute simple calculations, and represent data in the form of tables and graphs.	**.597**	.442
SE109BI I am able to use email for communication.	.052	**.917**
SE108BI I am able to use the internet to search for information and resources.	.075	**.891**
SE107BI I am able to use a word processor to create, edit, and format documents for specific purposes.	.313	**.680**
SE110BI I am able to use presentation software for classroom delivery.	.521	**.626**

Scale: SEBI BASIC

Case Processing Summary

		N	%
Cases	Valid	149	100,0
	Excluded[a]	0	,0
	Total	149	100,0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
,796	4

Item-Total Statistics

	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
SE107BI I am able to use a word processor to create, edit, and format documents for specific purposes.	,644	,730
SE108BI I am able to use the internet to search for information and resources.	,648	,748
SE109BI I am able to use email for communication.	,691	,748
SE110BI I am able to use presentation software for classroom delivery.	,653	,759

Scale: SESI SOPHISTICATED

Case Processing Summary

		N	%
Cases	Valid	149	100,0
	Excluded[a]	0	,0
	Total	149	100,0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
,885	6

Item-Total Statistics

	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
SE111SI I am able to use a spreadsheet to record data, compute simple calculations, and represent data in the form of…	,588	,882
SE112SI I am able to use graphic editors to create resources	,798	,848
SE113SI I am able to use video editing software.	,798	,848
SE114SI I am able to use animation software.	,710	,863
SE115SI I am able to use conferencing software for collaboration purposes.	,769	,853
SE116SI I am able to use learning management systems, like Blackboard and Google Classroom, to support teaching.	,524	,891

APPENDIX D

DESCRIPTIVES

Mean and Standard Deviation for Technology Skills

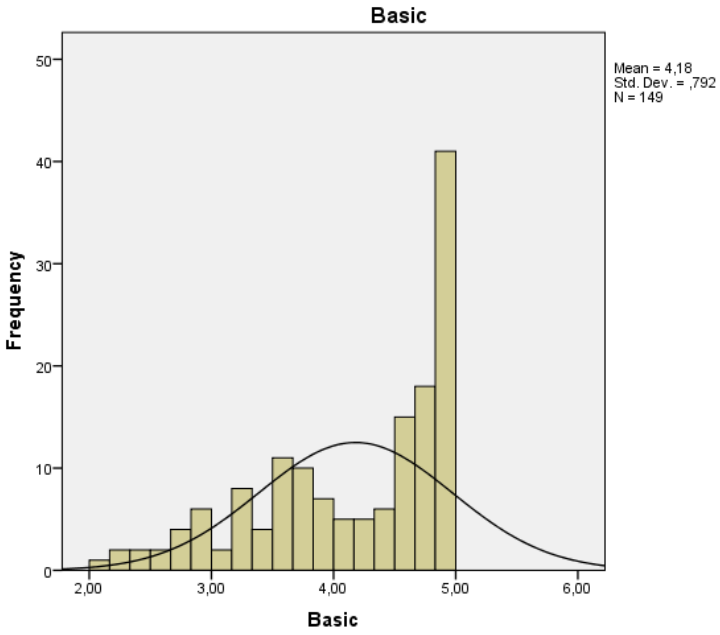
	M	*SD*
TS26WW Send and receive e-mail.	4.67	.631
TS27WW Navigate the World Wide Web.	4.54	.700
TS23WW Log on to a network.	4.30	.866
TS24WW Work in a network environment.	3.85	.968
TS28WW Subscribe to a list-service.	3.72	1.087
TS16BA Change font size and type.	4.60	.697
TS17BA Cut, copy, and paste in and between documents.	4.50	.825
TS11BA Access information on CD-ROM, flash memory, or hard drive.	4.39	.827
TS12BA Create and delete folders.	4.22	.990
TS18BA Insert files, graphics, and tables in a document.	4.18	1.020
TS25BA Share files electronically.	4.18	.987
TS10BA Store files in a folder or subdirectory.	4.13	.982
TS15BA Set margins.	4.04	.999
TS9BA Insert and eject external memory.	4.02	1.003
TS29BA Use an overhead projection device.	3.90	1.143
TS14BA Connecting peripheral devices.	3.82	1.091
TS19US Enter data in cells.	4.07	1.149
TS30US Develop an electronic slide show.	4.01	1.094
TS31US Develop a presentation using graphics.	3.82	1.107
TS20US Move data within a spreadsheet.	3.63	1.291
TS32US Develop a presentation using sound.	3.59	1.213
TS22US Create charts.	3.55	1.153
TS21US Use formulas in a spreadsheet.	3.08	1.343
TS13IP Use of Virus protection.	3.69	1.156
TS33IP Have a knowledge of copyright laws.	3.43	1.129
TS34IP Have a knowledge of software piracy.	3.23	1.097
TS35IP Have a knowledge of intellectual property rights.	3.21	1.147

Frequencies

Statistics

		TSBA Basic	TSUS Using software	TSIP Intellec-tual property	TSWW World Wide Web	TS Technology Skills
N	Valid	149	149	149	149	149
	Missing	0	0	0	0	0
Mean		4,1798	3,6790	3,3893	4,2157	3,9395
Std. Deviation		,79213	1,01486	,98313	,67919	,78085
Skewness		-,766	-,412	-,150	-,598	-,515
Std. Error of Skewness		,199	,199	,199	,199	,199
Kurtosis		-,493	-,890	-,624	-,707	-,790
Std. Error of Kurtosis		,395	,395	,395	,395	,395

Histogram


Basic
Mean = 4,18
Std. Dev. = ,792
N = 149
Frequency
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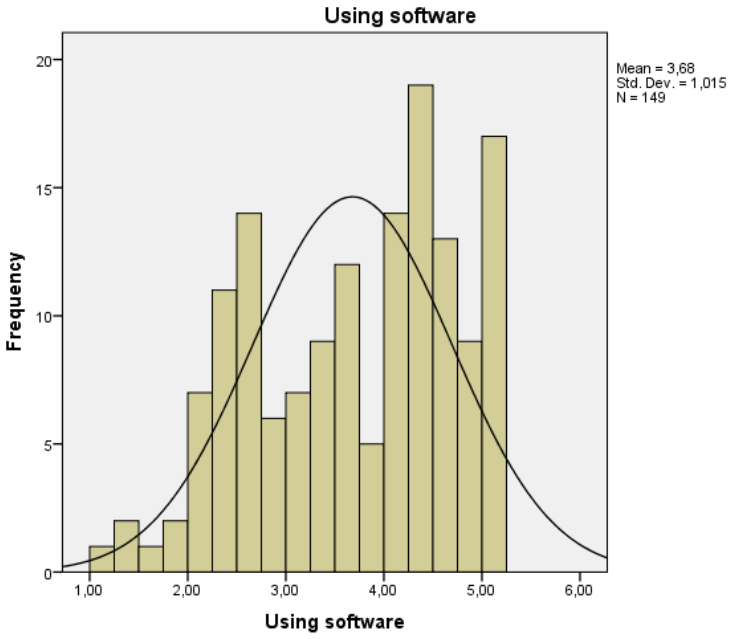
40
30
20
10
0
2,00
3,00
4,00
5,00
6,00
Basic


Using software
Mean = 3,68
Std. Dev. = 1,015
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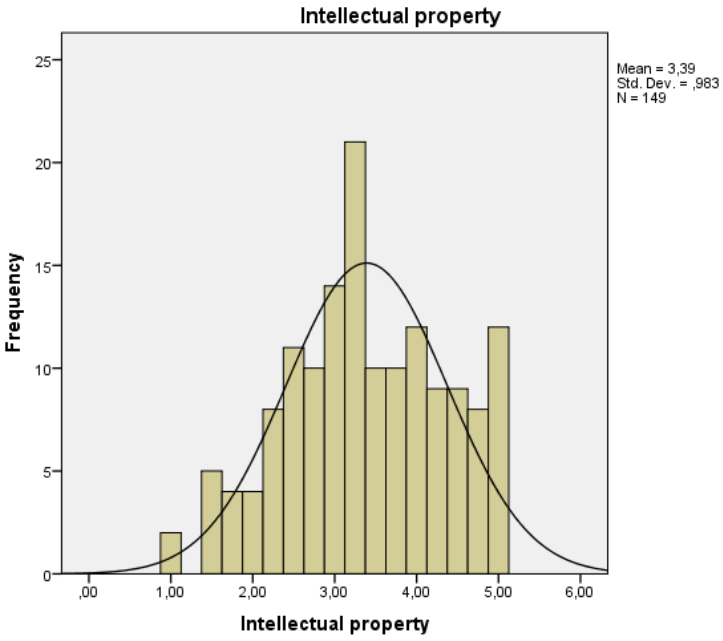
Frequency
20
15
10
5
0
1,00
2,00
3,00
4,00
5,00
6,00
Using software


Intellectual property
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Std. Dev. = ,983
N = 149
Frequency
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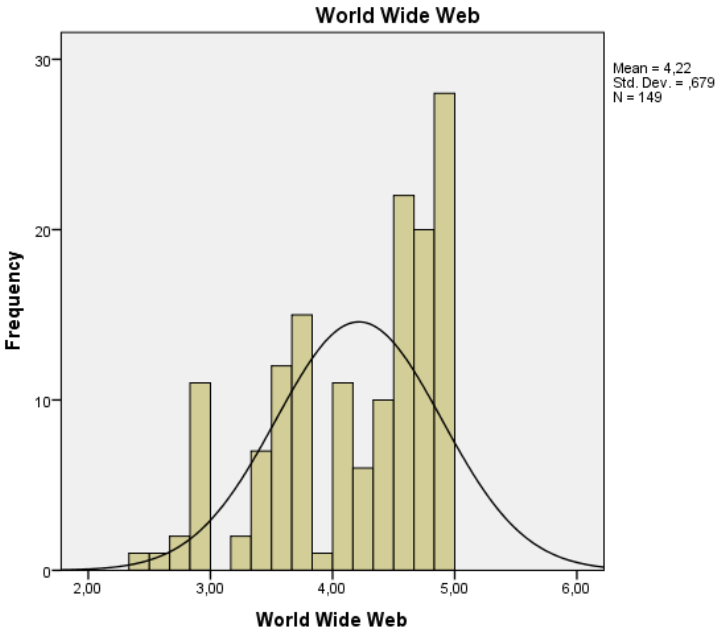
20
15
10
5
0
,00
1,00
2,00
3,00
4,00
5,00
6,00
Intellectual property


World Wide Web
Mean = 4,22
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Frequency
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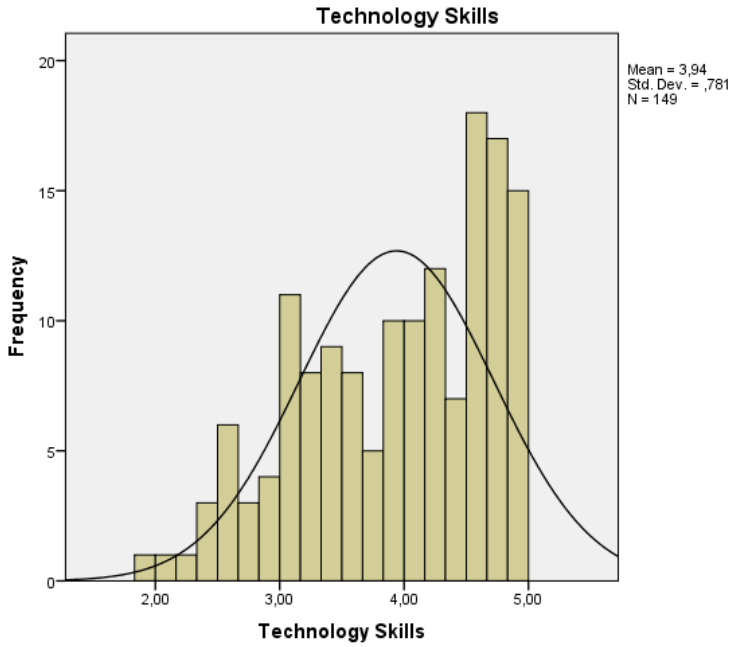
20
10
0
2,00
3,00
4,00
5,00
6,00
World Wide Web



Mean and Standard Deviation for Attitudes towards Technology

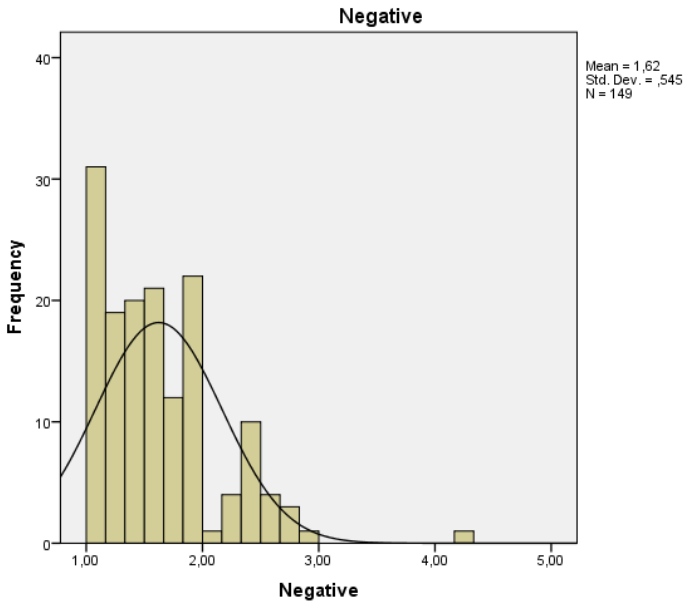
	M	*SD*
AT44PA Students should receive basic education on computer literacy.	4.68	.655
AT43PA Technological tools could be used for practice or revision.	4.45	.700
AT42PA Because video recordings could be watched again, students can provide feedback.	4.34	.633
AT47PA Using technology would facilitate the understanding of difficult subjects.	4.15	.729
AT46PA Technological facilities have a positive effect on productive studying and learning.	4.10	.769
AT41PA Recording some parts of the lesson via video could provide the students with the opportunity to see their mistakes.	4.04	.734
AT49PA Daily and yearly plans should be prepared by teachers using computers.	3.77	.938
AT50PA Lessons should often include computer-assisted instruction.	3.75	.846
AT52IT The usage of new technologies in teacher training should be increased.	4.32	.605
AT45IT Using current technologies would promote the improvement of new ones.	4.28	.666
AT51IT Students should get advanced information on the usage of new technologies.	4.10	.695
AT54IT In order to be able to graduate from high school, the ability to “use the technological materials of the field” should be rated.	3.66	.920
AT53IT Technological tools could only succeed when they address all the sense organs.	2.78	.958
AT56CN Having Microsoft Office Certifications impacts how I teach.	3.04	1.058
AT48CN One does not have to use technological facilities in order to be successful in life.	3.01	1.148
AT55CN Having Google Certifications impacts how I teach my students.	2.91	.996
AT37NA Overhead projectors and slides should not be preferred as they take too much time to be used.	1.85	.857
AT36NA Email is only for communication; it cannot be used in education.	1.71	.915
AT39NA Using technological tools does not affect students’ motivation.	1.66	.859
AT40NA Technological tools do not need to be used in instruction.	1.54	.842
AT38NA Using the Internet in the learning process is a waste of time.	1.34	.566

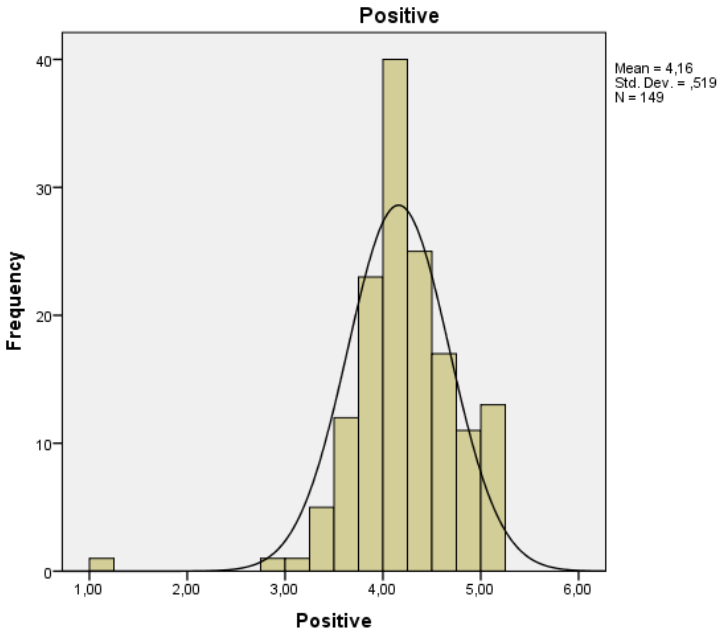
Frequencies

Statistics

		ATNA Nega-tive	ATPA Positive	ATIT Improve-ment of tech-nology	ATCN Certifi-cation	AT Attitude
N	Valid	149	149	149	149	149
	Missing	0	0	0	0	0
Mean		1,6232	4,1599	3,8270	2,9799	3,9634
Std. Deviation		,54483	,51938	,49075	,82853	,40579
Skewness		1,094	-1,258	,040	,046	-,922
Std. Error of Skewness		,199	,199	,199	,199	,199
Kurtosis		2,273	6,775	,226	-,231	4,194
Std. Error of Kurtosis		,395	,395	,395	,395	,395

Histogram

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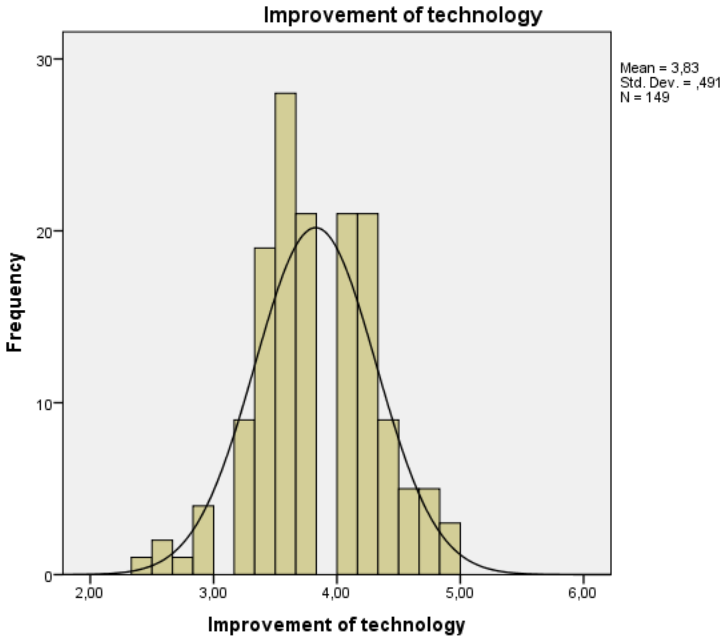
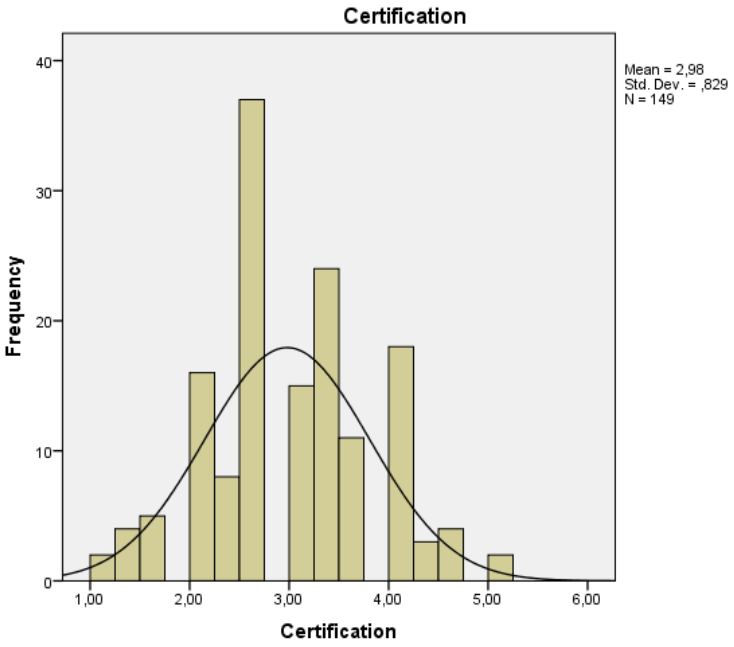
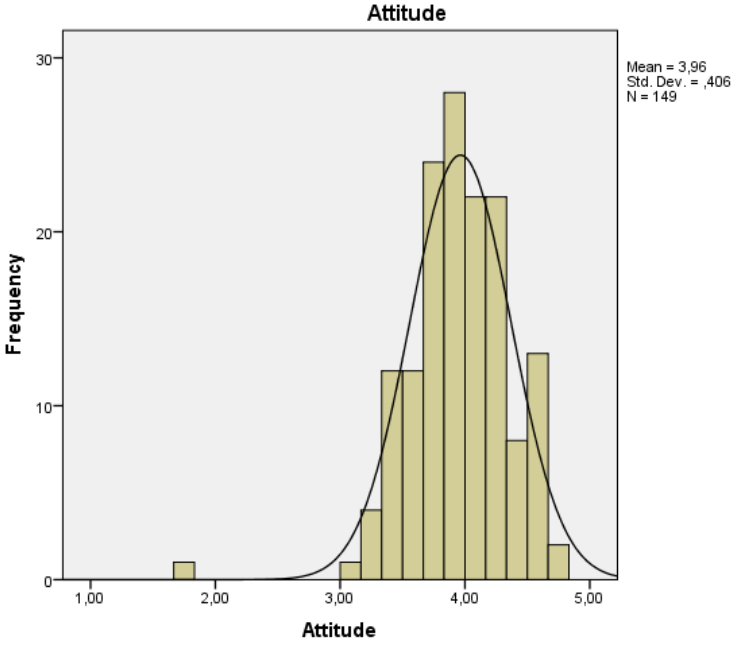
30
20
10
0
1,00
2,00
3,00
4,00
5,00
6,00
Positive


Improvement of technology
Mean = 3,83
Std. Dev. = ,491
N = 149
Frequency
30
20
10
0
2,00
3,00
4,00
5,00
6,00
Improvement of technology


Certification
Mean = 2,98
Std. Dev. = ,829
N = 149
Frequency
40
30
20
10
0
1,00
2,00
3,00
4,00
5,00
6,00
Certification


Attitude
Mean = 3,96
Std. Dev. = ,406
N = 149
Frequency
30
20
10
0
1,00
2,00
3,00
4,00
5,00
Attitude

Mean and Standard Deviation for Use of Technology

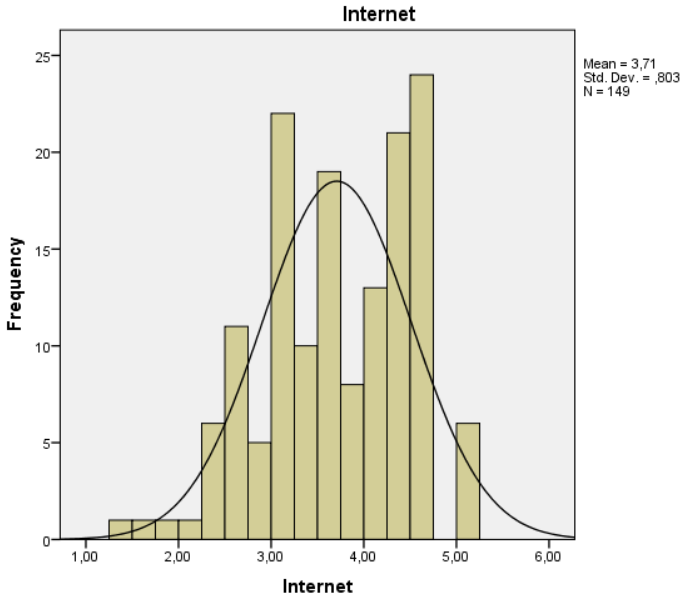
	M	*SD*
UT63II Search engine	4.01	.976
UT62II E-mail	3.97	1.090
UT60II Internet	3.90	.978
UT72II Microsoft Word, Pages, or Google Docs	3.77	1.060
UT61II www page	3.73	.989
UT78II Browser	3.67	1.074
UT71II Microsoft Excel, Numbers, or Google Sheets	2.91	1.099
UT81HI Printer	3.92	1.106
UT82HI Laptop or Chromebook	3.85	1.188
UT84HI Flash memory like flash drives and SD cards	3.31	1.229
UT83HI iPad or Tablet	3.26	1.306
UT70HI Windows Media Player, QuickTime, or iTunes	2.79	1.092
UT85HI Digital camera	2.71	1.237
UT65TV Video	3.35	1.006
UT64TV Television	2.76	1.125
UT73EI Microsoft PowerPoint, Keynote, or Google Slides	3.30	1.017
UT58EI Graphics	3.18	.993
UT79EI Projection	3.10	1.172
UT75EI Supplemental websites for teaching like Khan Academy, Quizlet, etc.	2.80	1.178
UT74EI NAD Resources like Reading A-Z, IXL Math, etc.	2.61	1.142
UT76EI Educational games like Kahoot, Quizlet Live, etc.	2.57	1.097

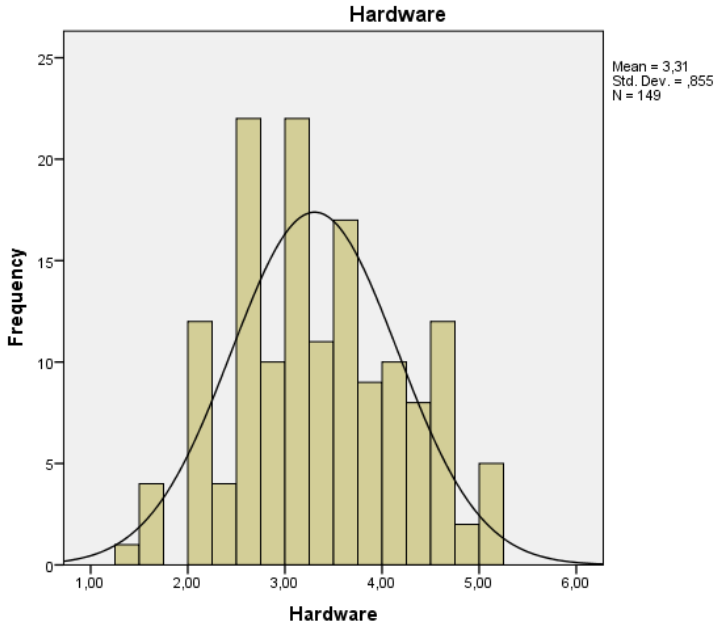
Frequencies

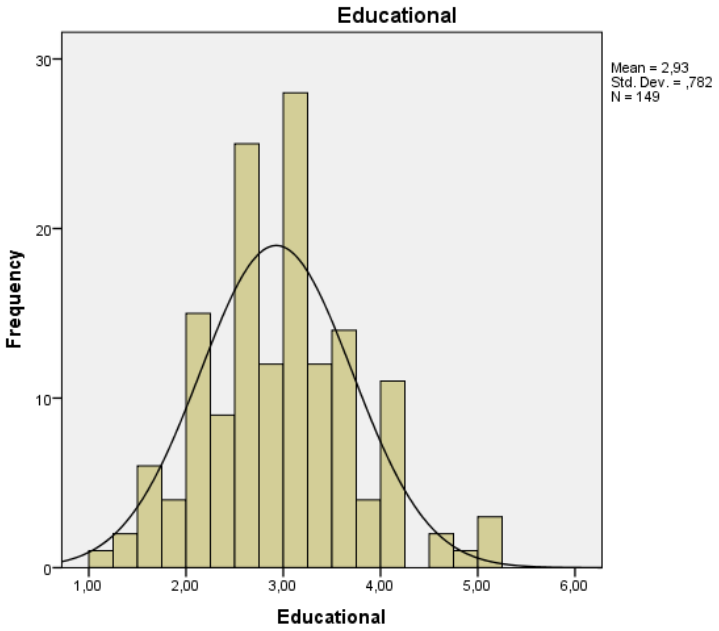
Statistics

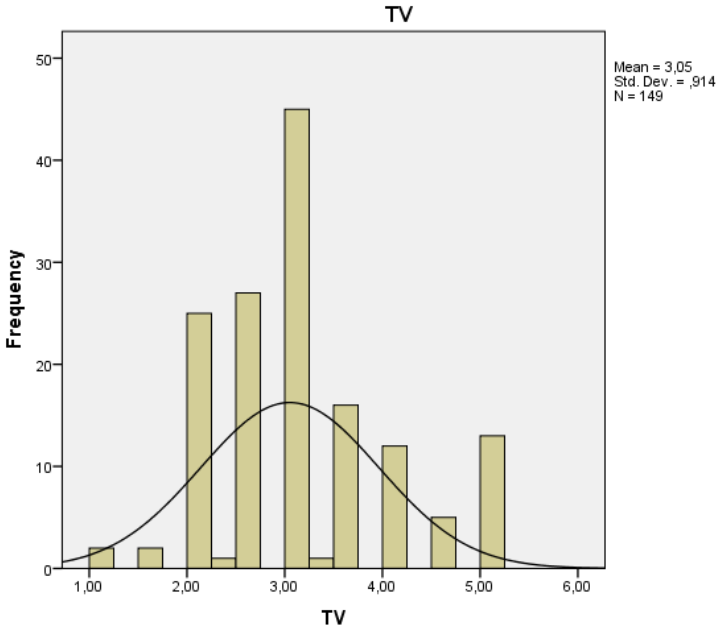
		UTII Internet	UTHI Hard-ware	UTEI Educa-tional	UTTV TV	UT Use of technology
N	Valid	149	149	149	149	149
	Missing	0	0	0	0	0
Mean		3,7082	3,3060	2,9281	3,0520	3,3079
Std. Deviation		,80299	,85461	,78199	,91395	,67645
Skewness		-,358	,080	,281	,576	,027
Std. Error of Skewness		,199	,199	,199	,199	,199
Kurtosis		-,655	-,664	,118	-,037	-,452
Std. Error of Kurtosis		,395	,395	,395	,395	,395

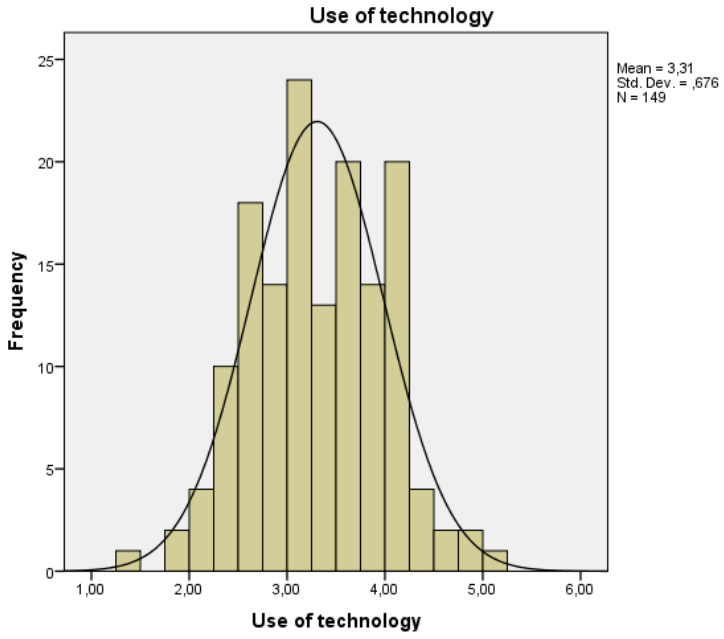
Histogram


Internet
Mean = 3,71
Std. Dev. = ,803
N = 149
Frequency
25
20
15
10
5
0
1,00
2,00
3,00
4,00
5,00
6,00
Internet


Hardware
Mean = 3,31
Std. Dev. = ,855
N = 149
Frequency
25
20
15
10
5
0
1,00
2,00
3,00
4,00
5,00
6,00
Hardware


Educational
Mean = 2,93
Std. Dev. = ,782
N = 149
Frequency
30
20
10
0
1,00
2,00
3,00
4,00
5,00
6,00
Educational


TV
Mean = 3,05
Std. Dev. = ,914
N = 149
Frequency
50
40
30
20
10
0
1,00
2,00
3,00
4,00
5,00
6,00
TV



Mean and Standard Deviation for Burnout.

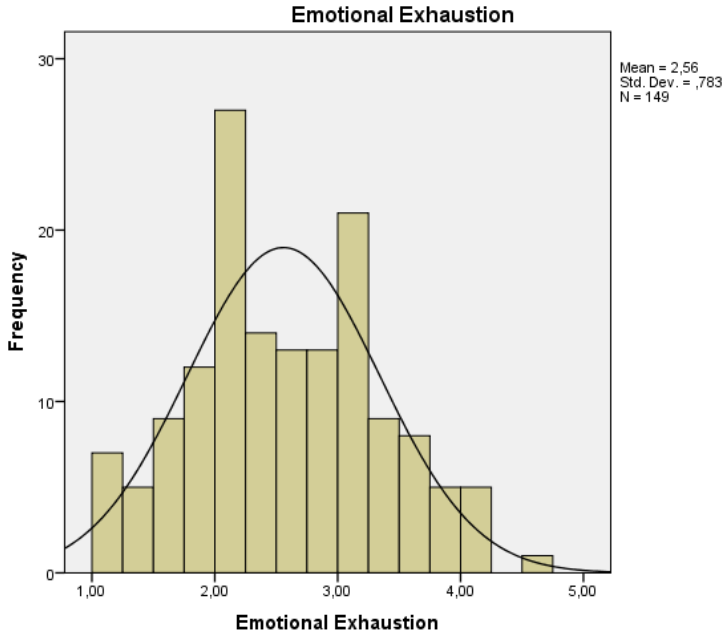
	M	*SD*
BU94PA I feel I'm positively influencing other peoples' lives through my work.	4.18	.780
BU104PA I have accomplished many worthwhile things in this job.	4.10	.724
BU102PA I can easily create a relaxed atmosphere with my audience.	3.91	.813
BU92PA I deal very effectively with the problems of my audience.	3.87	.684
BU89PA I can easily understand how my audience feels about things.	3.66	.741
BU103PA I feel exhilarated after working closely with my audience.	3.41	.950
BU97PA I feel very energetic.	3.27	1.050
BU87EE I feel used up at the end of the workday.	3.12	1.202
BU99EE I feel I'm working too hard on my job.	3.08	1.211
BU86EE I feel emotionally drained from my work.	2.87	1.221
BU88EE I feel fatigued when I get up in the morning and have to face another day on the job.	2.78	1.190
BU93EE I feel burnt out from my work.	2.74	1.170
BU98EE I feel frustrated by my job.	2.48	1.172
BU105EE I feel like I'm at the end of the rope.	2.12	.922
BU91EE Working with people all day is really a strain for me.	2.00	.908
BU101EE Working with people directly puts too much stress on me.	1.84	.780
BU106DE I feel recipients blame me for some of their problems.	2.49	1.130
BU96DE I worry that this job is hardening me emotionally.	2.10	1.064
BU95DE I've become more callous toward people since I took this job.	1.91	.895
BU90DE I feel I treat some in my audience as if they were impersonal objects.	1.83	.800
BU100DE I don't really care what happens to some people in my audience.	1.54	.642

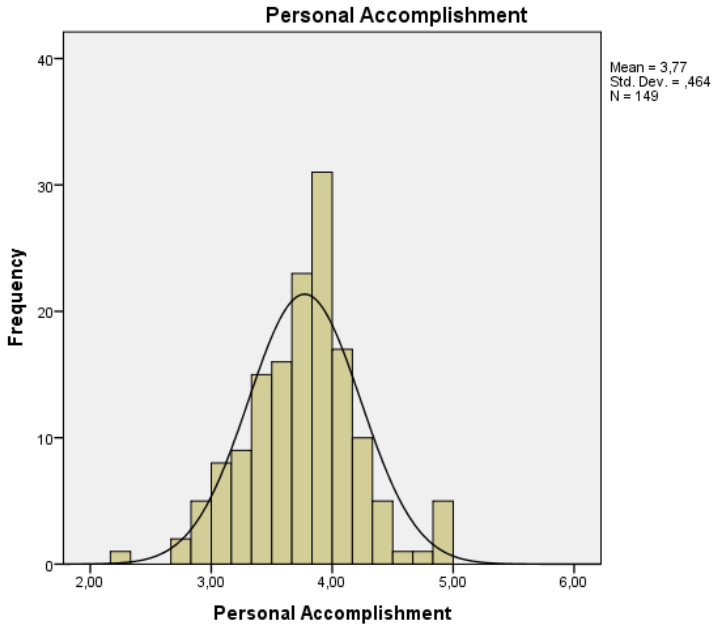
Frequencies

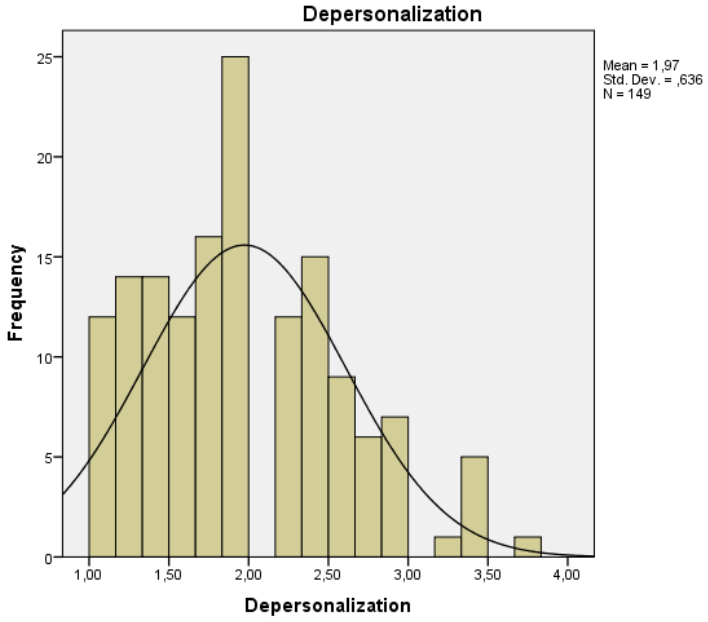
Statistics

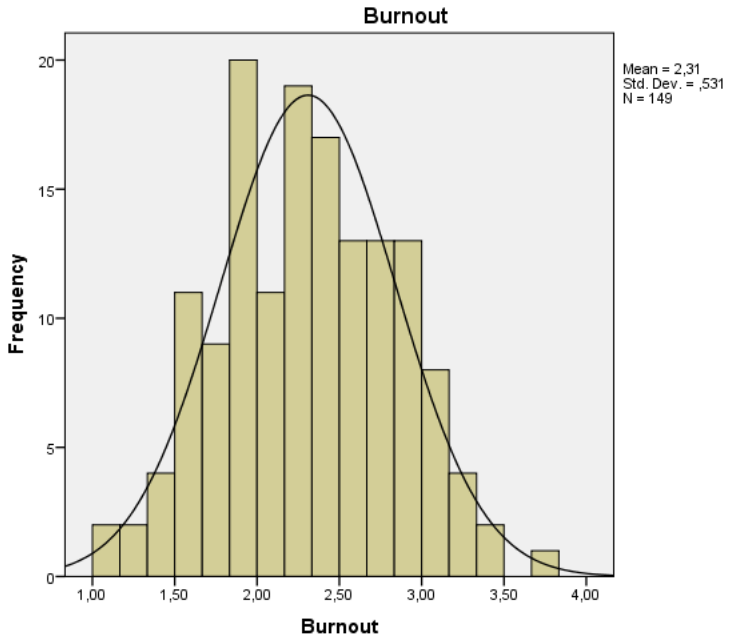
		BUEE Emotional Exhaustion	BUPA Personal Accomplishment	BUDE Depersonalization	BU Burnout
N	Valid	149	149	149	149
	Missing	0	0	0	0
Mean		2,5589	3,7717	1,9737	2,3093
Std. Deviation		,78285	,46381	,63552	,53143
Skewness		,162	,078	,429	-,020
Std. Error of Skewness		,199	,199	,199	,199
Kurtosis		-,509	,638	-,298	-,385
Std. Error of Kurtosis		,395	,395	,395	,395

Histogram




Personal Accomplishment
Mean = 3,77
Std. Dev. = ,464
N = 149
Frequency
40
30
20
10
0
2,00
3,00
4,00
5,00
6,00
Personal Accomplishment


Depersonalization
Mean = 1,97
Std. Dev. = ,636
N = 149
Frequency
25
20
15
10
5
0
1,00
1,50
2,00
2,50
3,00
3,50
4,00
Depersonalization



Mean and Standard Deviation for Self-efficacy

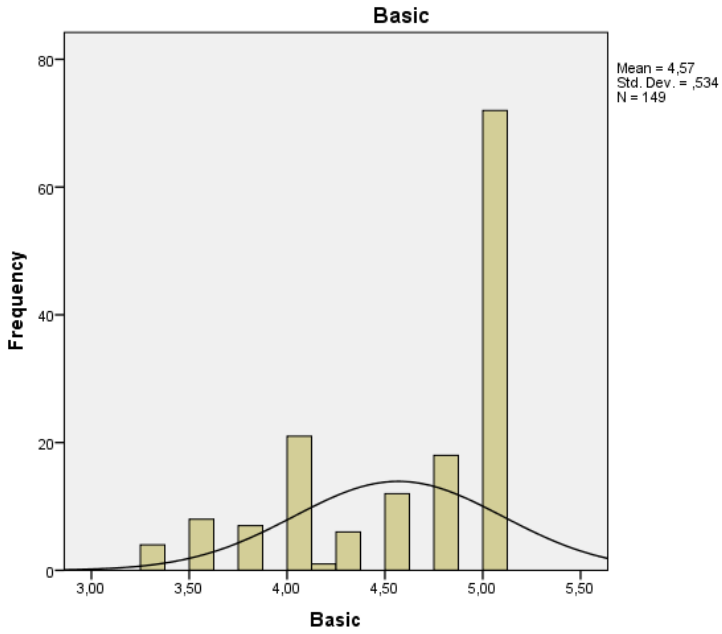
Items	*M*	*SD*
SE109BI I am able to use email for communication.	4.75	.433
SE107BI I am able to use a word processor to create, edit, and format documents for specific purposes.	4.46	.755
SE110BI I am able to use presentation software for classroom delivery.	4.34	.914
SE111SI I am able to use a spreadsheet to record data, compute simple calculations, and represent data in the form of tables and graphs.	3.97	1.071
SE116SI I am able to use learning management systems, like Blackboard and Google Classroom, to support teaching.	3.75	1.090
SE112SI I am able to use graphic editors to create resources for teaching.	3.62	1.210
SE115SI I am able to use conferencing software for collaboration purposes.	3.61	1.228
SE113SI I am able to use video editing software.	3.14	1.284
SE114SI I am able to use animation software.	2.84	1.172

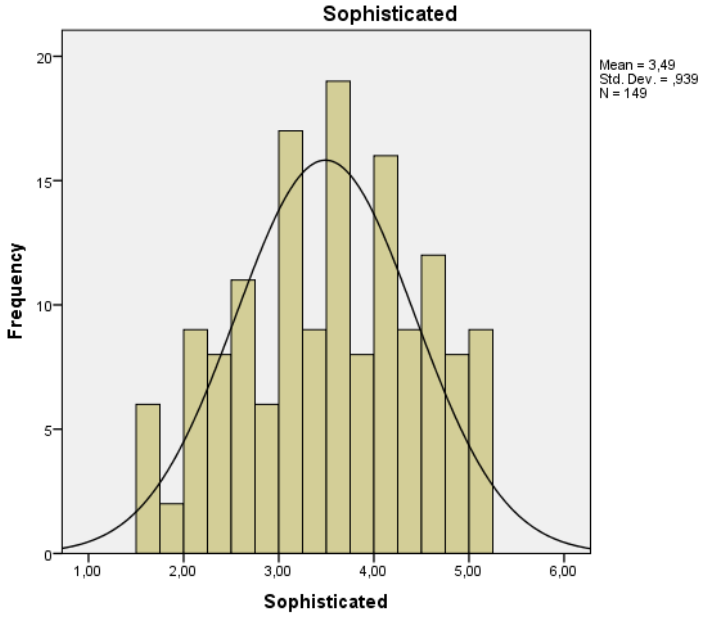
Frequencies

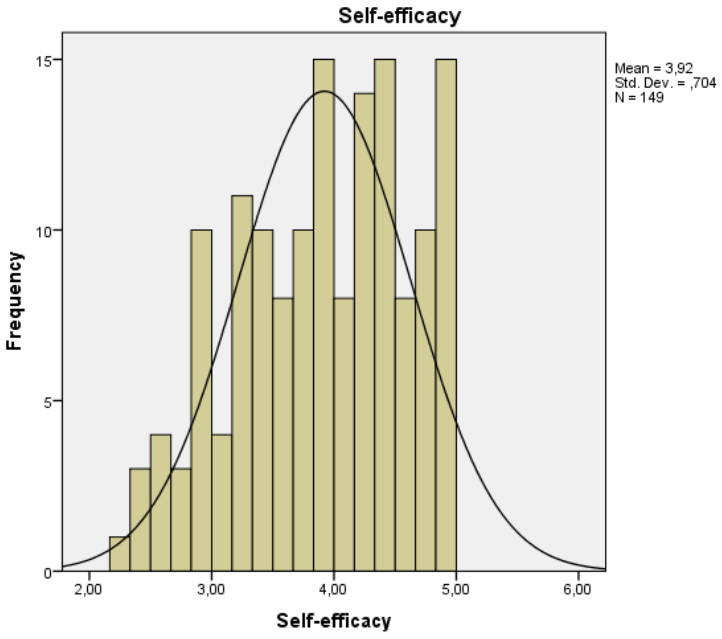
Statistics

		SEBI Basic	SESI Sophisti-cated	SE Self-effi-cacy
N	Valid	149	149	149
	Missing	0	0	0
Mean		4,5682	3,4902	3,9214
Std. Deviation		,53360	,93919	,70421
Skewness		-,929	-,184	-,311
Std. Error of Skewness		,199	,199	,199
Kurtosis		-,462	-,902	-,846
Std. Error of Kurtosis		,395	,395	,395

Histogram

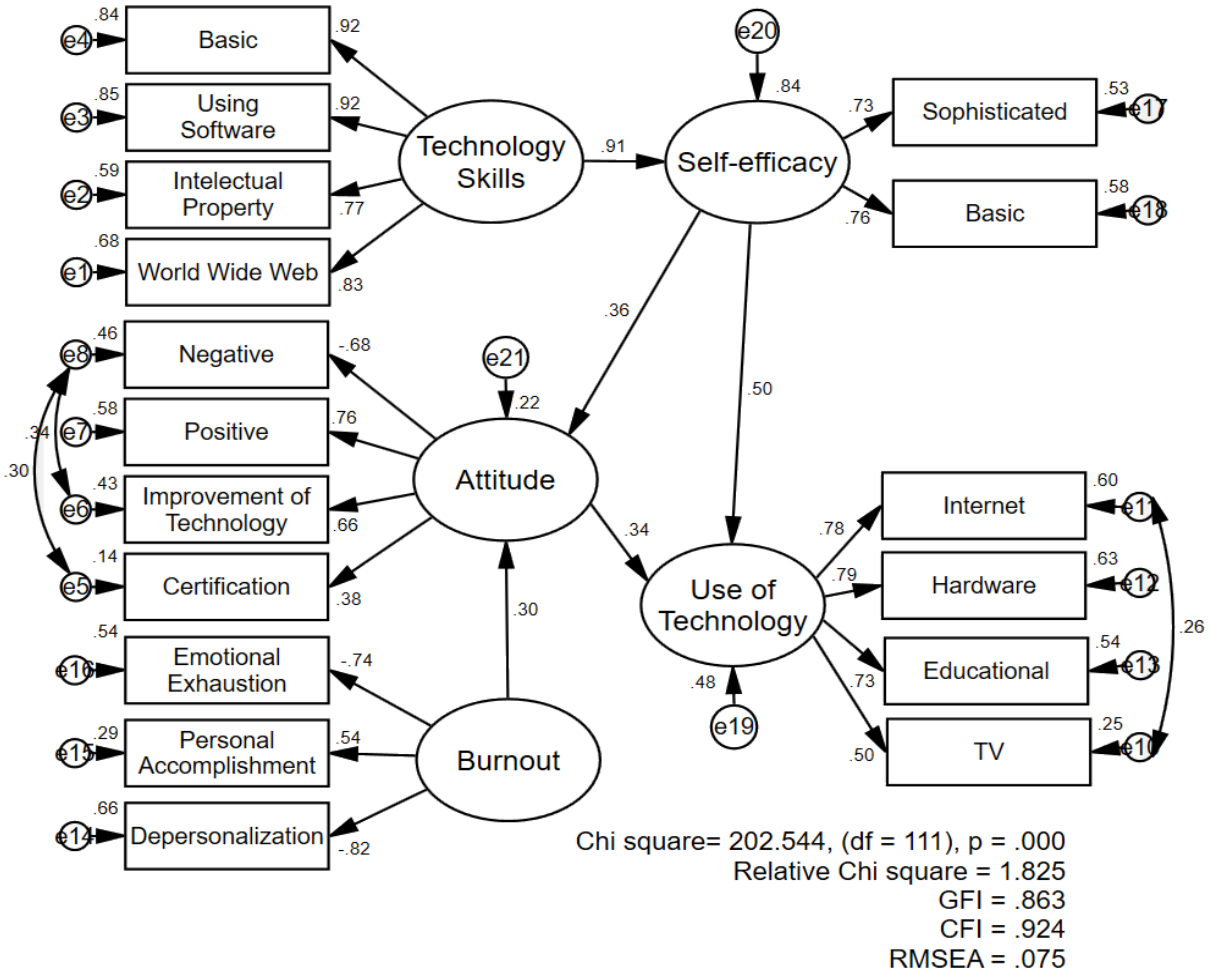

Basic
Mean = 4,57
Std. Dev. = ,534
N = 149
Frequency
80
60
40
20
0
3,00
3,50
4,00
4,50
5,00
5,50
Basic


Sophisticated
Mean = 3,49
Std. Dev. = ,939
N = 149
Frequency
20
15
10
5
0
1,00
2,00
3,00
4,00
5,00
6,00
Sophisticated


Self-efficacy
Mean = 3,92
Std. Dev. = ,704
N = 149
Frequency
15
10
5
0
2,00
3,00
4,00
5,00
6,00
Self-efficacy

APPENDIX E

HYPOTHESIS TESTING



Analysis Summary

Date and Time
Date: domingo, 12 de enero de 2020
Time: 08:41:15 p. m.

Title
Modelo: domingo, 12 de enero de 2020 08:41 p. m.
Groups
Group number 1 (Group number 1)
Notes for Group (Group number 1)
The model is recursive.
Sample size = 149

Variable Summary (Group number 1)

Your model contains the following variables (Group number 1)

Observed, endogenous variables	TSIP	ATCN
	TSUS	ATIT
TSWW	TSBA	ATPA

ATNA	UT	e10
UTRI	SE	e11
UTSI	Unobserved, exogenous va-	e12
UTII	riables	e13
UTHI	TS	BU
UTEI	e1	e14
BUDE	e2	e15
BUPA	e3	e16
BUEE	e4	e17
SESI	e5	e18
SEBI	e6	e19
Unobserved, endogenous	e7	e20
variables	e8	e21
AT	e9	

Variable counts (Group number 1)

Number of variables in your model:	44
Number of observed variables:	18
Number of unobserved variables:	26
Number of exogenous variables:	23
Number of endogenous variables:	21

Parameter Summary (Group number 1)

	Weights	Covariances	Variances	Means	Intercepts	Total
Fixed	26	0	0	0	0	26
Labeled	0	0	0	0	0	0
Unlabeled	18	4	23	0	0	45
Total	44	4	23	0	0	71

Models

Default model (Default model)

Notes for Model (Default model)

Computation of degrees of freedom (Default model)

Number of distinct sample moments:	171
Number of distinct parameters to be estimated:	45
Degrees of freedom (171 - 45):	126

Result (Default model)

Minimum was achieved
Chi-square = 256.399
Degrees of freedom = 126
Probability level = .000

Group number 1 (Group number 1 - Default model)

Estimates (Group number 1 - Default model)

Scalar Estimates (Group number 1 - Default model)

Maximum Likelihood Estimates

Regression Weights: (Group number 1 - Default model)

			Estimate	S.E.	C.R.	P	Label
SE	<---	TS	.490	.056	8.823	***	
AT	<---	BU	-.202	.070	-2.875	.004	
AT	<---	SE	.347	.098	3.554	***	
UT	<---	SE	.845	.158	5.359	***	
UT	<---	AT	.551	.158	3.484	***	
TSWW	<---	TS	.743	.069	10.833	***	
TSIP	<---	TS	1.000				
TSUS	<---	TS	1.245	.100	12.460	***	
TSBA	<---	TS	.961	.078	12.292	***	
ATCN	<---	AT	.800	.211	3.800	***	
ATIT	<---	AT	.822	.145	5.669	***	
ATPA	<---	AT	1.000				
ATNA	<---	AT	-.937	.170	-5.514	***	
UTRI	<---	UT	.474	.097	4.868	***	
UTSI	<---	UT	1.000				
UTII	<---	UT	.820	.089	9.208	***	
UTHI	<---	UT	.435	.089	4.888	***	
UTEI	<---	UT	.769	.099	7.734	***	
BUDE	<---	BU	.899	.149	6.040	***	
BUPA	<---	BU	-.432	.078	-5.520	***	
BUEE	<---	BU	1.000				
SESI	<---	SE	1.705	.196	8.716	***	
SEBI	<---	SE	1.000				

Standardized Regression Weights: (Group number 1 - Default model)

			Estimate
SE	<---	TS	.907
AT	<---	BU	-.297
AT	<---	SE	.360
UT	<---	SE	.497
UT	<---	AT	.312
TSWW	<---	TS	.825
TSIP	<---	TS	.767
TSUS	<---	TS	.925
TSBA	<---	TS	.914
ATCN	<---	AT	.379
ATIT	<---	AT	.660
ATPA	<---	AT	.760
ATNA	<---	AT	-.681
UTRI	<---	UT	.413
UTSI	<---	UT	.912
UTII	<---	UT	.723
UTHI	<---	UT	.411
UTEI	<---	UT	.620
BUDE	<---	BU	.816

			Estimate
BUPA	<---	BU	-.537
BUEE	<---	BU	.737
SESI	<---	SE	.739
SEBI	<---	SE	.763

Covariances: (Group number 1 - Default model)

			Estimate	S.E.	C.R.	P	Label
e5	<-->	e8	.091	.033	2.749	.006	
e9	<-->	e13	.115	.044	2.640	.008	
e6	<-->	e8	.049	.021	2.343	.019	
e9	<-->	e12	.063	.040	1.584	.113	

Correlations: (Group number 1 - Default model)

			Estimate
e5	<-->	e8	.304
e9	<-->	e13	.238
e6	<-->	e8	.341
e9	<-->	e12	.131

Variances: (Group number 1 - Default model)

	Estimate	S.E.	C.R.	P	Label
TS	.564	.104	5.437	***	
BU	.331	.079	4.169	***	
e20	.029	.012	2.370	.018	
e21	.120	.027	4.399	***	
e19	.259	.050	5.188	***	
e1	.146	.020	7.436	***	
e2	.396	.051	7.830	***	
e3	.147	.028	5.237	***	
e4	.102	.018	5.684	***	
e5	.582	.072	8.052	***	
e6	.134	.023	5.729	***	
e7	.112	.024	4.710	***	
e8	.155	.030	5.178	***	
e9	.521	.062	8.348	***	
e10	.097	.035	2.750	.006	
e11	.292	.042	6.961	***	
e12	.443	.053	8.357	***	
e13	.450	.058	7.761	***	
e14	.134	.042	3.216	.001	
e15	.152	.020	7.564	***	
e16	.278	.058	4.793	***	
e17	.398	.059	6.782	***	
e18	.118	.018	6.442	***	

Squared Multiple Correlations: (Group number 1 - Default model)

	Estimate
SE	.823

	Estimate
AT	.218
UT	.456
SEBI	.582
SESI	.546
BUEE	.543
BUPA	.289
BUDE	.665
UTEI	.385
UTHI	.169
UTII	.523
UTSI	.831
UTRI	.170
ATNA	.464
ATPA	.578
ATIT	.436
ATCN	.144
TSBA	.836
TSUS	.856
TSIP	.588
TSWW	.681

Matrices (Group number 1 - Default model)

Total Effects (Group number 1 - Default model)

	BU	TS	SE	AT	UT
SE	.000	.490	.000	.000	.000
AT	-.202	.170	.347	.000	.000
UT	-.111	.508	1.036	.551	.000
SEBI	.000	.490	1.000	.000	.000
SESI	.000	.835	1.705	.000	.000
BUEE	1.000	.000	.000	.000	.000
BUPA	-.432	.000	.000	.000	.000
BUDE	.899	.000	.000	.000	.000
UTEI	-.086	.390	.797	.424	.769
UTHI	-.048	.221	.451	.240	.435
UTII	-.091	.416	.849	.452	.820
UTSI	-.111	.508	1.036	.551	1.000
UTRI	-.053	.240	.491	.261	.474
ATNA	.189	-.159	-.325	-.937	.000
ATPA	-.202	.170	.347	1.000	.000
ATIT	-.166	.140	.285	.822	.000
ATCN	-.162	.136	.277	.800	.000
TSBA	.000	.961	.000	.000	.000
TSUS	.000	1.245	.000	.000	.000
TSIP	.000	1.000	.000	.000	.000
TSWW	.000	.743	.000	.000	.000

Standardized Total Effects (Group number 1 - Default model)

	BU	TS	SE	AT	UT
SE	.000	.907	.000	.000	.000
AT	-.297	.326	.360	.000	.000
UT	-.093	.552	.609	.312	.000
SEBI	.000	.692	.763	.000	.000
SESI	.000	.670	.739	.000	.000
BUEE	.737	.000	.000	.000	.000
BUPA	-.537	.000	.000	.000	.000
BUDE	.816	.000	.000	.000	.000
UTEI	-.058	.343	.378	.194	.620
UTHI	-.038	.227	.250	.128	.411
UTII	-.067	.400	.441	.226	.723
UTSI	-.085	.504	.555	.285	.912
UTRI	-.038	.228	.251	.129	.413
ATNA	.202	-.222	-.245	-.681	.000
ATPA	-.226	.248	.274	.760	.000
ATIT	-.196	.216	.238	.660	.000
ATCN	-.113	.124	.137	.379	.000
TSBA	.000	.914	.000	.000	.000
TSUS	.000	.925	.000	.000	.000
TSIP	.000	.767	.000	.000	.000
TSWW	.000	.825	.000	.000	.000

Direct Effects (Group number 1 - Default model)

	BU	TS	SE	AT	UT
SE	.000	.490	.000	.000	.000
AT	-.202	.000	.347	.000	.000
UT	.000	.000	.845	.551	.000
SEBI	.000	.000	1.000	.000	.000
SESI	.000	.000	1.705	.000	.000
BUEE	1.000	.000	.000	.000	.000
BUPA	-.432	.000	.000	.000	.000
BUDE	.899	.000	.000	.000	.000
UTEI	.000	.000	.000	.000	.769
UTHI	.000	.000	.000	.000	.435
UTII	.000	.000	.000	.000	.820
UTSI	.000	.000	.000	.000	1.000
UTRI	.000	.000	.000	.000	.474
ATNA	.000	.000	.000	-.937	.000
ATPA	.000	.000	.000	1.000	.000
ATIT	.000	.000	.000	.822	.000
ATCN	.000	.000	.000	.800	.000
TSBA	.000	.961	.000	.000	.000
TSUS	.000	1.245	.000	.000	.000
TSIP	.000	1.000	.000	.000	.000
TSWW	.000	.743	.000	.000	.000

Standardized Direct Effects (Group number 1 - Default model)

	BU	TS	SE	AT	UT
SE	.000	.907	.000	.000	.000
AT	-.297	.000	.360	.000	.000
UT	.000	.000	.497	.312	.000
SEBI	.000	.000	.763	.000	.000
SESI	.000	.000	.739	.000	.000
BUEE	.737	.000	.000	.000	.000
BUPA	-.537	.000	.000	.000	.000
BUDE	.816	.000	.000	.000	.000
UTEI	.000	.000	.000	.000	.620
UTHI	.000	.000	.000	.000	.411
UTII	.000	.000	.000	.000	.723
UTSI	.000	.000	.000	.000	.912
UTRI	.000	.000	.000	.000	.413
ATNA	.000	.000	.000	-.681	.000
ATPA	.000	.000	.000	.760	.000
ATIT	.000	.000	.000	.660	.000
ATCN	.000	.000	.000	.379	.000
TSBA	.000	.914	.000	.000	.000
TSUS	.000	.925	.000	.000	.000
TSIP	.000	.767	.000	.000	.000
TSWW	.000	.825	.000	.000	.000

Indirect Effects (Group number 1 - Default model)

	BU	TS	SE	AT	UT
SE	.000	.000	.000	.000	.000
AT	.000	.170	.000	.000	.000
UT	-.111	.508	.191	.000	.000
SEBI	.000	.490	.000	.000	.000
SESI	.000	.835	.000	.000	.000
BUEE	.000	.000	.000	.000	.000
BUPA	.000	.000	.000	.000	.000
BUDE	.000	.000	.000	.000	.000
UTEI	-.086	.390	.797	.424	.000
UTHI	-.048	.221	.451	.240	.000
UTII	-.091	.416	.849	.452	.000
UTSI	-.111	.508	1.036	.551	.000
UTRI	-.053	.240	.491	.261	.000
ATNA	.189	-.159	-.325	.000	.000
ATPA	-.202	.170	.347	.000	.000
ATIT	-.166	.140	.285	.000	.000
ATCN	-.162	.136	.277	.000	.000
TSBA	.000	.000	.000	.000	.000
TSUS	.000	.000	.000	.000	.000
TSIP	.000	.000	.000	.000	.000
TSWW	.000	.000	.000	.000	.000

Standardized Indirect Effects (Group number 1 - Default model)

	BU	TS	SE	AT	UT
SE	.000	.000	.000	.000	.000
AT	.000	.326	.000	.000	.000
UT	-.093	.552	.112	.000	.000
SEBI	.000	.692	.000	.000	.000
SESI	.000	.670	.000	.000	.000
BUEE	.000	.000	.000	.000	.000
BUPA	.000	.000	.000	.000	.000
BUDE	.000	.000	.000	.000	.000
UTEI	-.058	.343	.378	.194	.000
UTHI	-.038	.227	.250	.128	.000
UTII	-.067	.400	.441	.226	.000
UTSI	-.085	.504	.555	.285	.000
UTRI	-.038	.228	.251	.129	.000
ATNA	.202	-.222	-.245	.000	.000
ATPA	-.226	.248	.274	.000	.000
ATIT	-.196	.216	.238	.000	.000
ATCN	-.113	.124	.137	.000	.000
TSBA	.000	.000	.000	.000	.000
TSUS	.000	.000	.000	.000	.000
TSIP	.000	.000	.000	.000	.000
TSWW	.000	.000	.000	.000	.000

Modification Indices (Group number 1 - Default model)

Covariances: (Group number 1 - Default model)

			M.I.	Par Change
e18	<-->	BU	6.086	-.050
e16	<-->	e19	4.367	.062
e15	<-->	TS	9.024	.078
e15	<-->	e20	5.644	.024
e15	<-->	e21	9.437	.041
e14	<-->	e18	4.163	-.031
e13	<-->	e17	8.227	.109
e12	<-->	TS	4.625	-.091
e12	<-->	e18	13.402	-.076
e12	<-->	e17	6.216	.094
e9	<-->	e17	5.530	-.093
e8	<-->	BU	5.466	.056
e7	<-->	e15	4.081	.026
e6	<-->	e16	4.220	.042
e4	<-->	e18	17.448	.050
e4	<-->	e17	19.318	-.094
e4	<-->	e13	4.844	-.046
e3	<-->	e17	12.043	.092
e3	<-->	e13	5.115	.059
e2	<-->	e21	5.308	-.049
e2	<-->	e18	8.297	-.059
e2	<-->	e17	8.960	.111

			M.I.	Par Change
e2	<-->	e16	7.457	-.090
e2	<-->	e5	8.925	-.125
e1	<-->	e6	4.070	.028

Variances: (Group number 1 - Default model)

	M.I.	Par Change

Regression Weights: (Group number 1 - Default model)

			M.I.	Par Change
SEBI	<---	BU	6.086	-.152
SEBI	<---	BUPA	5.103	.153
SEBI	<---	BUDE	7.174	-.132
SEBI	<---	UTHI	10.734	-.141
SESI	<---	UTEI	4.996	.148
SESI	<---	UTHI	5.168	.176
BUEE	<---	UT	4.629	.167
BUEE	<---	UTEI	4.160	.120
BUEE	<---	UTSI	4.238	.136
BUEE	<---	ATIT	4.730	.224
BUPA	<---	TS	9.024	.138
BUPA	<---	SE	11.909	.306
BUPA	<---	AT	14.871	.362
BUPA	<---	UT	17.564	.217
BUPA	<---	SEBI	10.461	.204
BUPA	<---	SESI	4.382	.075
BUPA	<---	UTEI	11.068	.130
BUPA	<---	UTII	8.299	.123
BUPA	<---	UTSI	14.481	.169
BUPA	<---	UTRI	11.339	.143
BUPA	<---	ATNA	8.619	-.183
BUPA	<---	ATPA	14.675	.250
BUPA	<---	ATIT	4.264	.142
BUPA	<---	TSBA	8.680	.125
BUPA	<---	TSUS	5.809	.080
BUPA	<---	TSWW	9.039	.149
UTEI	<---	SESI	7.126	.158
UTHI	<---	TS	4.625	-.162
UTHI	<---	SE	4.290	-.300
UTHI	<---	SEBI	12.991	-.371
UTHI	<---	TSBA	5.758	-.166
UTHI	<---	TSWW	4.694	-.175
UTII	<---	SESI	5.697	-.121
UTSI	<---	SEBI	4.876	.163
UTRI	<---	SESI	5.140	-.139
UTRI	<---	BUPA	4.086	.250
ATNA	<---	BU	5.466	.168
ATNA	<---	BUDE	6.087	.143
ATIT	<---	BUEE	4.588	.093

			M.I.	Par Change
ATCN	<---	TSIP	6.081	-.160
TSBA	<---	SEBI	5.826	.142
TSBA	<---	SESI	7.641	-.092
TSUS	<---	SESI	5.631	.099
TSIP	<---	AT	4.159	-.308
TSIP	<---	ATCN	9.293	-.200

Minimization History (Default model)

Itera-tion		Negative eigenval-ues	Condition #	Smallest eigen-value	Diameter	F	NTries	Ratio
0	e	10		-.677	9999.000	1449.782	0	9999.000
1	e	8		-.393	2.644	796.285	20	.470
2	e*	5		-.121	.806	545.126	5	.877
3	e*	1		-.029	1.118	331.460	5	.801
4	e	0	494.943		.684	276.990	5	.803
5	e	0	83.775		.736	264.691	3	.000
6	e	0	109.778		.341	257.011	1	.988
7	e	0	118.060		.075	256.404	1	1.048
8	e	0	121.416		.009	256.399	1	1.013
9	e	0	121.375		.000	256.399	1	1.000

Model Fit Summary

CMIN

Model	NPAR	CMIN	DF	P	CMIN/DF
Default model	45	256.399	126	.000	2.035
Saturated model	171	.000	0		
Independence model	18	1394.742	153	.000	9.116

RMR, GFI

Model	RMR	GFI	AGFI	PGFI
Default model	.045	.843	.787	.621
Saturated model	.000	1.000		
Independence model	.185	.366	.291	.327

Baseline Comparisons

Model	NFI Delta1	RFI rho1	IFI Delta2	TLI rho2	CFI
Default model	.816	.777	.897	.872	.895
Saturated model	1.000		1.000		1.000
Independence model	.000	.000	.000	.000	.000

Parsimony-Adjusted Measures

Model	PRATIO	PNFI	PCFI
Default model	.824	.672	.737
Saturated model	.000	.000	.000
Independence model	1.000	.000	.000

NCP

Model	NCP	LO 90	HI 90
Default model	130.399	88.488	180.085
Saturated model	.000	.000	.000
Independence model	1241.742	1125.979	1364.941

FMIN

Model	FMIN	F0	LO 90	HI 90
Default model	1.732	.881	.598	1.217
Saturated model	.000	.000	.000	.000
Independence model	9.424	8.390	7.608	9.223

RMSEA

Model	RMSEA	LO 90	HI 90	PCLOSE
Default model	.084	.069	.098	.000
Independence model	.234	.223	.246	.000

AIC

Model	AIC	BCC	BIC	CAIC
Default model	346.399	359.655	481.576	526.576
Saturated model	342.000	392.372	855.675	1026.675
Independence model	1430.742	1436.045	1484.813	1502.813

ECVI

Model	ECVI	LO 90	HI 90	MECVI
Default model	2.341	2.057	2.676	2.430
Saturated model	2.311	2.311	2.311	2.651
Independence model	9.667	8.885	10.500	9.703

HOELTER

Model	HOELTER .05	HOELTER .01
Default model	89	96
Independence model	20	21

Execution time summary

Minimization:	.019
Miscellaneous:	.452
Bootstrap:	.000
Total:	.471

APPENDIX F

OTHER ANALYSES

T-Test

Group Statistics

	D1R	N	Mean	Std. Deviation
TSBA Basic	1.00 NEC	91	4,1476	,80219
	2.00 OTHER	58	4,2305	,78032
TSUS Using software	1.00 NEC	91	3,6861	1,00703
	2.00 OTHER	58	3,6679	1,03575
TSIP Intellectual property	1.00 NEC	91	3,3379	1,00649
	2.00 OTHER	58	3,4698	,94831
TSWW World Wide Web	1.00 NEC	91	4,2093	,69462
	2.00 OTHER	58	4,2257	,66013
ATNA Negative	1.00 NEC	91	1,5917	,57092
	2.00 OTHER	58	1,6726	,50201
ATPA Positive	1.00 NEC	91	4,2087	,54309
	2.00 OTHER	58	4,0834	,47427
ATIT Improvement of technology	1.00 NEC	91	3,8684	,46484
	2.00 OTHER	58	3,7621	,52643
ATCN Certification	1.00 NEC	91	2,9926	,81487
	2.00 OTHER	58	2,9600	,85631
UTII Internet	1.00 NEC	91	3,6828	,84608
	2.00 OTHER	58	3,7481	,73571
UTHI Hardware	1.00 NEC	91	3,3389	,84906
	2.00 OTHER	58	3,2543	,86812
UTEI Educational	1.00 NEC	91	2,8892	,78057
	2.00 OTHER	58	2,9893	,78709
UTTV TV	1.00 NEC	91	3,1951	,94025
	2.00 OTHER	58	2,8276	,83009
BUEE Emotional Exhaustion	1.00 NEC	91	2,5113	,81976
	2.00 OTHER	58	2,6336	,72173
BUPA Personal Accomplishment	1.00 NEC	91	3,7609	,49849
	2.00 OTHER	58	3,7886	,40709
BUDE Depersonalization	1.00 NEC	91	1,9571	,64192
	2.00 OTHER	58	1,9997	,63003
SEBI Basic	1.00 NEC	91	4,5170	,55299
	2.00 OTHER	58	4,6485	,49570
SESI Sophisticated	1.00 NEC	91	3,5166	,94862
	2.00 OTHER	58	3,4487	,93090
TS Technology Skills	1.00 NEC	91	3,9194	,79019
	2.00 OTHER	58	3,9710	,77176
AT Attitude	1.00 NEC	91	4,0010	,42677
	2.00 OTHER	58	3,9044	,36629
UT Use of technology	1.00 NEC	91	3,3114	,68449
	2.00 OTHER	58	3,3025	,66955
BU Burnout	1.00 NEC	91	2,2877	,56347
	2.00 OTHER	58	2,3431	,47967
SE Self-efficacy	1.00 NEC	91	3,9168	,70752
	2.00 OTHER	58	3,9286	,70508

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means		
		F	Sig.	t	df	Sig. (2-tailed)
TSBA Basic	Equal variances assumed	,013	,908	-,622	147	,535
TSUS Using software	Equal variances assumed	,630	,429	,107	147	,915
TSIP Intellectual property	Equal variances assumed	,111	,740	-,798	147	,426
TSWW World Wide Web	Equal variances assumed	,882	,349	-,143	147	,887
ATNA Negative	Equal variances assumed	,271	,603	-,883	147	,379
ATPA Positive	Equal variances assumed	,034	,853	1,442	147	,151
ATIT Improvement of technology	Equal variances assumed	,182	,670	1,292	147	,198
ATCN Certification	Equal variances assumed	,119	,730	,234	147	,816
UTII Internet	Equal variances assumed	1,346	,248	-,483	147	,630
UTHI Hardware	Equal variances assumed	,000	,990	,588	147	,557
UTEI Educational	Equal variances assumed	,009	,923	-,761	147	,448
UTTV TV	Equal variances assumed	1,361	,245	2,433	147	,016
BUEE Emotional Exhaustion	Equal variances assumed	1,367	,244	-,929	147	,354
BUPA Personal Accomplishment	Equal variances assumed	1,835	,178	-,355	147	,723
BUDE Depersonalization	Equal variances assumed	,047	,829	-,397	147	,692
SEBI Basic	Equal variances not assumed	4,515	,035	-1,508	131,063	,134
SESI Sophisticated	Equal variances assumed	,131	,718	,429	147	,668
TS Technology Skills	Equal variances assumed	,097	,755	-,392	147	,695
AT Attitude	Equal variances assumed	,180	,672	1,422	147	,157
UT Use of technology	Equal variances assumed	,565	,454	,077	147	,939
BU Burnout	Equal variances assumed	2,636	,107	-,618	147	,537
SE Self-efficacy	Equal variances assumed	,199	,656	-,100	147	,921

T-Test

Group Statistics

	D2 Age in years...	N	Mean	Std. Deviation
TSBA Basic	50 or more	76	3,9926	,84191
	Under 50	73	4,3748	,68986
TSUS Using software	50 or more	76	3,3916	1,01198
	Under 50	73	3,9783	,93397
TSIP Intellectual property	50 or more	76	3,2401	,96302
	Under 50	73	3,5445	,98631
TSWW World Wide Web	50 or more	76	4,0887	,71399
	Under 50	73	4,3479	,61844
ATNA Negative	50 or more	76	1,5698	,48364
	Under 50	73	1,6788	,60030
ATPA Positive	50 or more	76	4,1894	,47380
	Under 50	73	4,1293	,56462
ATIT Improvement of technology	50 or more	76	3,7792	,43999
	Under 50	73	3,8767	,53710
ATCN Certification	50 or more	76	2,9343	,79064
	Under 50	73	3,0274	,86914
UTII Internet	50 or more	76	3,7148	,82549
	Under 50	73	3,7014	,78453
UTHI Hardware	50 or more	76	3,2583	,86664
	Under 50	73	3,3557	,84500
UTEI Educational	50 or more	76	2,8048	,84008
	Under 50	73	3,0566	,69933
UTTV TV	50 or more	76	3,0560	,96982
	Under 50	73	3,0479	,85863
BUEE Emotional Exhaustion	50 or more	76	2,4762	,80585
	Under 50	73	2,6451	,75401
BUPA Personal Accomplishment	50 or more	76	3,7489	,47664
	Under 50	73	3,7954	,45213
BUDE Depersonalization	50 or more	76	1,8974	,58560
	Under 50	73	2,0531	,67856
SEBI Basic	50 or more	76	4,4759	,56319
	Under 50	73	4,6644	,48630
SESI Sophisticated	50 or more	76	3,2680	,95414
	Under 50	73	3,7215	,87094
TS Technology Skills	50 or more	76	3,7431	,80683
	Under 50	73	4,1440	,70151
AT Attitude	50 or more	76	3,9693	,35668
	Under 50	73	3,9572	,45374
UT Use of technology	50 or more	76	3,2616	,71822
	Under 50	73	3,3561	,63138
BU Burnout	50 or more	76	2,2629	,52468
	Under 50	73	2,3576	,53771
SE Self-efficacy	50 or more	76	3,7512	,71413
	Under 50	73	4,0986	,65245

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means		
		F	Sig.	t	df	Sig. (2-tailed)
TSBA Basic	Equal variances not assumed	5,904	,016	-3,036	143,474	,003
TSUS Using software	Equal variances assumed	1,033	,311	-3,674	147	,000
TSIP Intellectual property	Equal variances assumed	,089	,766	-1,906	147	,059
TSWW World Wide Web	Equal variances not assumed	4,121	,044	-2,371	145,471	,019
ATNA Negative	Equal variances assumed	1,332	,250	-1,223	147	,223
ATPA Positive	Equal variances assumed	,133	,716	,704	147	,482
ATIT Improvement of technology	Equal variances assumed	3,605	,060	-1,214	147	,227
ATCN Certification	Equal variances assumed	,544	,462	-,684	147	,495
UTII Internet	Equal variances assumed	,736	,392	,102	147	,919
UTHI Hardware	Equal variances assumed	,004	,947	-,694	147	,489
UTEI Educational	Equal variances assumed	2,954	,088	-1,984	147	,049
UTTV TV	Equal variances assumed	1,462	,229	,054	147	,957
BUEE Emotional Exhaustion	Equal variances assumed	,000	,992	-1,320	147	,189
BUPA Personal Accomplishment	Equal variances assumed	,025	,874	-,611	147	,542
BUDE Depersonalization	Equal variances assumed	,749	,388	-1,502	147	,135
SEBI Basic	Equal variances not assumed	4,137	,044	-2,190	145,379	,030
SESI Sophisticated	Equal variances assumed	1,206	,274	-3,026	147	,003
TS Technology Skills	Equal variances assumed	3,248	,074	-3,231	147	,002
AT Attitude	Equal variances assumed	1,346	,248	,181	147	,857
UT Use of technology	Equal variances assumed	1,750	,188	-,852	147	,396
BU Burnout	Equal variances assumed	,101	,751	-1,088	147	,278
SE Self-efficacy	Equal variances assumed	1,804	,181	-3,097	147	,002

Oneway

Descriptives

		N	Mean	Std. Deviation
TSBA Basic	1.00 0-10	58	4,3177	,76294
	2.00 11-20	51	4,2442	,75027
	3.00 21 or more	40	3,8979	,83281
	Total	149	4,1798	,79213
TSUS Using software	1.00 0-10	58	3,9286	1,05225
	2.00 11-20	51	3,6885	,91961
	3.00 21 or more	40	3,3051	,98480
	Total	149	3,6790	1,01486
TSIP Intellectual property	1.00 0-10	58	3,5172	,99214
	2.00 11-20	51	3,3971	,99646
	3.00 21 or more	40	3,1938	,94477
	Total	149	3,3893	,98313
TSWW World Wide Web	1.00 0-10	58	4,3526	,61245
	2.00 11-20	51	4,2773	,67137
	3.00 21 or more	40	3,9386	,71618
	Total	149	4,2157	,67919
ATNA Negative	1.00 0-10	58	1,6363	,61810
	2.00 11-20	51	1,6226	,50623
	3.00 21 or more	40	1,6050	,48882
	Total	149	1,6232	,54483
ATPA Positive	1.00 0-10	58	4,1147	,60901
	2.00 11-20	51	4,2181	,41821
	3.00 21 or more	40	4,1514	,49981
	Total	149	4,1599	,51938
ATIT Improvement of technology	1.00 0-10	58	3,8483	,51682
	2.00 11-20	51	3,9098	,50488
	3.00 21 or more	40	3,6905	,40990
	Total	149	3,8270	,49075
ATCN Certification	1.00 0-10	58	2,8623	,87426
	2.00 11-20	51	3,0587	,73229
	3.00 21 or more	40	3,0500	,87560
	Total	149	2,9799	,82853
UTRIOUT	1.00 0-10	58	3,1261	,87851
	2.00 11-20	51	3,1602	,69986
	3.00 21 or more	40	2,9079	,78093
	Total	149	3,0792	,79654
UTSIOUT	1.00 0-10	58	3,3424	,85789
	2.00 11-20	51	3,4072	,65534
	3.00 21 or more	40	3,0976	,72655
	Total	149	3,2988	,76379
UTII Internet	1.00 0-10	58	3,7843	,85796
	2.00 11-20	51	3,6904	,77534
	3.00 21 or more	40	3,6206	,76385
	Total	149	3,7082	,80299
UTHI Hardware	1.00 0-10	58	3,3127	,94251
	2.00 11-20	51	3,4624	,74533
	3.00 21 or more	40	3,0969	,82714
	Total	149	3,3060	,85461

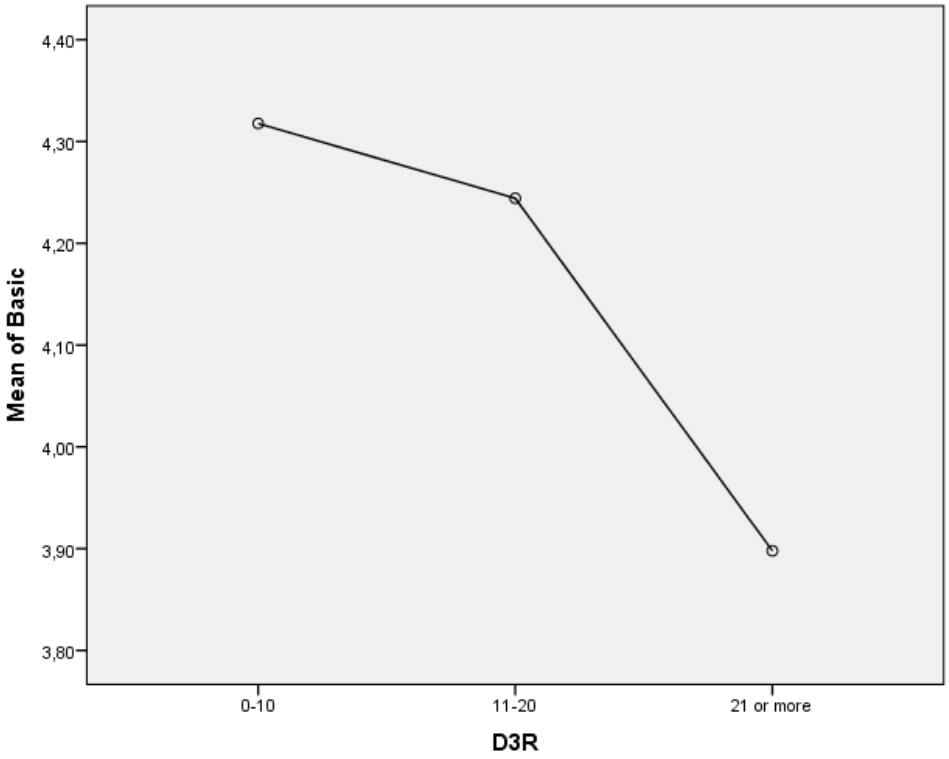
UTEI Educational	1.00 0-10	58	3,0155	,80176
	2.00 11-20	51	2,9653	,75684
	3.00 21 or more	40	2,7542	,77624
	Total	149	2,9281	,78199
UTTV TV	1.00 0-10	58	3,1186	,87180
	2.00 11-20	51	2,9878	,89593
	3.00 21 or more	40	3,0375	1,00886
	Total	149	3,0520	,91395
BUEE Emotional Exhaus-	1.00 0-10	58	2,6094	,84680
tion	2.00 11-20	51	2,5372	,70925
	3.00 21 or more	40	2,5134	,79134
	Total	149	2,5589	,78285
BUPA Personal Accom-	1.00 0-10	58	3,7854	,53073
plishment	2.00 11-20	51	3,7675	,39894
	3.00 21 or more	40	3,7571	,44733
	Total	149	3,7717	,46381
BUDE Depersonalization	1.00 0-10	58	2,0224	,66311
	2.00 11-20	51	1,9290	,61137
	3.00 21 or more	40	1,9600	,63601
	Total	149	1,9737	,63552
SEBI Basic	1.00 0-10	58	4,5839	,54880
	2.00 11-20	51	4,6654	,48506
	3.00 21 or more	40	4,4216	,55126
	Total	149	4,5682	,53360
SESI Sophisticated	1.00 0-10	58	3,6598	,96810
	2.00 11-20	51	3,4595	,89092
	3.00 21 or more	40	3,2833	,93385
	Total	149	3,4902	,93919
TS Technology Skills	1.00 0-10	58	4,1047	,77599
	2.00 11-20	51	3,9808	,71761
	3.00 21 or more	40	3,6474	,80203
	Total	149	3,9395	,78085
AT Attitude	1.00 0-10	58	3,9303	,47946
	2.00 11-20	51	4,0175	,35187
	3.00 21 or more	40	3,9423	,35249
	Total	149	3,9634	,40579
UT Use of technology	1.00 0-10	58	3,3665	,71931
	2.00 11-20	51	3,3512	,64189
	3.00 21 or more	40	3,1679	,65144
	Total	149	3,3079	,67645
BU Burnout	1.00 0-10	58	2,3377	,58463
	2.00 11-20	51	2,2908	,45867
	3.00 21 or more	40	2,2915	,54818
	Total	149	2,3093	,53143
SE Self-efficacy	1.00 0-10	58	4,0294	,73481
	2.00 11-20	51	3,9419	,65381
	3.00 21 or more	40	3,7386	,70183
	Total	149	3,9214	,70421

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
TSBA Basic	Between Groups	4,493	2	2,246	3,711	,027
	Within Groups	88,373	146	,605		
	Total	92,866	148			
TSUS Using software	Between Groups	9,210	2	4,605	4,695	,011
	Within Groups	143,219	146	,981		
	Total	152,430	148			
TSIP Intellectual property	Between Groups	2,482	2	1,241	1,289	,279
	Within Groups	140,566	146	,963		
	Total	143,048	148			
TSWW World Wide Web	Between Groups	4,352	2	2,176	4,970	,008
	Within Groups	63,921	146	,438		
	Total	68,273	148			
ATNA Negative	Between Groups	,023	2	,012	,038	,962
	Within Groups	43,909	146	,301		
	Total	43,932	148			
ATPA Positive	Between Groups	,295	2	,147	,543	,582
	Within Groups	39,629	146	,271		
	Total	39,923	148			
ATIT Improvement of technology	Between Groups	1,121	2	,561	2,371	,097
	Within Groups	34,523	146	,236		
	Total	35,644	148			
ATCN Certification	Between Groups	1,316	2	,658	,958	,386
	Within Groups	100,280	146	,687		
	Total	101,595	148			
UTRIOUT	Between Groups	1,636	2	,818	1,294	,277
	Within Groups	92,265	146	,632		
	Total	93,901	148			
UTSIOUT	Between Groups	2,329	2	1,165	2,024	,136
	Within Groups	84,011	146	,575		
	Total	86,340	148			
UTII Internet	Between Groups	,659	2	,330	,508	,603
	Within Groups	94,770	146	,649		
	Total	95,430	148			
UTHI Hardware	Between Groups	2,999	2	1,500	2,083	,128
	Within Groups	105,093	146	,720		
	Total	108,092	148			
UTEI Educational	Between Groups	1,723	2	,862	1,417	,246
	Within Groups	88,780	146	,608		
	Total	90,503	148			
UTTV TV	Between Groups	,476	2	,238	,282	,755
	Within Groups	123,151	146	,843		
	Total	123,626	148			
BUEE Emotional Exhaustion	Between Groups	,255	2	,127	,206	,814
	Within Groups	90,447	146	,619		
	Total	90,702	148			
BUPA Personal Accomplishment	Between Groups	,020	2	,010	,046	,955
	Within Groups	31,817	146	,218		

	Total	31,837	148			
BUDE Depersonalization	Between Groups	,247	2	,123	,302	,740
	Within Groups	59,528	146	,408		
	Total	59,775	148			
SEBI Basic	Between Groups	1,356	2	,678	2,427	,092
	Within Groups	40,784	146	,279		
	Total	42,140	148			
SESI Sophisticated	Between Groups	3,428	2	1,714	1,969	,143
	Within Groups	127,120	146	,871		
	Total	130,548	148			
TS Technology Skills	Between Groups	5,082	2	2,541	4,356	,015
	Within Groups	85,158	146	,583		
	Total	90,240	148			
AT Attitude	Between Groups	,231	2	,115	,697	,500
	Within Groups	24,140	146	,165		
	Total	24,370	148			
UT Use of technology	Between Groups	1,079	2	,539	1,182	,310
	Within Groups	66,644	146	,456		
	Total	67,723	148			
BU Burnout	Between Groups	,077	2	,039	,135	,874
	Within Groups	41,721	146	,286		
	Total	41,798	148			
SE Self-efficacy	Between Groups	2,034	2	1,017	2,081	,128
	Within Groups	71,360	146	,489		
	Total	73,395	148			

Means Plots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4,10
4,00
3,90
3,80
Mean of Basic
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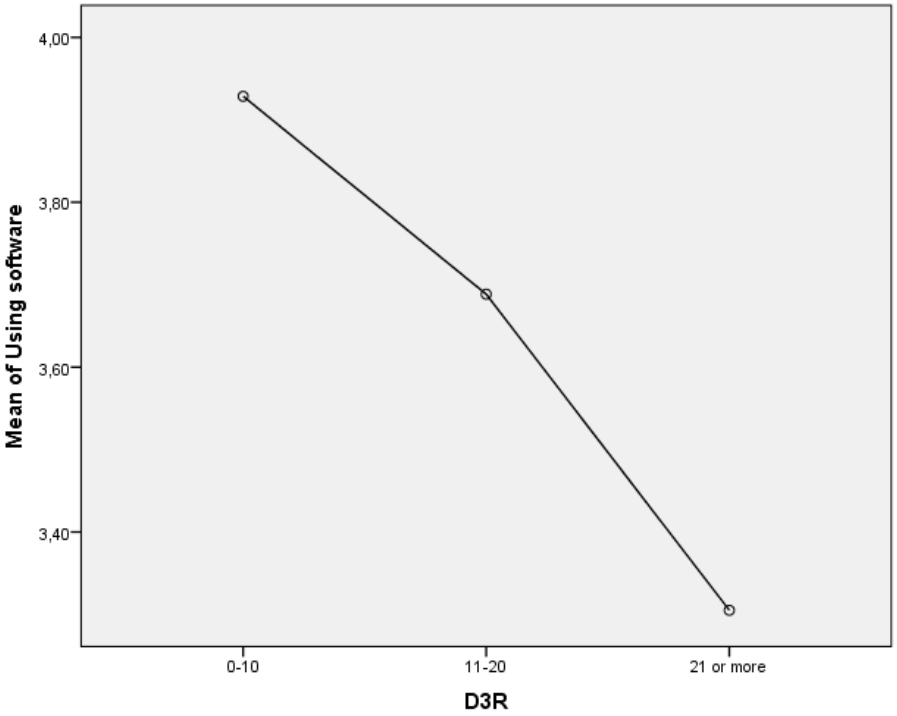
11-20
21 or more
D3R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3,80
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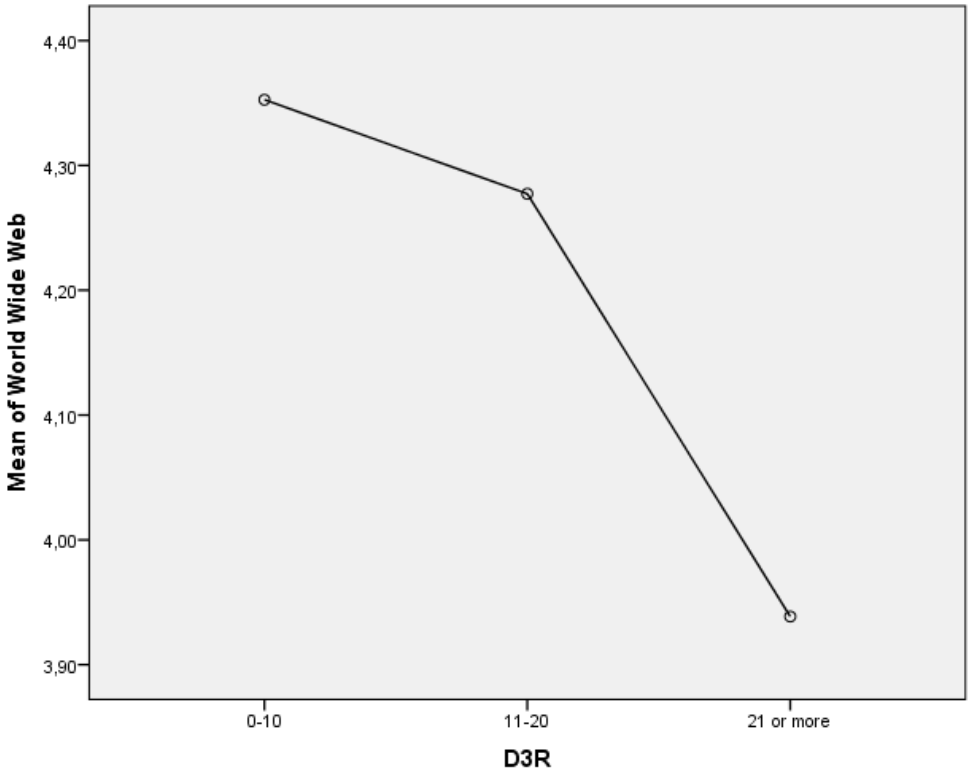
3,40
Mean of Using software
0-10
11-20
21 or more
D3R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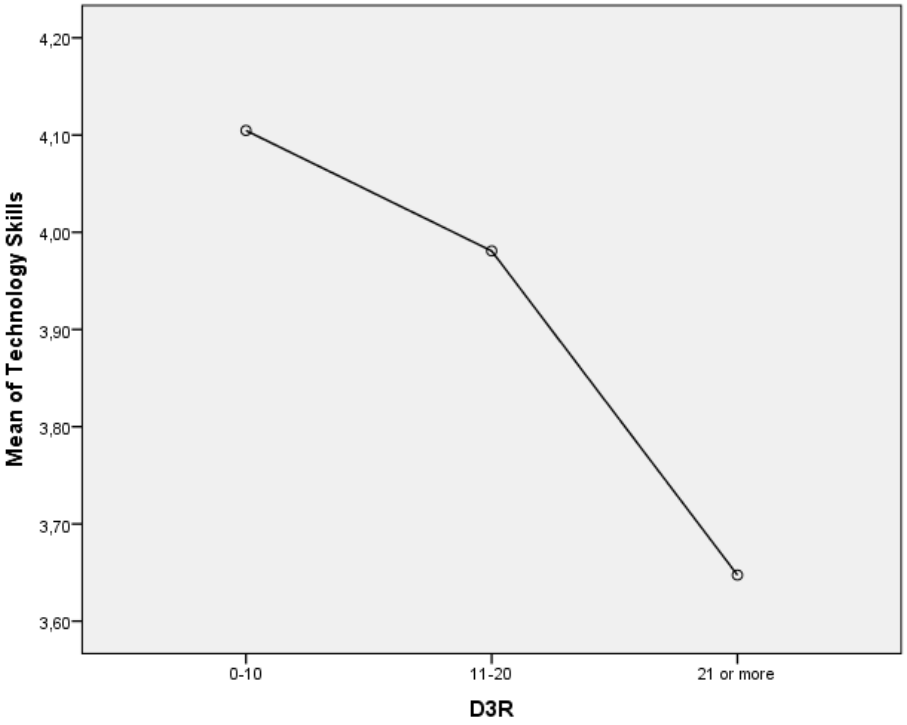
4,20
4,10
4,00
3,90
Mean of World Wide Web
0-10
11-20
21 or more
D3R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4,10
4,00
3,90
3,80
3,70
3,60
Mean of Technology Skills
0-10
11-20
21 or more
D3R

T-Test

Group Statistics

	D4 Highest degree...	N	Mean	Std. Deviation
TSBA Basic	Post Graduate	89	4,1783	,80400
	Pre Graduate	59	4,1991	,77641
TSUS Using software	Post Graduate	89	3,6535	1,01061
	Pre Graduate	59	3,7411	1,01986
TSIP Intellectual property	Post Graduate	89	3,4157	,98349
	Pre Graduate	59	3,3559	,99698
TSWW World Wide Web	Post Graduate	89	4,2163	,68839
	Pre Graduate	59	4,2320	,66337
ATNA Negative	Post Graduate	89	1,5568	,50265
	Pre Graduate	59	1,7170	,59662
ATPA Positive	Post Graduate	89	4,2052	,45415
	Pre Graduate	59	4,0922	,60627
ATIT Improvement of technology	Post Graduate	89	3,8452	,46577
	Pre Graduate	59	3,8068	,53041
ATCN Certification	Post Graduate	89	3,0112	,87386
	Pre Graduate	59	2,9381	,76685
UTII Internet	Post Graduate	89	3,6114	,83579
	Pre Graduate	59	3,8566	,74053
UTHI Hardware	Post Graduate	89	3,3005	,85317
	Pre Graduate	59	3,3167	,87107
UTEI Educational	Post Graduate	89	2,9346	,76385
	Pre Graduate	59	2,9369	,80891
UTTV TV	Post Graduate	89	2,9916	,91561
	Pre Graduate	59	3,1695	,89351
BUEE Emotional Exhaustion	Post Graduate	89	2,5650	,80481
	Pre Graduate	59	2,5555	,76096
BUPA Personal Accomplishment	Post Graduate	89	3,7886	,44060
	Pre Graduate	59	3,7375	,49819
BUDE Depersonalization	Post Graduate	89	1,9077	,64585
	Pre Graduate	59	2,0728	,61728
SEBI Basic	Post Graduate	89	4,6117	,51318
	Pre Graduate	59	4,4996	,56455
SESI Sophisticated	Post Graduate	89	3,5023	,93444
	Pre Graduate	59	3,4887	,95335
TS Technology Skills	Post Graduate	89	3,9363	,79159
	Pre Graduate	59	3,9616	,76610
AT Attitude	Post Graduate	89	4,0054	,35015
	Pre Graduate	59	3,9042	,47625
UT Use of technology	Post Graduate	89	3,2702	,70798
	Pre Graduate	59	3,3741	,62877
BU Burnout	Post Graduate	89	2,2901	,53287
	Pre Graduate	59	2,3434	,53519
SE Self-efficacy	Post Graduate	89	3,9460	,68995
	Pre Graduate	59	3,8931	,73263

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means		
		F	Sig.	t	df	Sig. (2-tailed)
TSBA Basic	Equal variances assumed	,045	,833	-,157	146	,876
TSUS Using software	Equal variances assumed	,035	,853	-,514	146	,608
TSIP Intellectual property	Equal variances assumed	,012	,912	,360	146	,719
TSWW World Wide Web	Equal variances assumed	,467	,495	-,138	146	,890
ATNA Negative	Equal variances assumed	,380	,539	-1,761	146	,080
ATPA Positive	Equal variances assumed	,878	,350	1,295	146	,197
ATIT Improvement of technology	Equal variances assumed	,551	,459	,464	146	,643
ATCN Certification	Equal variances assumed	1,636	,203	,523	146	,602
UTII Internet	Equal variances assumed	1,716	,192	-1,827	146	,070
UTHI Hardware	Equal variances assumed	,155	,694	-,112	146	,911
UTEI Educational	Equal variances assumed	,308	,580	-,017	146	,986
UTTV TV	Equal variances assumed	,322	,572	-1,168	146	,245
BUEE Emotional Exhaustion	Equal variances assumed	,225	,636	,072	146	,943
BUPA Personal Accomplishment	Equal variances assumed	,458	,500	,655	146	,514
BUDE Depersonalization	Equal variances assumed	,206	,650	-1,550	146	,123
SEBI Basic	Equal variances assumed	,663	,417	1,249	146	,214
SESI Sophisticated	Equal variances assumed	,169	,681	,086	146	,932
TS Technology Skills	Equal variances assumed	,456	,501	-,193	146	,848
AT Attitude	Equal variances assumed	2,391	,124	1,489	146	,139
UT Use of technology	Equal variances assumed	1,441	,232	-,914	146	,362
BU Burnout	Equal variances assumed	,036	,849	-,595	146	,553
SE Self-efficacy	Equal variances assumed	,836	,362	,446	146	,656

T-Test

Group Statistics

	D5 Gender...	N	Mean	Std. Deviation
TSBA Basic	1 Male	31	4,3744	,68635
	2 Female	118	4,1287	,81257
TSUS Using software	1 Male	31	3,9493	,90992
	2 Female	118	3,6080	1,03251
TSIP Intellectual property	1 Male	31	3,8065	,92130
	2 Female	118	3,2797	,97302
TSWW World Wide Web	1 Male	31	4,3290	,69771
	2 Female	118	4,1859	,67410
ATNA Negative	1 Male	31	1,7419	,72331
	2 Female	118	1,5920	,48644
ATPA Positive	1 Male	31	4,0645	,67921
	2 Female	118	4,1850	,46893
ATIT Improvement of technology	1 Male	31	3,8774	,50775
	2 Female	118	3,8137	,48754
ATCN Certification	1 Male	31	3,0865	,96593
	2 Female	118	2,9519	,79076
UTII Internet	1 Male	31	3,5484	,82239
	2 Female	118	3,7502	,79604
UTHI Hardware	1 Male	31	3,2462	,84742
	2 Female	118	3,3217	,85938
UTEI Educational	1 Male	31	3,0419	,62810
	2 Female	118	2,8982	,81734
UTTV TV	1 Male	31	2,8871	,89172
	2 Female	118	3,0954	,91850
BUEE Emotional Exhaustion	1 Male	31	2,4439	,76276
	2 Female	118	2,5892	,78843
BUPA Personal Accomplishment	1 Male	31	3,7939	,35622
	2 Female	118	3,7658	,48930
BUDE Depersonalization	1 Male	31	2,1871	,66320
	2 Female	118	1,9176	,61877
SEBI Basic	1 Male	31	4,6371	,49933
	2 Female	118	4,5501	,54282
SESI Sophisticated	1 Male	31	3,8656	,86754
	2 Female	118	3,3915	,93577
TS Technology Skills	1 Male	31	4,1717	,70186
	2 Female	118	3,8785	,79180
AT Attitude	1 Male	31	3,9263	,51670
	2 Female	118	3,9731	,37333
UT Use of technology	1 Male	31	3,2544	,67471
	2 Female	118	3,3220	,67907
BU Burnout	1 Male	31	2,3019	,53326
	2 Female	118	2,3112	,53321
SE Self-efficacy	1 Male	31	4,1742	,65420
	2 Female	118	3,8550	,70440

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means		
		F	Sig.	t	df	Sig. (2-tailed)
TSBA Basic	Equal variances assumed	2,073	,152	1,544	147	,125
TSUS Using software	Equal variances assumed	,860	,355	1,676	147	,096
TSIP Intellectual property	Equal variances assumed	,020	,889	2,711	147	,008
TSWW World Wide Web	Equal variances assumed	,015	,902	1,044	147	,298
ATNA Negative	Equal variances not assumed	5,126	,025	1,091	37,417	,282
ATPA Positive	Equal variances assumed	,188	,666	-1,151	147	,252
ATIT Improvement of technology	Equal variances assumed	,061	,806	,642	147	,522
ATCN Certification	Equal variances assumed	2,718	,101	,804	147	,423
UTII Internet	Equal variances assumed	,015	,902	-1,248	147	,214
UTHI Hardware	Equal variances assumed	,160	,690	-,437	147	,663
UTEI Educational	Equal variances assumed	2,010	,158	,910	147	,364
UTTV TV	Equal variances assumed	,092	,762	-1,130	147	,260
BUEE Emotional Exhaustion	Equal variances assumed	,008	,930	-,919	147	,359
BUPA Personal Accomplishment	Equal variances assumed	2,207	,139	,298	147	,766
BUDE Depersonalization	Equal variances assumed	,284	,595	2,126	147	,035
SEBI Basic	Equal variances assumed	,572	,451	,807	147	,421
SESI Sophisticated	Equal variances assumed	,045	,832	2,547	147	,012
TS Technology Skills	Equal variances assumed	1,011	,316	1,876	147	,063
AT Attitude	Equal variances assumed	,202	,654	-,570	147	,569
UT Use of technology	Equal variances assumed	,496	,482	-,494	147	,622
BU Burnout	Equal variances assumed	,218	,641	-,086	147	,931
SE Self-efficacy	Equal variances assumed	,090	,764	2,278	147	,024

T-Test

Group Statistics

	D6 At my school I am:	N	Mean	Std. Deviation
TSBA Basic	Other	53	4,3437	,68802
	Teacher	96	4,0894	,83378
TSUS Using software	Other	53	3,8380	,88814
	Teacher	96	3,5913	1,07279
TSIP Intellectual property	Other	53	3,4811	,99137
	Teacher	96	3,3385	,98005
TSWW World Wide Web	Other	53	4,2624	,64628
	Teacher	96	4,1899	,69868
ATNA Negative	Other	53	1,5687	,47711
	Teacher	96	1,6533	,57903
ATPA Positive	Other	53	4,2669	,46974
	Teacher	96	4,1009	,53811
ATIT Improvement of technology	Other	53	3,8759	,43693
	Teacher	96	3,8000	,51830
ATCN Certification	Other	53	2,9057	,84068
	Teacher	96	3,0209	,82329
UTII Internet	Other	53	3,9582	,75742
	Teacher	96	3,5702	,79773
UTHI Hardware	Other	53	3,4465	,83126
	Teacher	96	3,2284	,86167
UTEI Educational	Other	53	3,0094	,83103
	Teacher	96	2,8833	,75427
UTTV TV	Other	53	3,0755	,86267
	Teacher	96	3,0391	,94525
BUEE Emotional Exhaustion	Other	53	2,5514	,74471
	Teacher	96	2,5631	,80693
BUPA Personal Accomplishment	Other	53	3,8194	,52426
	Teacher	96	3,7453	,42745
BUDE Depersonalization	Other	53	1,9094	,60709
	Teacher	96	2,0091	,65107
SEBI Basic	Other	53	4,6472	,47250
	Teacher	96	4,5246	,56211
SESI Sophisticated	Other	53	3,5743	,85862
	Teacher	96	3,4437	,98210
TS Technology Skills	Other	53	4,0697	,70310
	Teacher	96	3,8676	,81524
AT Attitude	Other	53	4,0190	,31468
	Teacher	96	3,9327	,44682
UT Use of technology	Other	53	3,4569	,66188
	Teacher	96	3,2257	,67370
BU Burnout	Other	53	2,2749	,51165
	Teacher	96	2,3282	,54375
SE Self-efficacy	Other	53	4,0034	,62874
	Teacher	96	3,8761	,74186

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means		
		F	Sig.	t	df	Sig. (2-tailed)
TSBA Basic	Equal variances assumed	2,946	,088	1,892	147	,060
TSUS Using software	Equal variances assumed	3,173	,077	1,426	147	,156
TSIP Intellectual property	Equal variances assumed	,491	,485	,847	147	,399
TSWW World Wide Web	Equal variances assumed	,706	,402	,623	147	,535
ATNA Negative	Equal variances assumed	1,040	,309	-,906	147	,366
ATPA Positive	Equal variances assumed	,015	,902	1,883	147	,062
ATIT Improvement of technology	Equal variances assumed	1,599	,208	,903	147	,368
ATCN Certification	Equal variances assumed	,019	,890	-,812	147	,418
UTII Internet	Equal variances assumed	,038	,846	2,893	147	,004
UTHI Hardware	Equal variances assumed	,044	,834	1,498	147	,136
UTEI Educational	Equal variances assumed	,222	,638	,943	147	,347
UTTV TV	Equal variances assumed	,108	,743	,232	147	,817
BUEE Emotional Exhaustion	Equal variances assumed	,830	,364	-,087	147	,930
BUPA Personal Accomplishment	Equal variances not assumed	4,349	,039	,880	90,502	,381
BUDE Depersonalization	Equal variances assumed	,105	,746	-,916	147	,361
SEBI Basic	Equal variances assumed	3,488	,064	1,346	147	,180
SESI Sophisticated	Equal variances assumed	1,349	,247	,811	147	,419
TS Technology Skills	Equal variances assumed	2,686	,103	1,519	147	,131
AT Attitude	Equal variances not assumed	5,066	,026	1,375	138,357	,171
UT Use of technology	Equal variances assumed	,152	,698	2,018	147	,045
BU Burnout	Equal variances assumed	,529	,468	-,585	147	,560
SE Self-efficacy	Equal variances assumed	2,114	,148	1,057	147	,292

T-Test

Group Statistics

	D8 Most of the teaching in my work week is done at the grade level:	N	Mean
TSBA Basic	6 to 12	83	4,4053
	Pre k to 5	64	3,8803
TSUS Using software	6 to 12	83	4,0116
	Pre k to 5	64	3,2333
TSIP Intellectual property	6 to 12	83	3,7078
	Pre k to 5	64	2,9648
TSWW World Wide Web	6 to 12	83	4,3886
	Pre k to 5	64	3,9888
ATNA Negative	6 to 12	83	1,5966
	Pre k to 5	64	1,6616
ATPA Positive	6 to 12	83	4,1712
	Pre k to 5	64	4,1445
ATIT Improvement of technology	6 to 12	83	3,8316
	Pre k to 5	64	3,8156
ATCN Certification	6 to 12	83	2,9198
	Pre k to 5	64	3,0468
UTII Internet	6 to 12	83	3,7169
	Pre k to 5	64	3,6744
UTHI Hardware	6 to 12	83	3,2948
	Pre k to 5	64	3,3275
UTEI Educational	6 to 12	83	2,9835
	Pre k to 5	64	2,8724
UTTV TV	6 to 12	83	2,9323
	Pre k to 5	64	3,2325
BUEE Emotional Exhaustion	6 to 12	83	2,5847
	Pre k to 5	64	2,5134
BUPA Personal Accomplishment	6 to 12	83	3,8222
	Pre k to 5	64	3,7326
BUDE Depersonalization	6 to 12	83	2,0335
	Pre k to 5	64	1,9015
SEBI Basic	6 to 12	83	4,6663
	Pre k to 5	64	4,4492
SESI Sophisticated	6 to 12	83	3,6917
	Pre k to 5	64	3,2426
TS Technology Skills	6 to 12	83	4,1968
	Pre k to 5	64	3,5970
AT Attitude	6 to 12	83	3,9664
	Pre k to 5	64	3,9554
UT Use of technology	6 to 12	83	3,3120
	Pre k to 5	64	3,3040
BU Burnout	6 to 12	83	2,3168
	Pre k to 5	64	2,2868
SE Self-efficacy	6 to 12	83	4,0815
	Pre k to 5	64	3,7252

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means		
		F	Sig.	t	df	Sig. (2-tailed)
TSBA Basic	Equal variances not assumed	5,973	,016	4,069	117,351	,000
TSUS Using software	Equal variances assumed	1,034	,311	4,952	145	,000
TSIP Intellectual property	Equal variances assumed	,058	,809	4,875	145	,000
TSWW World Wide Web	Equal variances assumed	,422	,517	3,675	145	,000
ATNA Negative	Equal variances assumed	,614	,434	-,713	145	,477
ATPA Positive	Equal variances assumed	,048	,827	,307	145	,760
ATIT Improvement of technology	Equal variances assumed	,020	,888	,194	145	,847
ATCN Certification	Equal variances assumed	,076	,783	-,920	145	,359
UTII Internet	Equal variances assumed	,685	,409	,317	145	,752
UTHI Hardware	Equal variances assumed	,481	,489	-,228	145	,820
UTEI Educational	Equal variances assumed	,163	,687	,850	145	,397
UTTV TV	Equal variances assumed	,660	,418	-1,993	145	,048
BUEE Emotional Exhaustion	Equal variances assumed	,113	,737	,545	145	,587
BUPA Personal Accomplishment	Equal variances assumed	,067	,795	1,184	145	,238
BUDE Depersonalization	Equal variances assumed	2,452	,120	1,244	145	,216
SEBI Basic	Equal variances not assumed	4,499	,036	2,461	125,404	,015
SESI Sophisticated	Equal variances assumed	,000	,984	2,945	145	,004
TS Technology Skills	Equal variances assumed	1,697	,195	4,968	145	,000
AT Attitude	Equal variances assumed	,186	,667	,161	145	,872
UT Use of technology	Equal variances assumed	,006	,937	,070	145	,944
BU Burnout	Equal variances assumed	,013	,909	,339	145	,735
SE Self-efficacy	Equal variances assumed	,168	,682	3,138	145	,002

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CURRICULUM VITAE

Sherina I. Phillips
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SUMMARY OF QUALIFICATIONS

- Over 15 years of experience as an educational professional in the Caribbean and the United States of America
- Adept at utilizing and managing modern communication systems
- Professional teaching certificate within the Seventh-day Adventist education system
- Ability to utilize modern communication systems to support, enhance, and direct learning and professional training.
- Goal oriented leader with the ability work in fast paced environments.
- Excellent writing, communication, and organizational skills.
- Google Education Certified

EDUCATION

June, 2020 **Montemorelos University, PhD in Educational Management**
- *"Factors Affecting Technology Integration by Teachers in the Atlantic Union Conference of Seventh-day Adventists"*

May, 2016 **University of Florida, Master of Pharmaceutical Science**
- *Concentration: Forensics DNA and Serology*

May 2003 **Andrews University, Bachelor of Science**
- *Major: Biology, Minor: Chemistry*

PROFESSIONAL EXPERIENCE

08/2012 – Present: Northeastern Conference of SDA, Jamaica, NY

Educator

- *School Level*

- 12th grade – Forensics, Human Anatomy, Physical Science
- 5th grade – all subjects
- 5th – 8th grade – English/ Language Arts & Computer
- 5th – 7th grade – Science
- Chair - School Science Fair, Chair - Field Trip special committee, Chair - technology department, Chair - Spelling Bee planning committee
- Organizing Afterschool lessons with a Math emphasis
- Designed contingency plan for short and long-term teaching projects

- *Conference Level*
  - Chair, Northeastern Conference Science Fair Committee
  - Northeastern Conference Spelling Bee Committee
  - Northeastern Conference Education Strategic Planning Committee
  - Northeastern Conference School Reopening Task Force

- *Union Level*
  - Co-Chair, Atlantic Union Conference Education Technology Advisory Committee
  - Atlantic Union Conference Education Advisory Committee
  - Atlantic Union Conference Education Curriculum Committee

- *Division Level*
  - North American Division Education Technology and Distance Education Committee

01/2019 – Present: BYKOTA Federal Credit Union, Brooklyn, NY
Credit Union Board Secretary

- Ensure detailed records are kept of all financial disclosures and sent to the proper entities

02/2017 – Present: North American Division of SDA, Baltimore, MD
Technology & Distance Education Committee

- Represent the Atlantic Union on NAD's Technology and Distance Education Committee

09/2016 – Present: Northeastern Conference of SDA, Jamaica, NY
Pathfinder Federation Board Secretary

- Ensure the validity of all records
- Transmit communication to upper management

03/2012 – 6/2012: Barbados SDA Secondary School, St. Michael, Barbados
Educator

- 5th Form Biology teacher

08/2004 – 02/2011: Northeastern Conference of SDA, Jamaica, NY
Educator

- *School Level*
  - 5th grade – all subjects
  - 6th – 8th grade – Science
  - Chair - School Science Fair organizing committee
  - Website maintenance
  - Chair – Yearbook committee
  - Chair - Field Trip Planning Committee
  - Trip funds maintenance
  - Afterschool tutoring – Math emphasis
  - Long- and short-term planning for teaching via detailed lesson plans
- *Conference Level*
  - Northeastern Conference Science Fair Committee

08/2004 – 02/2011: Chemical Industries, Christ Church, Barbados
Quality Control Technician

- Analyzed food samples for the presence of bacteria in food from: Chefette Restaurants, Chickmont Foods Ltd, American Airlines, British Airways, Barbados Hatcheries, and several other companies
- Chemical testing of household cleaners for companies Chemsolv, Biosphere, and Hitech before they reached supermarket shelves
- Ensure accurate bacteria counts before sending reports to each company and clients

09/2003 – 12/2003: Alexandra Secondary School, St. Peter, Barbados
Educator

- 2nd to 5th Form Math teacher

09/2001 – 5/2003: University of the Southern Caribbean, Maracas Valley, Trinidad
Laboratory Technician

- Facilitated student performance of lab experiments
- Preparation and calibration of key solutions and equipment
- Supervise student performance to ensure lab safety

PUBLICATIONS

2012: Atlantic Union Conference Teacher Bulletin, *Volume 12: Exploring Bible-based Units*

- Phillips, S. (2012). The Human Body: Organization and Systems. Retrieved from http://teacherbulletin.org/volumes/volume-12/contents/the-human-body-organization-and-systems

2013: Atlantic Union Conference Teacher Bulletin, *Volume 13: A Journey Though Christ-centered Curriculum*

- Phillips, S. (2013). The Globe We Live On. Retrieved from http://teacherbulletin.org/volumes/volume-13/contents/earth-space-and-science

2014: Atlantic Union Conference Teacher Bulletin, *Volume 14: Instruction with the Heartbeat of Christ*

- Phillips, S. (2014). Come Rain or Shine. Retrieved from http://teacherbulletin.org/volumes/volume-14/contents/come-rain-or-shine

SKILLS

- Teaching, curriculum development, lesson planning, classroom management
- Educational leadership
- Educational technology
- Elementary and secondary education, differentiated instruction
- E-learning, public speaking, staff development, teacher training
- Able to multi-task and efficiently contribute to a team environment
- Excellent organizational, writing, and communication skills.