12-2020

Getting Online With Generation Z: Learning Approaches

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GETTING ONLINE WITH GENERATION Z: LEARNING APPROACHES

A Dissertation in Partial Fulfillment
of the Requirements for the Degree of
Doctor of Philosophy

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College of Education and Behavioral Sciences
Technology Innovation and Pedagogy

December 2020

This Dissertation by: Letha Marie Mellman

Entitled: *Getting Online with Generation Z: Learning Approaches*

Has been approved as meeting the requirements for the Degree of Doctor of Philosophy in College of Education and Behavioral Sciences, Technology Innovation and Pedagogy

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ABSTRACT

Mellman, Letha Marie *Getting Online with Generation Z: Learning Approaches.* Published Doctor of Philosophy dissertation, University of Northern Colorado, 2020.

This e-Delphi study explored learning approaches, as defined by Generation Z (Gen Z) learners, in online academic settings and nonacademic settings. It also considered differences between the two panels (38 participants in each panel, representing 39 states) of learners (Academic and Nonacademic) and compared current literature-supported best practices to the learning approaches generated by participants in this study. The Academic panel participants reached consensus on six of the 56 learning approaches: (a) completing course material; (b) rely on self; (c) projects that I can choose what to do and learn material by myself; (d) search Internet; (e) ask expert; and (f) work/discuss with others in class. Additionally, two themes emerged: (1) Guidance with subthemes (a) clear expectations and (b) ask to get a response and (2) Reliance on Self. Thematic analysis of the Academic panel participant data identified two themes: (1) Guidance with subthemes (a) clear expectations and (b) ask to get a response and (2) Reliance on Self. The Nonacademic panel participants reached consensus on 10 of the 37 learning approaches: (a) search online; (b) search for online resources, which are detailed; (c) very detailed, written instructions; (d) try to learn a new skill by self; (e) projects that I can choose what to do and learn material by self; (f) visual examples of finished projects; (g) videos that show me how to do the project; (h) ask expert; (i) ask in social media group; and (j) watch video. Thematic analysis of the Nonacademic panel participant data identified two themes (1) Recommendations and (2) Search Online. The driving learning approach for the Academic panel

participants was identified as seeking a guide, while the Nonacademic panel participants sought recommendations to aid them in the learning process. This study added to the limited literature on Gen Z, and offered suggestions for educators to enhance Gen Z learning experiences.
Key words: Generation Z, Gen Z, learning approaches, online learning, deep learning, deep learning for transfer/application outcomes, higher education, pedagogical practices, The Delphi method.

DEDICATION

This study is dedicated to my children, Emily, Attalyn, Isabelle, Olyvia, Zach, Owen and Tavin, thank you for supporting me and being a part of my dream. This research is also dedicated to all those who embrace thinking differently. Continue to Scatter Awesome!

ACKNOWLEDGEMENTS

To Dr. Mia Kim Williams, thank you to opening my eyes to the fact not thinking like others is exactly why I need to be a part of something bigger.

To Dr. Randy Larkins, every learner should have a teacher who believes in them as much as you do!

To Paula Bernander, thank you for keeping research fun; Dannon Cox, thank you for sharing your time and expertise; Agboola, Oluwagbenga, thank you for helping me be statistically cool.

My committee, thank you for your support. Dr. David Slykhuis, Dr. Kevin Pugh, Dr. Mia Kim Williams, and Dr. Matt Farber, thank you for taking on the explosion that has been my dissertation. Your endless innovation and guidance have shaped the teacher I wish to be.

To Mom, Dad, Uncle Lex, Sue, Grandparents and family, thank you for nurturing my curiosity.

To my favorite person in the world, my husband, Jeff. The end of this dissertation adventure is the start of many more adventures together. Thank you for believing in me.

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CHAPTER I

INTRODUCTION

This study began with the observation of a disconnect between the way that the members of Generation Z (Gen Z), those born between 1997-2012 (Dimock, 2019), go online to teach themselves a skill and the way they are being taught in online college courses. The researcher wondered, how does Gen Z learn? Would students be more engaged, more successful, and enjoy an online class taught with the same approaches they use outside of academia? The research answering these questions is scant. Current research largely reports observations of ways that Gen Z appears to learn, however, the literature is limited when asking Gen Z to confirm, challenge or deny researchers' conclusions from these perceptions. Due to the lack of literature, Gen Z needed to be asked about their preferred learning approaches and then pedagogical practices could be appropriately designed and tailored for Gen Z's optimal use.

Learning approach research often focuses on a specific learning strategy. Examples of learning approaches include strength-based approaches (Galloway et al., 2020), multimodal deep learning (Kahou et al., 2016), Problem Based Learning (PBL), deep or surface learning (Dolmans et al., 2016), a host of deep learning outcomes (e.g., understanding, transfer/application, conceptual change, deep structure vs. surface structure: Nation Research Council, 2000; Pugh, 2017), and social approaches (e.g., gamification and social networking: de-Marcos et al., 2016). Learning approach studies often involve exploratory research, observations, and qualitative methods as researchers seek to increase understanding of learning

approaches (e.g., Yew & Dawood, 2016). The Delphi method (discussed in more detail in later sections) is a beneficial research method to investigate Gen Z's perspective on their learning approaches. Specifically, a comparison of online academic learning approaches versus online nonacademic learning approaches can be effectively compared. The value of the Delphi method, over other research strategies for this topic, comes from its exploratory nature, iterative development, and members of Gen Z serve as panel experts.

Statement of the Problem

This research addressed the problem: Research has not been conducted to explore if current academic pedagogies align for Gen Z learners.

Due to Gen Z's immersive, technological existence, they have a unique way of interacting in the world and have created new approaches to learning. Best practices for online teaching literature abound, and there is a plethora of literature observing Gen Z's learning preferences (Cilliers, 2017; Ernst & Young, 2016; Levickaite, 2010; Merriman, 2015), but there is a deficit in research exploring Gen Z descriptions, definitions or articulations regarding their own learning approaches. The two fields may appear similar, but they have important differences. Research observing Gen Z's learning preferences seeks largely to understand Gen Z's learning preferences from a researcher perspective. Gen Z definition research seeks members of Gen Z's perceptions on their own learning preferences, as well the observations of the researcher. Studies, such as this one, seek to unearth meaning created by the participants. Furthermore, there is a disconnect between Gen Z's learning approaches and current online pedagogical practices (Goldie, 2016). This may be in part because pedagogies and best practices

are currently being updated and identified for Millennials – the previous generation. The pedagogical world is behind as it is Gen Z that is entering the online, collegiate world.

Researchers are already noting several differences between Gen Z and previous generations, including Millennials (Schwieger & Ladwig, 2018; Shatto & Erwin, 2017). The generalizations made in this paper describe Gen Z as a whole rather than being applicable to any given individual. More than any past generation, Gen Z learns by observation and experimentation (Gale, 2015). They have an affinity for YouTube videos (Gale, 2015; Jaschik, 2013; Shatto & Erwin, 2017) and thrive on the instant gratification and the wisdom that Google's search and Apple's Siri provide them (Cilliers, 2017; Nguyen & Hovy, 2019). Interestingly, Gen Z's attention span is the shortest in history. It has been reported to be eight seconds as opposed to Millennials who have a reported 12-second attention span (Beall, 2016; Hallowell & Ratey, 2011). Current research suggests that this attention span may also be an eight-second filter that allows them to quickly sift through information perhaps not perfectly, or critically, but enough that they decipher useful information from irrelevant information in a very short time (Goldie, 2016; Rue, 2018). It is very important for Gen Z to keep up with current technology and use it to enhance daily tasks (Gale, 2015; Hoque, 2018). From robots that clean the floor to apps that give directions, Gen Z sees technology as a part of their identity (Gale, 2015; Hoque, 2018). They have largely given up computers and laptops for smartphones (Gale, 2015). This is due, in part, to the convenience of carrying a seemingly endless wealth of immediate information in a contraption that conveniently fits in a pocket. Gen Z discontinues use of devices, such as smartphones, for only sixty-second intervals before once again engaging with them to look up information, solve quandaries, connect with others, or seek entertainment (Jaschik, 2013).

Not only do students want to use their personal devices, they expect to use them when learning (Pearson Student Mobile Device Survey, 2015). For example, many of Gen Zs' friends reside within their screen, as they are able to connect with people all over the world (Beall, 2016; Gale, 2015). Gen Z often uses these global connections to engage in video chats and texting as opposed to face to face interactions to share out things they are learning (Beall, 2016; Gale, 2015). Additionally, Gen Z uses the devices and digital connections to ask questions about the topics they are learning. Gen Z learners appear to expect education to be self-taught, experiential, use constantly updated technology, provide opportunities to connect with peers and experts around the globe, offer immediate feedback, and desire constant support from the educator, leaving current pedagogical practices scrambling to meet their unique needs and requests.

Purpose

The purpose of this study was to deepen knowledge regarding how Gen Z prefers to learn. Specifically, this study sought to understand the learning approaches of Gen Z in online academic and online nonacademic learning contexts. In this study, the ways by which Gen Z learns were identified and detailed by Gen Z themselves. Updated preferences for online learners could aid Gen Z in engaging in and completing the undergraduate degree process (and beyond) in a timely manner. The length of time spent earning a degree, from start to finish, varies widely. Retention and timely graduation rates have positive pecuniary and public benefits, while also decreasing debt, stress, and feelings of hopelessness and inadequacy for students. One key factor in achieving higher graduation rates with a decreased time to completion may be to align teaching strategies with ways students prefer to learn (Shatto & Erwin, 2017). Therefore, identifying how Gen Z prefers to learn and incorporating Gen Z students' learning approaches could be of value to students, educators, universities, and other learning institutions. Future

research was needed to test a pedagogy specifically designed for online Gen Z learners, but first, learning approaches for this unique generation needed to be identified. Furthermore, research comparing the online academic versus the online nonacademic preferred learning approaches of Gen Z was unexplored. At the time of this study, little research had been conducted asking Gen Z to identify their own unique learning process or if they agreed with the research completed on their behalf. Once this was finished, future researchers could use that data to create and test curricula specific to Gen Z learners.

The online world of education constantly evolves as new generations grow up and technological advances become increasingly affordable and attainable. Gen Z is innately digital. Gen Z was the first generation to grow up with smartphones as a means of entertainment and the internet as an intrinsic part of their existence. They were proficient at swiping, navigating apps, and connecting with the digital world to find answers before they were out of diapers. Artificial Intelligence (AI) bots such as Siri, Google, and Alexa have been constant and instant dispensers of information (Lovato et al., 2019).

Perhaps, due to the ability to gather information instantly, Gen Z does not just want to learn, they want experiences and crave the ability to share out their findings to authentic audiences (Mohr & Mohr, 2017; Rue, 2018; Schwieger & Ladwig, 2018). Educators are needed to safely guide them in their learning experiences and help them secure their online persona as they share out artifacts (Graham et al., 2001). Technology has produced a variety of ways for learners to share out, including social media, webinars, podcasts, and/or multimedia platforms. Gen Z learners are familiar with many technologies and platforms but often lack the ability to properly utilize them, as they may not have experience with producing such projects. The unique attributes of Gen Z lead to a need for updated online pedagogical practices.

Due to the need to revisit pedagogical practices for Gen Z, and the desire to explore Gen Z's unique learning attributes and approaches, a study utilizing the Delphi method was selected. This study utilized an adaption of the e-Delphi method where one panel of experts co-constructed attributes for Gen Z's learning approaches in an online, higher education setting and a second panel of experts co-constructed attributes for Gen Z's learning approaches in nonacademic settings. Participants were not known to come from a vulnerable population, meaning that no participants were known to come from populations which were disadvantaged, had a greater risk for being taken advantage of in research (e.g., children, elderly, minors, pregnant women, prisoners, etc.), or those who may not be able to provide informed consent. It is important to note that participants in this study were all capable of providing informed consent. Another feature of participant selection was diversity. Participants encompassed various socioeconomic status groups, ethnicities, and genders. Participants in a Delphi study are considered experts in the topic being researched. In this study, experts were defined as individuals who were Gen Z members, born between January 1, 2001, and July 8, 2002, who have had experience with learning in online settings. Experts were further defined by two panels, Academic and Nonacademic. Generating two panels provided an opportunity to see what, if any, differences existed between members of Gen Z who chose to learn in academic settings, and those who chose to learn in nonacademic settings. The panels were created using the following criteria:

Academic

1. The college courses were taken within the United States.
2. The individuals had chosen to enroll in and take at least two online college courses, taught by at least two different educators (pre pandemic). The COVID-19 pandemic

(also known as the Coronavirus) began in late 2019. In the spring of 2020, businesses and schools were shut down and stay-at-home orders varied by state to prevent the spread of the disease pushing education to an emergency online learning situation (Wu et al., 2020). Due to the state of emergency the world was in during this time, educators met demands of online education with little to no training.

3. Individuals resided within the United States.

Members of the Academic panel may be also have experience with and expertise in informal, nonacademic learning. However, in this study they do not meet the criteria of expert in the Nonacademic panel due to the choice to enroll in and take multiple online classes, as outlined by the Nonacademic panel selection criteria.

Nonacademic

1. The individuals had not chosen to enroll in or take online college courses (pre-pandemic).
2. Individuals who had gone online to learn at least one skill, gain knowledge, or explore online learning for personal reasons.
3. Individuals resided within the United States.

Two Delphi panels were implemented simultaneously, to compare two subgroups of Gen Z online learners (Academic and Nonacademic). The following research question guided this research study:

Research Question

Q1 How does Generation Z learn
   a. in online academic settings?
   b. in nonacademic settings?
   c. What, if any, are the differences in Generation Z's learning approaches in the two learning contexts?

This question allowed the research to look at both nonacademic and academic online learning approaches. Looking at both allowed for comparisons of learning preferences within the two settings. Furthermore, this question may offer data that can be used to compare what previous researchers have said against what Gen Z members reported in the study. One of the reasons the researcher completed this study was to understand what changes Gen Z learners desired in their education. This understanding may entice educators to make changes enhancing Gen Z's online learning experience and outcomes.

Overview of the Research Method

This study began with a pilot study, identifying a list of best pedagogical practices, as identified by panel members in an online setting. Pilot study panel members consisted of eight members of Gen Z born between 1999-2001. All were currently enrolled in one or more online college courses within the United States. Participants were all female, represented colleges across the Western US, and represented Caucasian, Hispanic and Latino ethnicities/races. Participants were purposefully divided into two groups (Academic and Nonacademic), each panel consisting of four participants. Additionally, the pilot study tested the instrumentation, clarity of design, and the research method. The e-Delphi method was chosen due to its adaptability in an online space, as well as its ability to meet the goal of this study; to create consensus with participants scattered throughout the USA on a relatively unexplored topic. The e-Delphi allows for quick communication as well as instant, digital data collection (Davidson, 2013). Once the pilot study was completed, a modified proposal and literature review were designed. The modifications refined the goal to explore the panel participant's learning approaches in an academic online space and a nonacademic online space, as well as explore alignments and misalignments between research defined best practices and Gen Z defined

learning approaches for online learning. The study implemented three rounds of surveys to achieve consensus on the preferred learning preferences in online academic and nonacademic spaces, as well as producing examples for future use.

The Round 1 survey was developed from the literature review, and results from the pilot study. The survey contained both quantitative (rank order and choose all that apply) and qualitative (open-ended) questions which experts reviewed. Subsequent round surveys were based on the responses from the previous rounds' data. The Round 2 surveys contained both quantitative (rank order and choose all that apply) and qualitative (open-ended) questions which culminated in expert consensus. The Round 3 survey gathered qualitative data from participants for future use and potentially successful examples for implementation of identified learning approaches. This data will be explained in greater detail in Chapter IV.

All potential panelists received an email invitation with a link to an application to be a panelist in the study. The initial email and the application included a cover letter describing the study. The application contained a cover letter informing potential participants of time commitment, confidentiality notices, gathered consent, participants created nicknames/pseudonyms, and funneled potential participants into one of two groups, academic and nonacademic, based on a series of questions they answered. The results of application round were quantitatively analyzed, using frequency and mean. Once panels were purposely selected, they were invited to participate in the study by an email which included a unique hyperlink to the survey.

Data Analysis

Round 1 data were analyzed and used to develop the instrumentation used in the Round 2. Panelists chose all that applied, then ranked each item according to personal importance to

his/her learning approach. Additionally, they were given the opportunity to add comments, and were asked one clarifying, open-ended question. The quantitative data were analyzed by frequency count and mean. Additional qualitative data provided support or additional items for consideration. Round 2 demands expert consensus (minimum of 80%), or non-consensus (researcher determines an inability to meet minimum of 80%), within each panel. Round 2 data for the Academic panel did not reach consensus on any items. Round 2 data for the Nonacademic panel reached consensus on all items; however, participants did not provide differences for similar items (e.g. “go online” and “search online”). Items were amended for clarity, refined and combined as dictated by the data. Round 2 was repeated as Round 2.5 in an attempt to reach consensus in the Academic panel and verify consensus in the Nonacademic panel. Items which did not meet consensus in Round 2.5 were dropped, and those which did meet consensus were introduced as such in Round 3. In Round 3, panelists were asked to provide examples, explanations and further define the items agreed upon in Round 2. The results were analyzed according to qualitative protocol (Clarke & Braun, 2013). The results of this round were compared with results from previous rounds, and were presented to the panelists via email for member checking. Once the member checking was completed, no further data were collected.

Limitations

Roberts (2010) explained that study limitations are unavoidable, as every study has shortcomings, such as small sample size, methodology issues, time constraints, participant selection, etc. The Delphi design relies on a relatively small sample size, which can be both a strength and a limitation. While the participants of this study varied in ethnicity, gender, location and socioeconomic backgrounds, the sample size, and purposeful sample selection may limit the generalizability to the entire Gen Z population.

Assumptions

This study was conducted with the following assumptions:

1. The panel participants in this study are experts in the topic being explored and have knowledge about how Generation Z learns.
2. The panel experts in this study provided honest responses to the survey questions.
3. Generalization of Generation Z were accepted as representative for the group as a whole.
4. Generalization of Educators were accepted.

Definition of Terms

The following terms helped to operationally define the study and offered constancy throughout the study:

***Academic Lens*:** The lens through which the Academic panel participants were asked to think about when they answered questions about learning approaches. Referring to learning in an online academic setting.

***Academic*:** Learning which takes place in an online college course within the USA.

Consensus: Participants (also known as experts) reach a consensus when a minimum of 80% agreement with the panel is obtained.

Deep Learning: Learning with the goal of knowledge transfer and application.

Delphi Participant: Delphi participant, for this study, is an individual born between January 1, 2001, and July 8, 2002. Experts are further defined by their academic or nonacademic qualifications. Participants encompassed various socioeconomic status groups, ethnicities, and genders. Experts were further defined by two panels, Academic and Nonacademic, participants

were identified as expert representatives of Gen Z in one of two panels due to the following factors:

Academic

1. The individuals have chosen to enroll in and take at least two online college courses, taught by at least two different educators (pre-pandemic).
2. The college courses were taken within the United States.
3. Individuals reside within the United States.

Nonacademic

1. The individuals had not chosen to enroll in or take online college courses (pre-pandemic).
2. Individuals who have gone online to learn at least one skill, gain knowledge, or explore online learning for personal reasons.
3. Individuals reside within the United States.

Learning: The way that Gen Z (in academic and nonacademic settings) approaches gathering information to learn, search, explore or otherwise engage with the process of acquiring knowledge with the goal of deep learning.

Nonacademic: Learning taking place in an online space outside of college courses. As online spaces are not defined by locations, the participants are located within the USA, however the online spaces they learn in may originate anywhere in the world.

Nonacademic Lens*:* The lens through which the Nonacademic panel participants were asked to think about when they answered questions about learning approaches. Referring to learning in a nonacademic, informal setting.

Panels: In this paper, “panels" refers to the Academic and Nonacademic Delphi panels.

Participant Lens: The context for which each panel was asked to respond to surveys. Two panels were purposefully assigned. The participant lens was an independent variable with two levels, academic and nonacademic. The survey instructions for each panel was to think specifically about their assigned lens when reading the survey and responding to the survey. Neither panel was told about the other panel, or the differences between the panels.

Summary

This chapter introduced the topic of research, Gen Z's learning approaches. The problem was presented and supported by the literature and past studies. A brief description of the study was provided (for a full description, see Chapter III). The research question was laid out, and an explanation of the rationale for the guiding research question was provided. Chapter II discusses aspects of Gen Z's learning approaches, including the environment in which learning takes place, development of what research reports about Gen Z's learning approaches, as well as explaining the Delphi method as a form of research. Furthermore, implementations of Gen Z's learning attributes and the effectiveness of the e-Delphi method in an exploratory study will be discussed. Chapter III describes the proposed methodology in terms of participants, types of methods used, research procedures, and plan of analysis. Chapter IV displays the results of the study and explains how the results answer the research question. Chapter V further discusses results presented in Chapter IV and links the results with the literature to draw conclusions and provides suggestions for further research.

CHAPTER II

LITERATURE REVIEW

As outlined in Chapter I, research regarding the distinctive manner with which Generation Z (Gen Z) learns is sparse. In an effort to deepen understanding and critically evaluate available research the following literature review was conducted. First, the history of online education and the concerns associated with online education were explored as a means of broadening the knowledge of online education and how it has evolved to its current state. Next, online pedagogical practices were explored to increase understanding of current online learning theories (e.g. connectivism and constructivism) and pedagogical lens (e.g. deep learning). Pedagogical practices were also examined to explore potential connections to Gen Z, and their unique approaches to learning in an online space. To clarify, this study discusses educators and Gen Z as generalizations and these generalizations may not be true for individuals. This study aimed to increase knowledge on Gen Z learning approaches. As Approaches to Learning (ATL) are one way of exploring learning, and are lined with "a theoretical view" (British Broadcasting Corporation (BBC), 2020), ATL information was explored to broaden the knowledge base of how and why learners approach learning. Equally important was increasing knowledge on current research regarding Gen Z's approach to learning, and what, if any, of Gen Z learning approaches differ from other generations. Lastly, this chapter expands knowledge on the method through which the study was implemented, the e-Delphi method, to deepen the knowledge base on the method and the benefits and constraints which are associated with it.

History of Online Education

To increase understanding of online learning preferences for the current generation, it was important to explore the history leading up to online education known today. The World Wide Web, introduced in 1992, is what many think of as the birth of online education. In truth, education began being distributed over distance with the invention of the telegraph in 1861 (Ferrer, 2019). The first distance learning dates back to 1728 when Caleb Philips advertised in the Boston Gazette newspaper offering weekly lessons delivered through "private (mail) correspondence" (Ferrer, 2019, p. 6). Exchanging knowledge through letters may be a stretch for some in the idea of distance learning, especially as it was not yet "online" as we define it today, but it is an important step in the history of education. Letters and telegraphs made it possible to share information and create more than one holder of knowledge. In 1971, email became a faster way to share knowledge (Ferrer, 2019). In the mid-1970s, universities adapted and integrated additional knowledge acquisition via email and computer conferencing (Ferrer, 2019). The first course offered fully through distance learning was in 1981 (Ferrer, 2019).

As technology became more readily available and more affordable, distance education became more popular. Once the internet was established, online education was explored. As with any infancy, there were issues such as the inability to connect, unstable connection, areas without Internet capabilities, and false information (Ferrer, 2019; Goldie, 2016). These issues still exist to some extent today. As the World Wide Web has expanded a new concern appeared. The ability for so many to put information into the World Wide Web created a haven for false news, fantastic stories and unbelievable truths. However, educators, parents, and others are working hard to teach online users the importance of gathering correct information, and how to do so (Graham et al., 2001).

In an effort to spread knowledge and promote education, digital and online learning possibilities were explored. Online degrees, online K-12 and higher education courses, Massive Open Online Courses (MOOCs), mobile learning, blogs, YouTube, social media groups (e.g., Facebook, Twitter, LinkedIn, and Wikis) are a few advancements brought about by online learning exploration (Dabbagh et al., 2016). Most, if not all, universities in the United States have some form of online education (Conrad & Openo, 2018; Martin & Bolliger, 2018). Flipped classrooms (Gilboy et al., 2015) and blended learning (Halverson et al., 2017) are becoming increasingly popular in K-12 and higher education. Flipped classrooms utilize the online learning culture for students to engage with course material outside of traditional classroom time so that in the classroom students interact with learning experiences and applications (Gilboy et al., 2015). Blended learning combines traditional face-to-face education with additional support from online sources (Halverson et al., 2017). Hybrid courses, which differ from blended learning as the mixture of online learning techniques and face-to-face learning techniques are individualized according to personal preference, and fully online courses are increasingly popular among higher education institutions (Tomei & Nelson, 2019). The rapid and constant advancement of technology increases the ability to share information globally, instantly, and with little to no cost. This ability to connect any time and place combined with the demands of individual's schedules has increased the desire for online education (Conrad & Openo, 2018). Therefore, it is important for educators to look to the future and reimagine what education looks like and how it can be utilized in our world today (Goldie, 2016; Schwieger & Ladwig, 2018).

Global and Cultural Opportunities and Challenges for Online Learning

One change online education has provided is the opportunity to connect individuals across the globe. Gen Z has grown up in a time of virtual expansion (the ability to do and

experience more through digital and virtual means), virtual travel, and learning challenges unique to this generation. Background knowledge of the current global and cultural opportunities afforded to these learners, as well as the current challenges for online learning may aid teachers and educators understanding of Gen Z's learning approaches.

It is no longer necessary to physically travel to be immersed in a different place. This advancement may well alter online education. Augmented Reality (AR) and Virtual Reality (VR) are becoming more prevalent thanks to apps and various mobile devices (Park & Khoshnevisan, 2019). In a 2019 study by Mead et al. it was suggested that traveling somewhere virtually is perceived by many to be as immersive as traveling there in person. Furthermore, these virtual and immersive field trips save money, time, and suggest an increase in students' focus on specific tasks and targeted subject matter (Mead et al., 2019). Technology and the online world made it possible for students to have immersive and virtual educational experiences which they otherwise would not have had (Mead et al., 2019).

Many students in today's education are "Digital Natives" (Prensky, 2001, p. 1) and are accustomed to instant and just-in-time learning (Rue, 2018). For many of these students, keeping up with social issues and relationships, through their digital device, is part of their day-to-day life (Rue, 2018). The ability to create relationships with people around the globe, through digital technology, creates a unique opportunity for people to learn more about other cultures and ways of life (Dabbagh et al., 2016). These global relationships and the ability to communicate quickly can help negate stereotypes and help people embrace one another in the learning process. These expedited question and answer sessions allow learners to ask questions and learn from the experiences of those who live the experiences as well as limit confusion and misunderstanding as learners are able to ask clarifying questions and receive feedback relatively quickly.

While it is possible to travel virtually just about anywhere, not everyone has the means to get online or the availability of resources. The USA has limited issues; however, globally devices are still beyond the financial reach of some, and in some places, the Internet is not reliable and very costly (Dabbagh et al., 2016).

Current Trends in Online Education

Global connection is not the only change online education has provided. Members of Gen Z are often depicted as being connected to their devices. So great is Gen Z's dependency upon technology that they reach for a smart device every few minutes (Kardaras, 2016) and just under half of Gen Z self-identify as device addicts (Albert, 2016). One reason for their constant connection may be that smart devices are their main way of communicating (Levickaite, 2010; Martin & Bolliger, 2018). This creates concern for many educators as it presents a new challenge; how to engage students who are constantly engaged with and often distracted by the same device they use to learn.

Equally as challenging for educators is the inability to decipher student knowledge and ability. Many of Gen Z consider themselves to be tech savvy (Ng, 2016). However, being able to run a smartphone or navigate apps such as Instagram and Snapchat does not mean that these tech savvy individuals have increased ability to engage with all technology that comes their way (Clark-Ibanez & Scott, 2008; Ng, 2016). Educators need to be mindful of the various levels which their students have regarding technology. If educators plan to use a specific software, program or device, support in the form of training should be implemented in the course design. Valuable time that could be used learning might be squandered in laborious frustration as the students teach themselves, or worse, give up entirely. While literature on Gen Z concerns in

online education is limited, it may be beneficial to ground this research in general concerns for online education.

Concerns

Online learning has created a debate between synchronous versus asynchronous learning (Offir et al., 2008). Asynchronistic courses allow for participants to engage with learning materials at time which is convenient to them, while synchronous classes promote interaction. A main concern of the debate centers on the level of interaction and ability to develop relationships in asynchronous and synchronous courses (Chou, 2002; Offir et al., 2008). Asynchronous relationships can potentially create distance, allowing participants to be less thoughtful in their responses because they are disconnected by a cloak of invisibility, and limited interactions. In their 2008 study, Offir et al. found that relationships are an important factor in successful online classes, whether they are synchronous or asynchronous. Offir et al. (2008) report that asynchronous online classes appeared to have less satisfactory levels of interaction as opposed to synchronous classes. The study found students with "high-level thinking can overcome the low-level of interactions in asynchronous learning" (Offir et al., 2008, p. 1172). Chou (2002) suggests that the best defense for limited interactions in an online setting is to implement "constructivist-based instructional activities" (p. 1795). Constructivist learning theories (defined in the pedagogical lens section of this paper) promote cooperation and interconnection between educators and students.

Additionally, a concern with online education is not everyone learns best in an online environment. It is important for educators to remember there are those who are visually or hearing impaired, or otherwise struggle online, due to feelings of isolation (Price-Rhea et al., 2018); lack of support (Ng, 2016); lack of communication (Price-Rhea et al., 2018); inability to

manage time (Martin & Bolliger, 2018); and cannot participate in virtual or online learning as others do. As with other challenges students may face, the educator is a key component of overcoming concerns and barriers. Through adaptations, careful instructional design and thoughtful planning, educators can offer these students accommodations in online learning settings (Martin & Bolliger, 2018).

The Feeling of Isolation/No Community

A common concern with online classes is the isolation that many students feel (Price-Rhea et al., 2018). This concern is especially true for individuals who are solely online or do not have a sufficient support group outside of class. For them, the classroom can be very lonely and lack a feeling of community (Roblyer & Ekhaml, 2000). There is a delicate balance for educators attempting to create an inclusive and communal class experience, as one of the advantages of online education is the ability to engage with class on an individual timeline.

Communication, or Lack Thereof

Communication can be an issue in any classroom, and is a particular issue in online education. Bawa (2016) suggested that one major concern for students online is the fear of missing an assignment or something else of importance due to lack of communication. Additionally, students and teachers can mistake meanings of emails, online assignments, or communication. While online classes can be both synchronous and asynchronous, the flexibility often associated with online education increases the likelihood of asynchronous communication. With various schedules and workloads both educators and students hope that communication will happen at the time that is convenient to them, and may become frustrated when it does not (Price-Rhea et al., 2018; Roblyer & Ekhaml, 2000).

Clarity, or Lack Thereof

Clarity is a common concern in online classes (Ng, 2016; Price-Rhea et al., 2018; Roblyer & Ekhaml, 2000; Uzun & Kilis, 2019). Just as clarity is an integral part of successful online courses, lack of clarity is a concern in every aspect of an online course. Regulations regarding privacy, conversations, assignments/rubrics (Price-Rhea et al., 2018), expectations, technological use (Uzun & Kilis, 2019), where to find assignments, how to successfully complete assignments, how to submit assignments, and rules of engagement within the classroom, all individually and collectively beg for clarity. Clarity is imperative in every detail of online classes.

Training, or Lack Thereof

Some of the concerns with clarity and communication issues may be minimized by training. Bawa (2016); Clark-Ibanez and Scott (2008); Ng (2016); and Roblyer and Ekhaml (2000), suggested that a lack of training for both students and teachers is a concern in online education. Previously discussed is the need for student training with technology, and that is equally important for educators (Ng, 2016). Educators need training to properly use and implement technology within coursework, as well as training in how to teach students to use the technology. Due to a variety of constraints, including money, time, and workload, educators are not receiving valuable and consistent training that could enhance their pedagogical practices and create more successful online classes (Kim & Bonk, 2006).

Educators are also in need of training in pedagogical practices for teaching online to be successful (Mohr & Shelton, 2017). The need for pedagogical training stems in part to the fact that online education is not the same as face-to-face education (Kebritchi et al., 2017). The adaptation of materials to an online setting can be difficult for educators (Li & Irby, 2008).

Faculty mentoring programs (Anderson et al., 2011), continuous training supporting educators' ability and desire to update pedagogical practices (Choi & Park, 2006), training for improving for online delivery methods (Anderson et al., 2011) and online course facilitation, can greatly benefit online instruction (Kebritchi et al., 2017).

Time Management and Balance

Time management and balance are not concerns reserved for online courses. They are concerns for most educators and students. One complication for online courses is that many people choose online courses to fit their unique timeline and do not wish to cater to other schedules (Martin & Bolliger, 2018). Time management is one aspect of online education that both students and educators need to pay careful attention to if they wish to engage in a successful course online (Ng, 2016; Price-Rhea et al., 2018).

Managing time is tricky for many because they are balancing a variety of life endeavors, such as work, social life, academic, family, and other responsibilities (Price-Rhea et al., 2018). Learners may feel lost and overwhelmed. The best solution for this issue is thoughtful course design (e.g., redesigning or reimagining content and delivery for online spaces; Kyei-BLanKson et al., 2009) constant communication, and clear expectations (Price-Rhea et al., 2018; Roblyer & Ekhaml, 2000).

Current Pedagogical Practices

Look to the Future

Looking to the future is defined as being constantly aware of the end result (jobs, goals, etc.) for the students, as well as constantly preparing pedagogical practices to meet the needs and abilities of upcoming generations of learners. Online learning is not a stagnant learning environment (Goldie, 2016; Wijngaards-de Meij & Merx, 2018). As generations age, and cultures shift and adapt, it is important for both the student and educator to keep their eye on the

future of education (Joordens et al., 2019; Nash, 2015), as knowledge is ever evolving and needs of learners continually change (Siemens, 2005). Looking towards the future helps educators prepare students for their life beyond academia, as well as encouraging educators to constantly update pedagogical practices for incoming learners. This is particularly interesting because while looking to the future was abundant in literature reviewed, educators are often behind, just now looking at Millennials, as they welcome Gen Z to school.

Online courses are an avenue of education that is gaining popularity. Some current areas of change being explored are changes in forms of assessment, how learners interact with one another and the professor in online settings (Gibby et al., 2002; King & Alperstein, 2017; Martin & Bolliger, 2018). The most successful educators are the ones who constantly broaden their outlook (Keengwe & Kidd, 2010) and are willing to adapt to the needs of incoming students and their learning preferences (Goldie, 2016). Technological advances, generational shifts, and the nature of human continuous growth point to a need for ongoing training for the educator and the student (Joordens et al., 2019; Kim & Bonk, 2006; Mead et al., 2019). The speed at which our technology is altering educational culture requires intentional integration of pedagogies.

Pedagogical Lens

Pedagogical choices are paramount to the educators' ability to successfully implement an online class. Currently, connectivism and constructivist learning theories are among the top theories being implemented in online learning spaces (Goldie, 2016; Schwieger & Ladwig, 2018). *Connectivism* is a digital age learning theory created by Steven Downes and George Siemens and is particularly useful in e-learning settings (Siemens, 2005). Connectivism centers on the idea that new knowledge is the most important knowledge, and knowledge is acquired by connections. Connections which the individual makes, as well as networking connections,

provide diverse opinions and outlooks. When the individual has a background of knowledge he/she can explore opinions and make decisions about what they believe and why they believe it. Increasing understanding and creating connections are continual processes of creating new knowledge (Siemens, 2005). Connectivism is supportive of online education, as technology is useful to create learning connections. In this learning theory, websites, blogs, social media, virtual connections, and support from technology can all play a part in increasing an individual connection for learning. In connectivism, learners not only gain knowledge, more importantly, they acquire the skills and ability to independently access knowledge, so that learning extends beyond the classroom (Siemens, 2005).

Constructivist learning theory is among the top theories being implemented in online learning spaces (Goldie, 2016; Schwieger & Ladwig, 2018). It offers relevant pedagogical approaches that are important to current digitally connected students, such as authentic experiences, problem-based learning, passion projects, collaboration, connecting to the world around them, interactive learning, offering choices, sharing artifacts, as well as student voice and choice. The main idea of constructivist learning theory suggests learning is achieved when individuals attempt to explore and understand their experiences (Driscoll & Tomiak, 2000).

Both the individual components (e.g. individual stages of development) of Piaget's (1971, 1972) theories and the social component (e.g. knowledge development is first a social experience, then an inner, reflective and personal experience) of Vygotsky's (1962, 1978) theories blend well with technology-supported learning. Vygotsky believed that there comes a time when the balance between old knowledge, new knowledge, and the perfect challenge come together to create a Zone of Proximal Development (Vygotsky, 1978). When this happens, the individual is primed to learn as social guidance increases their potential to learn. Perhaps,

Piaget's individual development would work well with asynchronous online learning, and Vygotsky's (1978) social constructivism would do well in online learning settings. Either way the core of constructivist theory contends at some point an online learner engages with technology interacting individually, processing, analyzing and making meaning of the digital material they are working with (Ng, 2016). Learners will continually check and balance new information with past knowledge. Furthermore, they will check with others to ensure that what they now believe to be true is equivalent and comparable among their social group.

Connectivism and Constructivism offer relevant learning opportunities that are important to current online students, such as authentic experiences, problem-based learning, passion projects, collaboration, connecting to the world around them, interactive learning, offering choices, sharing artifacts, student voice, and student choice. For this study, the pedagogical lens focused on deep learning with the goal of knowledge transfer and application.

Deep Learning. Deep learning constitutes a shift in pedagogical practices. Fullan and Langworthy depicted old pedagogies were those which used technology, pedagogical capacity and content knowledge with a goal of "content mastery" (Fullan & Langworthy, 2014, p. 3). New pedagogies seek deep learning outcomes by engaging with current technology which allows students to "discover and master content knowledge" through a delicate balance of pedagogical capacity and creation of "NEW knowledge in the World" (Fullan & Langworthy, 2014, p. 3). To put it simply, old pedagogies are those which were teacher centered and required content regurgitation, and new pedagogies are often student centered and focus on the creation and application of knowledge. The deep learning shift is more student focused and creates an ongoing partnership for the learner and the knowledge they acquire. Marton and Säljö (1976) researched how students approached learning when given a specific task. From their study, they

noted two approaches, surface learning and deep learning. Surface learning is achieved when students attempt to memorize information during a lesson, and deep learning is a complex learning approach. Deep learning requires a student who is willing to critically explore new information, analyze the new information to understand how the new knowledge enhances or disassembles past knowledge and personal theories. This process of analyzing, linking, and deconstructing will lead the learner to long-term retention and integration of past and new knowledge which can be used to problem solve in future circumstances. The ability to connect with information and manipulate it in future problem solving comes in part from the learner's construction of a deeper meaning (Marton & Säljö, 1976).

If an educator has a theoretical framework of deep learning, the amount of information given to students may be limited to allow for critical thinking and higher-order cognitive skills. Deep learners need to experiment with the information, think critically about it and develop a more in-depth understanding as they engage with the learning process, if they are to apply the knowledge in their life (Pugh, 2017).

Setting Appropriate Levels of Cognitive Load

If learners are to apply knowledge, they must be able to move it from short-term memory to long-term memory. The amount of information which can be processed at one time is called *Cognitive load* (Paas et al., 2004). Navigating between the amount of information necessary to ensure students know enough about a given topic and overwhelming them can be challenging in any classroom. This is particularly true in an online space where the educator may offer additional material through technological interaction in hopes of supporting the student (Bawa, 2016). Unfortunately, if the instructional design is not thoughtful and well scaffolded, the student may become cognitively overwhelmed and unable to retain the information (Gibby et al., 2002;

Mapson, 2011). A thoughtful and well scaffolded lesson plan blends a learner's past knowledge and current abilities with content and/or experiences, projects, task, etc., which stretch the learner but do not overwhelm the learner's capabilities. One example of this is found in Lev Vygotsky's (1978) zone of proximal development (ZPD). Vygotsky (1978) suggests that the optimal learning zone occurs when an individual is guided by the educator to navigate the space between what the learner can do by themselves and what the learner cannot do. When this happens, the individual is primed to learn as the guidance (social or by the educator) increases their potential to learn. Technology implemented in the class or assignments is not beneficial to the students unless it is well structured and has a purposeful connection to the learning experiences (Kim & Bonk, 2006).

Educators who provide thoughtful, well scaffolded lessons may use Rosenbloom and Newell's *chunking theory of learning* (1982) or Miller's "magical number seven, plus or minus two" theory to help build connections (Miller, 1956, p. 81). For example, an online course could focus on a few key ideas and encourage learners to utilize tools such as blogs or Flipgrid to create posts and discussions about the topic being learned (Fullan & Langworthy, 2014). As the class goes on, the instructor could have students share the information they have learned with a classmate. The final could be a culmination of iterative projects, reflections of knowledge, analysis and construction, displayed in a meaningful way (e.g. a twine story or online game could be developed by the learner). This project could showcase their personal connection to the material, while simultaneously engaging others in the class with his or her unique learning process.

Cognitive overload can increase levels of helplessness and feelings of failure, increasing the likelihood that students will not want to continue (Ivankova & Stick, 2007; Park & Choi, 2009). The good news about this concern, and potentially one of the reasons it is often referred to

in the literature, is that it is correctable. With purposeful and detail oriented instructional design, cognitive load can be dispersed in the coursework at a level which is simultaneously challenging and supportive (Gibby et al., 2002). When cognitive load is set at appropriate levels, knowledge can be transferred into long-term memory, allowing for application of knowledge.

Creation and Application of New Knowledge

Deep learning often occurs in projects or tasks which forego content memorization for individual exploration in past knowledge, which in turn produces new knowledge. Once 'new knowledge' is formulated, the individual is able to practice applying knowledge directly into daily activities. New knowledge pertains only to the individual learner, and may or may not add to collective knowledge (Claxton, 2014; Fullan & Langworthy, 2014). Additionally, new knowledge becomes a base from which the learner can continue to build and explore.

Focus on the Learning Process

As alluded to above, deep learning does not focus on the content as much as the process of learning. Individual learners play a key part in the learning experience. Their role and the ability to move learning from a momentary achievement into an action which can be continually built upon, is a pivotal component of deep learning (Fullan & Langworthy, 2014; Gee & Esteban-Guitart, 2019).

Creating Meaning

Another component of deep learning is the learners' creation of meaning. Motivation literature suggests students are more likely to succeed in a class (especially an online class which requires greater self-motivation) if they find value in the coursework (Wigfield & Eccles, 2000). Value for class content may not be something students come to class with, educators may need to help students find or create value. It may be up to the instructor to implement opportunities for

the student to explore the value of the material presented for them as an individual, and potentially as a whole class to make meaning (Graham et al., 2001). *Making meaning* is the ability for a student to actively engage in a learning experience while simultaneously internalizing the concept being studied to create unique, individualized value (Bennett & Lockyer, 2004). Making meaning promotes deep learning as it creates individual value for students and is invaluable in student retention (Bawa, 2016).

Student/Faculty Relationships

Another important component of deep learning is connection. The relationships generated during the learning process are critical to the success of online students (Conrad & Openo, 2018; Graham et al., 2001; Ivankova & Stick, 2007; Kim & Bonk, 2006; Martin & Bolliger, 2018). Educator to student, student to student, and all relationship combinations are important to successful learning. Due to the nature of an online class, interactions are often restricted to an online space. Therefore, it is crucial that the educator includes ways (e.g. projects or discussions, which foster interaction and student engagement) for the participants to interact and nurture relationships (Bailey & Card, 2009). The relationships the learner has in the class greatly impact his/her ability to navigate and engage in the learning space, including feeling comfortable to ask questions, respond to others and ultimately remain in the class and successfully complete the course (Conrad & Openo, 2018; Graham et al., 2001; Kim & Bonk, 2006; Martin & Bolliger, 2018; Park & Choi, 2009). Relationships are additionally important as students may need to ask teachers about matters beyond traditional education, such as technology involved in online courses (Bennett & Lockyer, 2004). Good relationships can help create an engaging and safe environment, which is another critical component of successful online classes (Graham et al., 2001; Martin & Bolliger, 2018; Nguyen & Hovy, 2019; Rue, 2018; Schwieger & Ladwig, 2018).

For deep learning, relationships between educator and students are critical, as the student will need the support from the educator to think critically and process information in a safe learning environment.

Collaboration

Some educators and students feel that the ability to collaborate is stifled in online courses (Nagel et al., 2009). This potential concern and misconception may be part of why this topic appears frequently in research literature (Bawa, 2016). Technology has changed the way that many people interact and respond to one another, and has actually created more options for class members to collaborate.

Collaboration helps build relationships, which enhances the desire to engage and complete the class (Conrad & Openo, 2018; Graham et al., 2001; Martin & Bolliger, 2018; Park & Choi, 2009). Collaboration may decrease cognitive load as participants are able to discuss the topics of the class at length. Additional training in online collaboration may be needed for educators to implement successful collaborative endeavors (Bailey & Card, 2009). When implemented well, collaboration in a digital space can create classes who harvest information for the purpose of collaboratively engaging in application of that knowledge (Weigel, 2002). Wise et al. (2013) suggested that successful online collaboration was one that extended student engagement, including discussion, emotional connections, reflection and critical thinking extended beyond the classroom.

Training for the Educator

The practices described in this section lead to a need for continuous training for the educator. The best course design occurs when the educator is properly trained (Bailey & Card, 2009). Bennett and Lockyer (2004) suggested that one forgotten or unknown element of training

needed for the educator is ensuring students know how to adequately use technology in appropriate ways. Educators need training to be able to demonstrate how to use and implement the technology in ways that students will understand. It is also imperative that educators receive ongoing training to supply support for technology as well as for the student in general. Furthermore, it is imperative that educators be trained in online pedagogical practices. Training which explores current pedagogical trends and understanding students' learning approaches can enhance student learning experiences.

Approaches to Learning (ATL)

How do we know how we learn? Why do we learn the way that we do? ATL is one area of study that researches answers to those queries. Murray-Harvey (1994) noted that ATL researchers are concerned with learning strategies and characteristics individuals implement when learning. There are six common approaches: deep, surface, achievement-orient (strategic approach), lack of direction, academic self-confidence, and metacognitive awareness of studying (Furnham, 2012). It all comes down to the reason behind learning. If, for example, a student hoped to get an A by attempting to memorize an entire book the night before a test, he/she may be externally motivated by surface learning. If learning is inherent and joy is found in acquiring knowledge then applying it, that student likely has a deep learning approach. For example, you need bagels for your breakfast. You like to cook, and while you have never made bagels, you believe, based on your previous baking experiences, that you can. You decide to try making them. You secure a recipe, perhaps research the process, then you try it out. If you do not engage in researching, finding a recipe, and learn the technique, you have only engaged in trial and error. Once you have finished your task, you share your newfound skill (or lack thereof) with your family.

The most popular instrument for measuring learning approaches is the Approaches to Studying Inventory (ASI) test, created in 1979 (Kolb, 1985). In 1992 the Revised Approaches to Studying Inventory (RASI) was created (Duff, 2004). These instruments assume that learners fall into at least one of these approaches. These instruments appear to be more useful when research is concerned with study habits. This research is interested in the entire learning process, not solely dominant approach(es), nor study habits, so while the instruments mentioned are interesting, and may offer some guidance, they will not work as instruments in this study.

Furnham (2012) cautions:

> A central issue for approach and style researchers is the conceptual and empirical overlap between their measures and established personality traits. This issue concerns not only the correlation between measures of cognitive and learning style, personality, and approaches to learning but also the incremental validity. That is, if both trait and style measures are used to predict some criterion variable (such as academic performance), is there evidence of the incremental predictability of one over the other? This question nearly always boils down to whether approaches or style measures add anything to the well-established Big Five (Neuroticism, Extraversion, Openness, Agreeableness, and Conscientiousness) or Big Three (Extraversion, Neuroticism, and Psychoticism) personality dimensions, which is particularly important because more psychometric work has gone into developing valid and reliable personality measures than into style and approach instruments (p. 70).

These cautions are important for this study; however, they do not define or negate the importance of this study as it is exploratory and did not seek statistical significance, but rather narrative

understanding. Identifying Gen Z learning approaches may be beneficial for the educators who teach them. There is literature exploring learning preference vs. tried and true teaching methods. Learning preferences are not always the most effective way to teach and the most effective ways of teaching are not always as engaging as teaching the way students prefer to learn. Knowing both the most effective method and the learning preferences enhances the educators' pedagogical tool box. Similarly, learning approaches may not align with the most effective pedagogy, and that does not discredit the value of educators' understanding learning preferences.

Generation Z's Learning Preferences and Characteristics

Deeply Personal

As students enter school capable of getting any question they have answered by mobile technology, their learning has an increased focus on individual meaning. Furthermore, Gen Z learners expect to learn through experiences (Goldie, 2016; Rue, 2018; Schwieger & Ladwig, 2018). Creating lesson plans and adding instructional design elements (e.g. offering projects which offer student choice) which support this learning preference will benefit an online class (Bennett & Lockyer, 2004). Gen Z learners want more than an education. To Gen Z, it is important to them that they are active participants in their education (Goldie, 2016; Rue, 2018). Gen Z learners have a great desire to associate their learning with real life and show this in their constant connection to the world through their mobile devices. For them every aspect of the learning process is deeply personal.

Infuse Lifestyle With the Way They Prefer to Learn

Unique to Gen Z learners is the extension of technology as a part of who they are (Cassandra, 2015; Cilliers, 2017). This generation grew up asking AI bots such as Siri, Alexa and Google for answers just for the thrill of hearing the machine talk. They expect immediate

answers (Cook, 2015) and do not believe there is a question that cannot be answered, even if Siri has been programmed to say she "can't answer that right now." Many members of Gen Z reach for a phone almost once a minute (Kardaras, 2016). They are curious about the world around them and have no qualms asking their trusted device to explain answers to them. AI bots are programed to offer auditory results (e.g. Alexa) or a combination of results. For example, Siri and Google offer auditory answers, and a variety of search results including links to websites, videos, podcasts, etc.

Technologically Innate

Gen Z is the first generation to grow up in a time that digital devices have the ability to be mobile. While some use desktop devices, they have largely given way to laptops, tablets, smartwatches, smartphones, and other mobile devices due to their ability to carry information with them at all times (Shay & Rees, 2004; Turner, 2015). Technology use and availability have changed the way many choose to learn (Bailey & Card, 2009; Bennett & Lockyer, 2004). Due to the ever-present technological advancements, online education has the opportunity to break the bonds of the traditional classroom (Joordens et al., 2019). Educators should embrace the technology that students are using and not be afraid to have them try out new technology available to them (Bailey & Card, 2009; Bennett & Lockyer, 2004). The type of technology used in online courses is important to both the educator as a tool for implementation and exploration, as well as for the student as a way to enhance the educational experience (Bailey & Card, 2009).

As mentioned above, technology is very important to Gen Z. Technology use is additionally important in the learning process (The Center for Generational Kinetics, 2016; Mead et al., 2019; Morey & Mouratis, 2016; Ng, 2016). Whether online or face-to-face, Gen Z learners desire to engage with technology (Seemiller & Grace, 2016; Turner, 2015). From endlessly

peppering AI bots with questions, to watching YouTube videos to learn how to work the newest gadget, Gen Z infuses their learning in and out of the classroom with technology (Ernst & Young, 2016; Graham et al., 2001; Nguyen & Hovy, 2019). They use their smart device to keep track of assignments, snap pictures of notes, remind themselves of appointments and look up definitions all without lifting a pen. The technological advances have created a new world for them, and they cannot imagine a time without it (Cilliers, 2017). They send short messages, often with more images and emojis than text, and they prefer video chatting as a way of connecting with others. Due to their constant interaction with technology, one thing for educators to keep in mind is that speed matters (Dimock, 2019). Whether they are surfing the web, checking the weather, playing games, or solving equations, Gen Z seems hardwired for speed. They are also constantly watching and waiting for the next technological advancement and lack tolerance for those who do not keep pace (Schwieger & Ladwig, 2018). This may frustrate some educators, but research shows that Gen Z learners adapt quickly and are more than willing and capable of teaching themselves, and sharing what they have learned with others (Mohr & Mohr, 2017; Rue, 2018).

Desire Experiences and Opportunity to Share

As Gen Z has not known a time when they could not access more information on a topic in a fraction of a second than any previous generation, they have come to expect that their learning is personalized. The virtual assistants silently await their every command. These individuals are not just waiting for knowledge to be poured out upon them, they relish the opportunity to be proactive participants (Merriman, 2015; Morey & Mouratis, 2016). They look for opportunities to solve problems and are constantly posting, Snapchatting and Instagramming experiences (Ng, 2016). In an instant they share to multiple platforms something meaningful to

them. To Gen Z, the ability to express and share experiences is an integral part of who they are (Merriman, 2015; Schwieger & Ladwig, 2018). For Gen Z learners, shared experiences are an expected part of the learning process (Ernst & Young, 2016).

Creating digital artifacts to showcase on their resume provides an added incentive For Gen Z to join the online learning realm (Alismail & McGuire, 2015; Graham et al., 2001). This personal investment raises persistence and overall retention of online learners (Bailey & Card, 2009; Ivankova & Stick, 2007; Park & Choi, 2009). One way to increase opportunities for class members to share is the creation of digital artifacts (Martin & Bolliger, 2018; Nguyen & Hovy, 2019). Potential artifacts include photos of tangible items made during the class, videos of class members sharing what they have learned, teaching a portion of the class, providing pictures, or links to additional information about topics from websites.

Social Media/Networking as a Tool for Acquisition and Sharing of Knowledge

Gen Z utilizes social media to share out experiences, network, to ask questions, find answers to questions, and seek information (Staples, 2018). As this generation spends so much time connecting via the Internet, they have created connections and follow people from all around the globe (Cassandra, 2015). If they want to know what something is like in another part of the world they have no issue finding a YouTube channel, watching a video, and then contacting the author of the channel with questions. Social media is also a chosen medium to share what they have learned (Turner, 2015). Instagram and Snapchat are examples of places Gen Z shares and asks questions multiple times a day. They like to know what others are doing and enjoy posting pictures of what they are doing. They use their connection to social media to

share knowledge in authentic ways (Ernst & Young, 2016; Martin & Bolliger, 2018; Ng, 2016; Nguyen & Hovy, 2019; Rue, 2018; Schwieger & Ladwig, 2018).

Gen Z may find social media a valuable tool, but Sinatra and Lombardi (2020) caution that social media has contributed to the "post-truth" era. The "post-truth" era is one where critical evaluation and scientific evidence have been sidestepped by misinformation and charlatans who cloud truth with glittering memes or counterfeit information. With a seemingly endless internet, constant updates, news feeds, and search results, the validity of online resources are often not verified (Sinatra & Lombardi, 2020). While "fake news" and misconceptions (e.g., the War of the Worlds panic in 1938; Rosenberg, 2013) is not a new phenomenon, the rate at which individuals come in contact with it and the continued inexperience in questioning credibility is staggering. Sinatra and Lombardi (2020) raise their voice to encourage online learners to question what they read, see, or feel in online spaces and take the time to determine the reliability of online content rather than take everything as truth. Current marketing research suggests that members of Gen Z have "highly advanced 8-second filters" (Finch, 2015, p. 4), which allows them to almost instantaneously gather and sift through information perhaps not perfectly, or critically, but enough that they can decipher useful information from the unimportant (Goldie, 2016; Rue, 2018). This filter is unique to Gen Z and while they are known for their short and often sporadic attention span, their filter may give them an advantage in sorting out the mountain of results identified in a search, if they are taught to evaluate it critically.

Non-Text Communication

With the previously identified categories of technology, social media, and networking, it may not come as a surprise that Gen Z does not prefer text when conversing or acquiring

information (The Center for Generational Kinetics, 2016). Instead, they turn largely to YouTube (Bazilian, 2017). They will watch hours of video to learn about any topic, from facts about Siberian unicorns to how to boil water. Gen Z learners enjoy videos and often spend a lot of time either watching or making videos. They believe there are more creative ways to learn and share knowledge than the traditional ones (e.g., textbooks, paper and pen) implemented now (Morey & Mouratis, 2016; Ng, 2016). Lithner (2008) performed a study exploring frameworks and origins of reasoning. He determined "in most research, the primary source of evidence is observation of data" (p. 272). Gen Z may agree with Lithner, as they turn largely to demonstrative videos, such as those on YouTube.

They also prefer not to read much text. Instead, they largely use images, symbols, emojis and shortened text to communicate (Ng, 2016). As with Instagram, the idea of communicating may be more about getting their thoughts and ideas out or sharing a message than having an ongoing conversation (Rue, 2018; Schwieger & Ladwig, 2018). Members of Gen Z live in a digital world and prefer digital artifacts and communication.

Seek Real-Life People, Problems and Examples

Due to their constant connection to news and individuals around the globe, Gen Z is a generation of advocates (The Center for Generational Kinetics, 2016; Ernst & Young, 2016; Morey & Mouratis, 2016; Ng, 2016; Rothman, 2016). They have a unique collective consciousness with a shifting idea of social norms (The Center for Generational Kinetics, 2016). With this collective consciousness comes greater acceptance. This group does not just want to learn subjects or about the world around them, they want to apply knowledge in meaningful ways (e.g. solving real-life problems for real people).

Teachers are Guides and Facilitators, not the Holders of Knowledge

Another shifting norm held by Gen Z is the idea teachers no longer hold the knowledge to impart on students. Rather educators exist to guide students in the education process (Tomei & Nelson, 2019) and facilitate experiences (Morey & Mouratis, 2016; Seemiller & Grace, 2016; Tomei & Nelson, 2019). Mohr & Mohr (2017) explain that Gen Z "often desire relevant, solution-oriented relationships with their mentors and peers but need guidance to respond to contemporary challenges" (p 92). Gen Z students expect teachers to have well thought out lesson plans that facilitate meaningful collaboration and genuine real-life experiences and training.

Self-directed Learning. One learning theory which strongly supports the idea of educator as a guide is self-directed learning (SDL). SDL occurs when a learner takes responsibility for their own learning (Knowles, 1975). Responsibility can include establishing individual goals, choosing materials and generating knowledge according to unique achievements, desires, and experiences (Knowles, 1975). SDL is a popular adult learning theory, which requires learners to take ownership of knowledge acquisition as part of a lifelong endeavor.

There are three perspectives for SDL: personal attribute (e.g. Kasworm, 1988), in which learners become responsible for their moral, emotional, and intellectual development; process (e.g. Harrison, 1978) where the learner chooses, constructs, and organizes an individual learning process; and context (e.g. Candy, 1991) when self-directed learning is bound by the environment or context. Context is generally thought of as confined to face-to-face learning and does not venture into a virtual learning space; however, researchers, such as Song and Hill (2007), are exploring the expansion of the context perspective in online learning. SDL is anticipated to do well in online settings, in part due to the belief that online learning is effective for autonomous

learners (Song & Bonk, 2016). Furthermore, mobile technology has increased the desire and places SDL occurs, which enhances student-centered learning over teacher-centered learning (Song & Bonk, 2016).

Generation Z's Approach to Learning

Naturally, not everyone approaches learning the same way. As mentioned above, Swedish researchers Marton and Säljö (1976) began exploring approaches to learning (ATL). Their research looking at "deep" and "surface" learning are still widely studied today.

There is a debate in the literature around the issue of preference vs. effectiveness. It is important to note that in this study, Gen Z's preferences may not translate to best practices for Gen Z. However, there is value in understanding that preferences are important. For example, in 2009 Parmer et al. research conducted exploring the relationship between preference to vegetable consumption, hands on garden exploration and school gardens. They found that having a garden did improve vegetable preference in second graders. There are many variables which may have played into the increased preferences including the teachers' knowledge and experience growing a garden. The increased knowledge about the vegetables may have been due to prior preferences, increased access to the vegetables, or a host of other variables.

Additionally, it is important to be aware of potential problems when preferences are ignored. Taylor and Serna's 2020 article examines college student preferences in regards to communication. One of the findings was "the time and frequency of text messages determine student interaction with the text" (p.139). If the university ignored the student's preferred time and frequency, they may not have students engage with the text. If the university sent too many texts or consistently sent texts at an inopportune time, students may ignore or block the texts all together. This could detrimentally limit the knowledge that the text was attempting to relay to the

student. When it comes to preferences and effectiveness, there should not be a battle, instead educators would do well to meld perspectives.

History of the Delphi Method

The final section in this literature review sets the stage for the chosen research method. The Delphi method (or Delphi) gets its name from the ancient Greek word, *Delphi,* which was believed to be the omphalos, or center of the world, where prophecies were given (Scott, 2014). Delphi also alludes to the oracle, which in Greek mythology was known to give advice or prophecy (Scott, 2014).

"Project Delphi" was the original Delphi study. In the early 1950's the Air Force sponsored a RAND Corporation study utilizing expert opinion (Dalkey & Helmer, 1963). The 1952 study relied on seven experts, or panelists, who the military believed would best be able to determine how many bombs the US would need to counter the Soviet Union if they launched their planned attack in 1953. The experts were gathered for their knowledge, the educated speculations they could draw from that knowledge, and ultimately their opinion (Dalkey & Helmer, 1963). The group of experts built a consensus through an iteration of questionnaires and evaluations of opinions. Panelists were asked to compare and re-evaluate through multiple rounds until they reached a general agreement. Consensus in a Delphi is usually considered met at around 80% (Lynn, 1986; O'Connor, 2006). One unique factor in the Delphi method is that generally consensus within the group is met without the experts ever talking directly to one another (O'Connor, 2006). This is done to help ensure that there is no one leader, and each expert has the opportunity to speak freely, without pressure to agree or disagree with the group (Dalkey & Helmer, 1963; Fischer, 1978). The only person to see the responses attached to an

expert, or to see all the individual results is the researcher. It is the researchers' job to reframe and properly categorize the results creating the subject matter for the following round.

The Basics

The traditional Delphi method falls under "consensus development techniques," which are under the broader umbrella of action research (Vernon, 2009). It also qualifies for future research methodology status (Gordon, 1994; Okoli & Pawlowski, 2004; Skulmoski et al., 2007). Future research is research which "systematic[ly studies] possible future events and circumstances" (Business Research Methodology, (n.d.), para. 1). Delphi research is becoming more popular among a variety of researchers, from advertising to education (Geist, 2008). The wide range of target experts has produced several offshoots of the Delphi method. While the desired output somewhat differs, the basic characteristics and rounds remain the same. The five identifying characteristics of a Delphi study are:

- A group of experts is identified by the researcher (Linstone & Turoff, 1975). Rationale for this group of experts is given.
- Multiple rounds of iterations are given to the experts with brief interjections of time for the researcher to aggregate and create the instrument for the subsequent round (Geist, 2008). Each round clarifies and narrows the focus of the study. This is done in part by the experts defining the issue, and reaching a group consensus.
- Statistical group response (Van Zolingern & Klaassen, 2003). This refers to the combining of individual responses into a collective response. This is often done in the first round by frequency and a minimum of 80% consensus (Lynn, 1986) in the Round 2

- Anonymity (Dalkey, 1967). This characteristic sets Delphi apart from other forms of decision making methods. It is important to note that the Group Delphi (further explained below) has very limited anonymity, as the participants are reaching consensus in one place and time.

The original RAND corporation study and many others in the 1940s and 1950s sought rather bleak forecasting of military efforts. A decade later businesses found that the Delphi method was advantageous for advertising purposes (Geist, 2008). Popularity grew and in 1975 two formative publications were made: Group Techniques for Program Planning: A Guide to Nominal Group and Delphi Processes (Delbecq et al., 1975), and The Delphi Method: Techniques and Applications (Turoff & Linstone, 2002). While there is still some debate over the approach associated with Delphi research (i.e. quantitative, qualitative, or mixed methods; Avella, 2016; Rieger, 1986), the method continues to be used and continues to extend beyond its original purposes (Geist, 2008).

At its conception, "Delphi Exercises" were surveys created by the researcher(s) and a "monitor team" sent to a larger group of experts who answered individually and independently with paper and pencil (Turoff & Linstone, p. 5). The survey was returned to the creators and data were used to develop a new questionnaire for the group of experts to reevaluate.

There are generally three to five rounds, or four phases, in a Delphi study (Turoff & Linstone, 2002) First, in a round nicknamed Round 0, or the Generative Round (Nelson et al., 2005), experts are given a questionnaire that introduces a scenario, question or issue, and respondents respond with a list of ideas about the broad problem (Ziglio, 1996). This round sets the basis for Round 1. In phase one respondents explore the topic of discussion. In Round 1 experts individually offer information which they feel is relevant to the subject. This is often

referred to as the “exploration phase” (Ziglio, 1996, p. 9). Round 2, sometimes called the “evaluation phase” (Ziglio, 1996, p. 9), is where additional rounds may be necessary for the expert group to reach consensus. This is a process where the expert panel agrees or disagrees on what is meant by various components, such as definitions and level of importance, in the research. Consensus status is closely monitored by the researcher and rounds will repeat until the researcher has a clear picture of how the group views the issue (Turoff & Linstone, 2002). If participants are unable to reach consensus on any of the items or topics presented to them an additional round is implemented. This round is aimed at exploring, identifying and if possible, resolving the disagreement. The final round rephrases the data found in the previous rounds and asks the experts to share examples of implementation, practical practices, and future use. Throughout the study it is important the researcher did not subject the study to personal bias or interpretations. It is also paramount the researcher was keenly aware of disagreements within the group (Turoff & Linstone, 2002), which may lead to nonconsensus.

Different Types of Delphi

Figure 1 was created by the researcher to showcase the four main adaptations of the Delphi method and breaks down what each is used for.

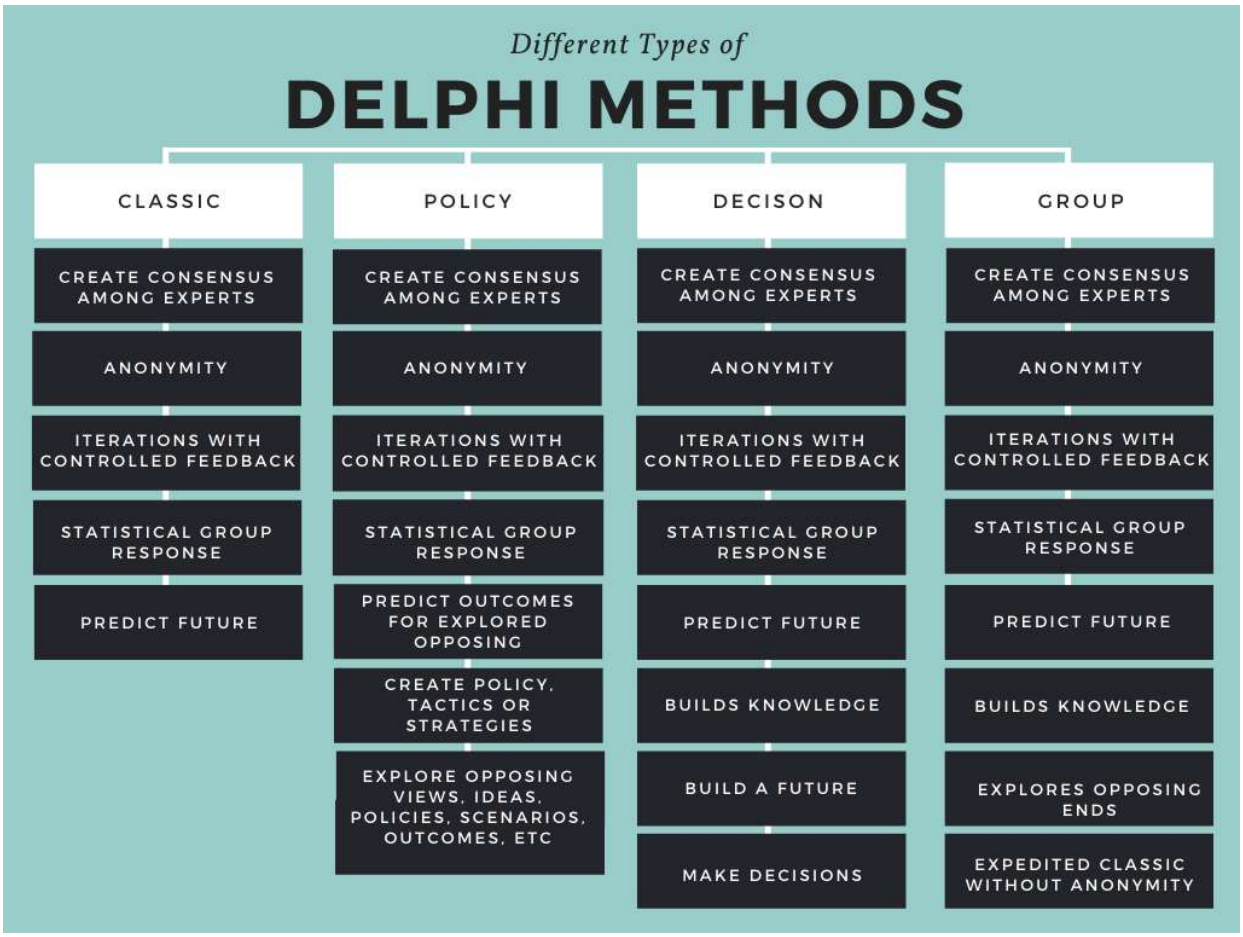

Figure 1. Different Types of Delphi Method

There are four main types of Delphi studies, the classic Delphi, policy Delphi, decision Delphi, and group Delphi.

Classic Delphi

The classic Delphi seeks consensus of future outcomes through iterative rounds (O'Connor, 2006). Technology has modified the Delphi in many ways. The e-Delphi mirrors the classic Delphi, but instead of paper and pencil, all communication, surveys, feedback, etc., from the participants (expert panel) and the researcher happen in an online setting (Davidson, 2013). Communication is through email, online surveys, and ever advancing forms of online communication. The e-Dephi remains asynchronous in nature.

Policy Delphi

The policy Delphi seeks a conversation regarding opposing views on objectives, infrastructure and policy (McGeoch et al., 2014). This is commonly used to explore and address issues or develop strategies within businesses, organizations and management structures (McGeoch et al., 2014; Rauch, 1979). Unlike the classic Delphi, "the aim is not consensus; it is a clearer understanding of the plurality of standpoints" (Crisp et al., 1997, p. 117). This technique holds true to the anonymity and iterative rounds which are identifying characteristics of the Delphi.

Decision Delphi

The decision Delphi, as its name suggests, is implemented to make a decision. Generally a decision about a future development, or rather than forecasting a future, seeks to build one (Rauch, 1979). This type of Delphi strays from traditional Delphis' group opinion to forecast as it is instead honed in on to a decision at hand.

The Group Delphi

The group Delphi, created by Webler et al. (1991) is also known as an *expert workshop, or workshop Delphi*. The workshops occur in one day and are an expedited version of the classic Delphi, without the anonymity. Small groups are given the issue and they work together in their small group to create consensus. Once groups reach consensus their work is compared. The results are announced to the large group, differences are discussed as a collective group. They are then broken into new smaller groups and again asked to reach consensus with the small group. This process is repeated until the large group reaches consensus (Geist, 2008). Another variation of the group Delphi is the modified Delphi. The group modification styles tend to have face-to-face interviews or focus groups in at least Round 1 (McKenna, 1994). While this limits

the anonymity of the Delphi, because the people can see each other, the results remain aggregated and collective, increasing the anonymity of the individual panel members. After Round 1, anonymity generally returns, as the group interviews and focus groups are no longer used (Davidson, 2013). Another variation of the group Delphi is what is sometimes referred to as a consensus conference. This advanced version of Delphi was created by Gnatzy et al. (2011) in hopes of limiting attrition by performing the study in real time. This deliberative process harnesses the speed of a computer to allow participants real-time responses from anonymous participants (Hartman & Baldwin, 1995). This makes the process much faster as participants can change their answer as many times as they like. Group Delphis have strayed the farthest from the traditional Delphi, creating workshops and conferences.

Group Delphi Workshop. The invention of computers and the internet created what is sometimes called a "Delphi Conference" (Turoff & Linstone p. 5). This type of Delphi relies heavily on structured communication and synchronous conversations. The Delphi conference creates an interesting adaptation to the chain of Delphi methods. While most Delphi revere the importance of anonymity, the Delphi conference attempts to engage in limited anonymity by mixing participants within iterative rounds.

Group Technological Delphi. Similar to the real time Delphi which takes place at the consensus conference, the technological Delphi takes advantage of the current technological advances (Davidson, 2013). This Delphi method utilizes handheld devices to reach real time polling results. It is quantitative in nature due to the inability to ask open-ended questions (Davidson, 2013). This can be done with participants in different locations, or in the same room, such as a college classroom, so the level of anonymity varies. Gordon and Pease (2006) attest that real-time Delphi is "round-less" as the participant's entries are polled instantly and can be

changed as many times as they wish within a specific set of time. Time varies by study needs from minutes to months. Participants are encouraged to engage in the polling process several times throughout the set survey time. Geist (2008) states that this type of Delphi results may not be as consistent as others as the number of times participants visit and interact with the study vary widely.

Recent Applications of the Delphi Method as Related to the Current Study

McIntyre-Hite (2016) ran a qualitative Delphi study to ascertain, through an expert panel, commonly identified effectual and successful competency development within competency-based program development for higher education. She was also interested in the disagreements among the group, as understanding both sides of the discussion would help create a list of effective practices for future program development. McIntyre-Hite began by eliciting professionals within her network who had previous experience developing competency based programs in Higher Education. She then utilized snowball sampling to recruit the rest of her participants (N=25, with a minimum of N=10 after attrition).

Round 1 consisted of email or phone semi-structured interviews, between the researcher and each participant. This data were coded for emergent themes. The results from this round created a set of questions for Round 2. Round 2 was conducted via phone interviews when possible, and email conversations when participants requested it. The goal of this round was to collect participants suggested methods of program creations, and participant's thoughts. Round 2 specifically asked participants about agreements, disagreements, and any additions participants wanted to make to the findings from the first round. Round 3 involved clarification of previous data, explanation and further inquiry interview questions regarding areas of agreement or disagreement among participants. This round focused on reaching consensus among the group.

Consensus was not reached for every practice; however, the items which reached consensus were deemed sufficient. Lists were created and made into a chart for researchers to use. McIntyre-Hite's (2016) study is valuable to the current research in that it demonstrated how the researcher dealt with nonconsensus and examined the agreements and disagreements within participants, similar to this study's goal of examining similarities and differences between the panels.

de Leeuw et al. (2018) conducted a Delphi study to create a list of diverse, literature supported indicators for educators to implement in e-learning classes. This Delphi utilized two groups of experts (N=23). Group one included 13 international medical education experts and Group 2 was 10 experienced users of e-learning. In Round 1 experts were given a list of 57 indicators. These indicators were previously identified through a literature review and focus group study. In subsequent rounds, the group agreed with 37 of the items and identified an additional 15 items. In the end, consensus was reached on 37 of the items. The resulting list of 37 items set the groundwork to develop a tool which could assess postgraduate medical e-learning (de Leeuw et al., 2018). de Leeuw et al. (2018) offers a similar methodology, involving two groups within one Delphi, used in this research.

Mohr & Shelton conducted a Delphi study in 2017 exploring best practices for online educators. Their expert panel consisted of educators who had extensive experience teaching in an online setting, as well as several who had additional experience teaching in a variety of face-to-face facilities. They note that they were able to retain 72% of participants throughout the study, which is above the 70% recommended by Hasson et al. (2000). The authors attribute their success to presenting clear time expectations to participants, the individual participants' personal interest in the study, desire to be better teachers, and a $25 US Dollar Amazon gift card given to each participant upon completion of the study. Each round asked participants to respond using a

"six-point balanced bipolar, Likert scale response" (p. 128), scaling the essential nature of the item, or report non exposure of the item. This survey chose to eliminate variables which could not reach consensus within three iterative rounds. The first round presented 59 potential professional

development methods, identified through a literature review, for participants to choose from. Round 2 incorporated the 36 methods, which did not meet consensus, and 58 additional suggestions for participants to consider. This round resulted in 14 items meeting consensus among the group. Round 3 was conducted in the same manner, producing seven items of consensus. Round 4 reiterated the seven items and all those from previous rounds which had not yet met consensus. Only the seven previously agreed upon items reached consensus in this round. After completion of the four rounds the data were analyzed, themes emerged and the online professional development best practices were broken "into four categories to structure the learning opportunities: faculty roles, online classroom design, learning processes, and legal issues" (p. 132). The research confidently asserts that following these essential practices can enhance educational practices within online education.

Conclusion

As with many pedagogical practices, the largest impact to create informed decisions in education both now and in the future lies with the educator. The need for creating and maintaining an online environment in which learners will thrive is up to the individual educator. Online learning is not the same as face-to-face and requires educators who understand and embrace the affordances and drawbacks of the digital world, navigate the variety of cultures and global issues that Gen Z learners face on a daily basis. The best learning will happen where the relationships are the strongest. This begins with the support and relationships offered to the

instructor from the learning institution and trickles down to the learner and those who support the learner.

Advancements in technology will continue to create tremendous opportunities for education beyond anything we know today. One of the most interesting components of online learners and the upcoming generation is the ability to connect the world and learning experiences. Learners and educators will need to be aware of learning preferences to meet the needs of Gen Z online students. Educators and researchers would do well to research Gen Z, implementing learning strategies as they become available, all while keeping an eye on the future, growing right before our eyes.

CHAPTER III

METHODOLOGY

Chapter III details the design of the study, including participants, research instruments, data collection and data analysis. As outlined in previous chapters, the aim of this study was to deepen knowledge regarding how Gen Z prefers to learn in online settings. Specifically, this study sought to understand the learning approaches of Gen Z in online academic and online nonacademic learning contexts, as detailed by Gen Z. The e-Delphi was chosen for this study due to its exploratory nature, lending itself to be useful in research which is largely unexplored (Price, 2000), and its ability to extract a common consensus among experts, who provide understanding and offers expert derived examples for future use. Furthermore, the e-Delphi method combines both quantitative and qualitative elements, giving the study a holistic view. To guide the research and extract expert opinions, the following question were developed:

Research Question

Q1 How does Generation Z learn
   a. in online academic settings?
   b. in nonacademic settings?
   c. What, if any, were the differences in Generation Z's learning approaches in the two learning contexts?

Design of the study

The following sections detail the study epistemology, researcher stance, ethical considerations, methodological framework and methodology, and finally, the analysis and coding of the data.

Epistemology

Theoretical Framework

The overarching approach was pragmatic. Pragmatism is an investigation that tells both the quantitative and qualitative sides of the research (Crotty, 1998) and is based on optimal outcomes for the research question. Pragmatism was believed to be the best theoretical stance possible to approach the research quantitatively and qualitatively.

Qualitative Framework: Constructivist. This research embraced a constructivist theoretical framework to scaffold the methodology and research design for all qualitative data. A constructivist epistemology, fathered by Bruner (1961), Piaget (1955, 1971), and Vygotsky (1962), is often used in educational research (Mogashoa, 2014) and delves into how humans construct knowledge, make meaning, and learn (Creswell & Poth, 2018). It is common for constructivist researchers to be qualitative and implement instruments that ask open-ended questions. Constructivists contend that learning is an active, individual journey based upon the interactions between past and current ideas and experiences (Creswell & Poth, 2018).

While learning occurs individually, it is simultaneously a social experience. Learning is heavily enfolded by social interactions (Vygotsky, 1962), personal experiences (Dewey, 1938), culture (Hunter & Krantz, 2010), perceptions (Stengers, 2008), language (Lin & Qiyun, 2003), collaboration (Mohr & Mohr, 2017), the individual capacity to teach self (Vygotsky, 1997), and active participation with the individual's world (Tobin, l993). As an individual reflects upon experiences, knowledge is not transferred but is built and is personally meaningful.

The Delphi method aligns with the constructivist epistemology as it offers opportunities for individuals to individually and collectively create meaning. Anonymity, one component of the Delphi method, enables individuals to share ideas, experiences, and thoughts with the

researcher without potential influences from others. The individual offers personally meaningful explanations that the researcher compares among all panel participants. It is the researcher who identifies commonality or themes among the data in each round. Constructivist theory enhances the Delphi process by embracing individual thought and constructing a meaningful, collective knowledge from the individual data. A constructivist framework further frames this research as the researcher implemented two Delphi panels as an exploration into how the learner prefers to learn online both in and out of an academic setting.

Quantitative Framework: Post-Positivism. In addition, a post-positivist theoretical stance was the framework used as a continuum between qualitative and quantitative methodologies. In order to appreciate the post-positive paradigm, it is important to understand its predecessor, Positivism. Positivism is a paradigm where reality is firmly grounded in evidence that can be quantitatively validated. In short, there is only one reality, which is unchangeable. Positivists believe that due to its sound foundation, reality can be statistically measured (Waismann, 2011). Gay et al. (2009), caution that positivism "cannot capture the full richness of the individuals and environments" (p. 5). This caution is one reason post-positivism exists.

Although post-positivism evolved from positivism, post-positivists do not believe that reality is singular, but rather potentially multiple aspects of reality may exist (Krauss, 2005). The post-positivist framework aligns with the qualitative constructivist stance in that post-positivism also takes culture and historical perspective into consideration (Fischer, 1978). The aim of post-positivism is to scientifically explore the phenomena through objective mathematical results (Creswell & Poth, 2018; Panhwar et al., 2017). Furthermore, post-positivism "was the beginning of a compromise between qualitative and quantitative paradigms" (Geist, 2008, p.88). Post-positivist research encourages the combining of qualitative and quantitative methods in research

to extract key components for the expansion of knowledge (Fischer, 1978). It is important to note that constructivist and post-positivist epistemologies are not fully compatible. Although they have different assumptions about the nature of knowledge and truth, parts of each can work collaboratively in a Delphi process.

Researcher Stance

Researcher bias can be an area of concern in qualitative research. To enhance trustworthiness in this study the researcher ran a pilot study, in part, to identify potential researcher bias as suggested by Chenail (2011). Furthermore, the researcher increased trustworthiness by bringing to light researcher bias as directed by Merriam (1998). This section explained the researcher's personal research stance as well as elucidated any bias.

The researcher has online learning experiences and online teaching experiences. As a university graduate student, the researcher attempted to better understand Gen Z learner's unique learning approaches and ways that the online learning process could be improved. The researcher earned a bachelor's degree in English, with a minor in Psychology, and an emphasis in Elementary Education. The researcher further earned a Master's degree in Technology, Innovation, & Pedagogy. Both degrees were earned at moderately sized universities. Much has changed in the way students engage with learning and taking classes from the time the researcher earned her bachelor's degree to the time she earned her master's degree. Furthermore, as a mother with children who entered college courses, the researcher noticed the process they undertake to learn informally was quite different from current pedagogical practices. Having taught various teens over the last several years, the researcher found when she adapted teaching strategies to match students' learning approaches, the class was more engaged, and the students appeared to have had a strong desire and increased ability to apply the information presented in

class into their daily lives. When the researcher co-taught a class which introduced preservice teachers to the world of teaching with technology, she was surprised several students reverted to overhead projectors as the way they saw themselves teaching in the classroom, even though not one of them used an overhead projector when they wanted to learn something. The researcher pondered why the potential educators, who were the senior members of Gen Z, the ones who could embrace their unique learning approaches because they share them, would succumb to overhead projectors? The researcher noticed throughout the class the way Gen Z learners approached learning in academic settings was different than in nonacademic settings.

At the time of this study, the literature on Gen Z was largely observational. Before pedagogies could be tested, however, it was important for researchers to ask Gen Z about their learning approach. The Delphi method is an advantageous research method for exploratory research. The Delphi method is a mixed-method research which implements iterative rounds. Delphi researchers gather experts who offer insights about the research topic. The panel of experts first identify, then refine, and finally offer suggestions. While this researcher is a qualitative researcher at heart due to the deep, rich data which comes from interviewing people and unearthing stories, deepening understanding and insight in the research, she also finds value in mixed methods. The combination of qualitative and quantitative research offered a holistic view of the research.

The researcher used a technique called bridling, which is defined by Vagle et al. (2009) as “a reflective stance that helps us ‘slacken’ the firm intentional thread that tie us to the world” (p. 351). Bridling was used to limit researcher’s bias in data collection and analysis of data.

Furthermore, the researcher's experiences with online learning and Gen Z learners gave her a unique understanding and ability to attend to the meaning collected in the study.

To prepare for this study, the researcher conducted an e-Delphi (a Delphi taking place online) pilot study looking at Gen Z's learning preferences, their agreement with what current research said about them, and their concerns with online classes. A few emerging themes were identified, and the researcher realized learning preferences did not offer insight into Gen Z learners' unique learning approach. Changes were made accordingly for this study. Bridling was practiced in the pilot study and found to be a sufficient form of bias control in connection with a researcher journal and member checking. Therefore, in this research, bridling, a researcher journal and member checking were used to control bias.

Methodological Framework

Methodology: The Delphi, Mixed Methods Study. For this research, an exploratory, mixed methods e-Delphi approach was used (Davidson, 2013). Traditional for a Delphi (expert panel of 15 +) study, this research selected participants based on set criteria (see Participant section). All contact with participants was conducted on an individual level and via email or Qualtrics survey platform.

A Delphi study generally consists of three to five rounds, or until consent (see Operational Definitions section) among the identified experts is met. In this study, there were two separate panels. Each panel remained the same throughout all rounds of the study. The panels were separated by their expertise and the lens through which they thought about the questions (see Operational Definitions section for an explanation of lenses). Panel results and data were kept separate in each round. Upon completion of the final round, the two panels' data were compared (see Figure 2 for a visual flowchart).

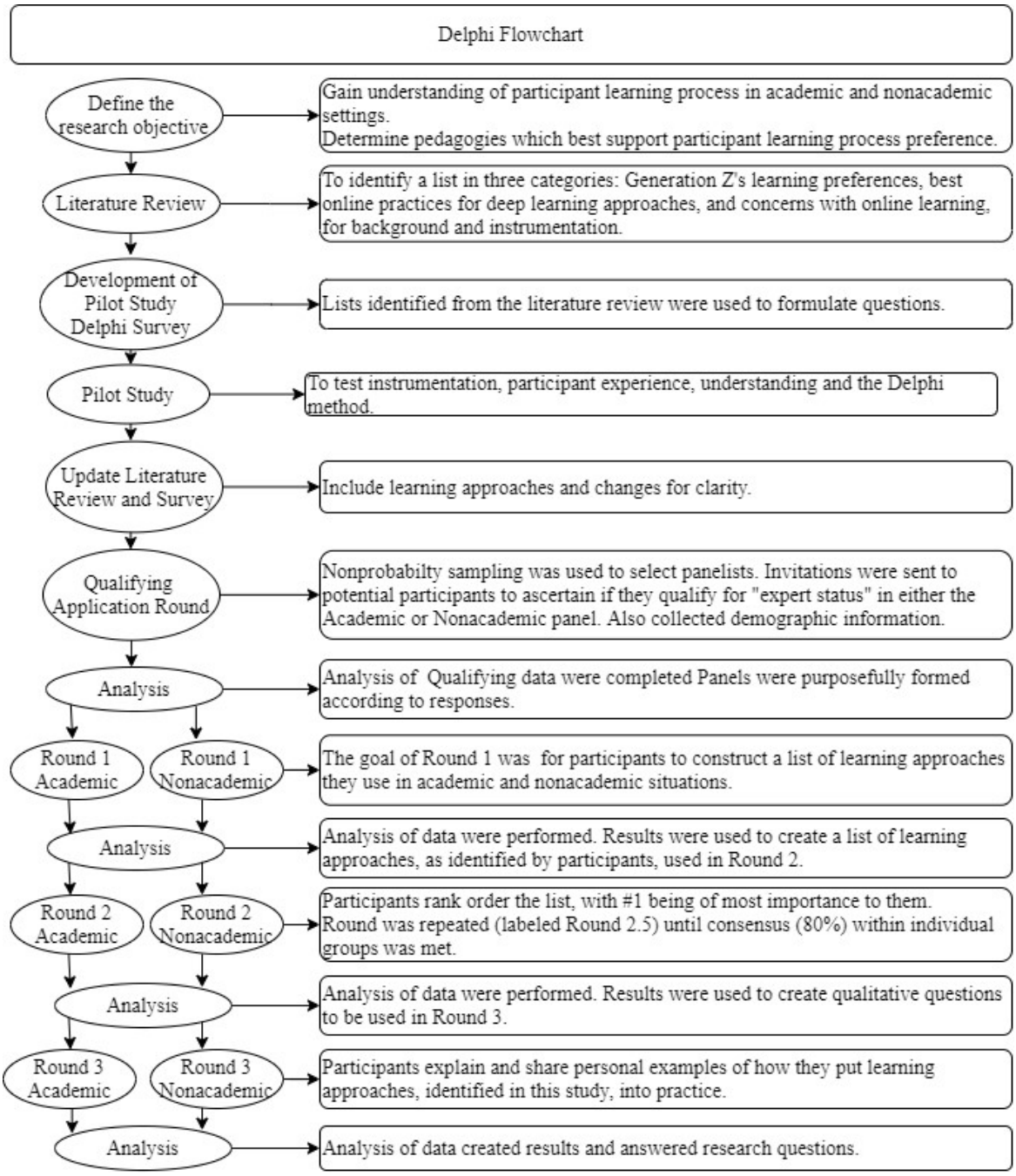

Figure 2. Delphi Flowchart

Each section in the flowchart is discussed further in this section.

Methods

Participants

Participants were invited to participate in the research through nonprobability sampling, specifically, convenient purposeful sampling. After approval from the Institutional Review Board (see Appendix A), the researcher contacted students known to her and invited potential participants to apply through a Facebook post. Additionally, the researcher's dissertation committee used social media and personal contacts to elicit students who fit the participant criteria, defined above, for participation in this study (see Appendix B for recruitment email).

Based on the 40% response rate of the pilot study, for the full study, a minimum of 76 applicants (38 in each panel) needed to be invited to maintain 15 individuals per panel after attrition. Just over 2.6K applicants filled out the qualifying application survey. At this point the survey was shut off as saturation was more than sufficiently met. Surveys were designed to filter applicants into one of two panels, Academic or Nonacademic, according to their criteria as outlined in Chapter I, and later in this Chapter. The remainder of this paragraph will outline steps taken to select participants. The statistical information for the final participants will be presented in the following paragraph. First, all surveys were checked to ensure completion. Next, a spreadsheet was generated for each panel, displaying all applicant responses. Date of birth and age were checked. All applicants were age 18-19. Next, any applicant which did not meet all availability was rejected. Any applicant which did not meet expert criteria were then excluded from participant selection. The most common exclusion was in the Nonacademic group. Applicants were asked to briefly describe a skill they had learned in an online setting. Those who replied "none" were excluded at this point. In each panel two males and two females and when possible, other were chosen from each race/ethnicity. Next, selected participants and remaining

applicants were explored for diverse socio economic status (SES). Additional participants were chosen according to any missing SES, while maintaining equal race/ethnicity and gender ratios. Once all SES categories were met, surveys were explored by where individuals resided (and college of choice for Academic panel). Regions were well represented within the current sample, so individual educational experiences (e.g. elementary education took place in homeschool, online, traditional school building or any combination) were considered. Next, skills learned online were considered. Final, grades (A, B, C, D, F) were considered. Once a list of 38 participants per panel were selected, a final comparison was made to ensure variety in race/ethnicity, gender, SES, region representation, individual educational experiences and various skill acquisition. Selected participants with matching characteristics were highlighted. Applicants were explored for any unique characteristics not yet met in the participant selection. Once the researcher felt that the participants were as diverse as possible, with as many unique characteristics as possible, an email was sent to the potential participants inviting them to take part in Round 1. Three emails came back. Those participants were excluded, and applicants with similar characteristics were invited. A total of 76 participants were invited to participate in the study. Each panel consisted of 38 individuals.

Participants were defined as individuals who were Gen Z members, born between January 1, 2001 and July 8, 2002. Participant age ranged from 18 (n =44) to 19 (n = 32). Participants were residents of 39 states and represented all regions within the United States (see Figure 3, Appendix O for a complete list). One feature of participant selection was diversity. Participants encompassed various socioeconomic statuses as measured by internet access, educational background, and parent educational attainment (Figure 4). Nine races and ethnicities were represented with no group comprising more than 18% of the total (Figure 5). Participants

identified as 48% male, 49% female, and one participant identified as other. Diversity in participant demographics increases representativeness and potential transferability of this sample to the Gen Z population.

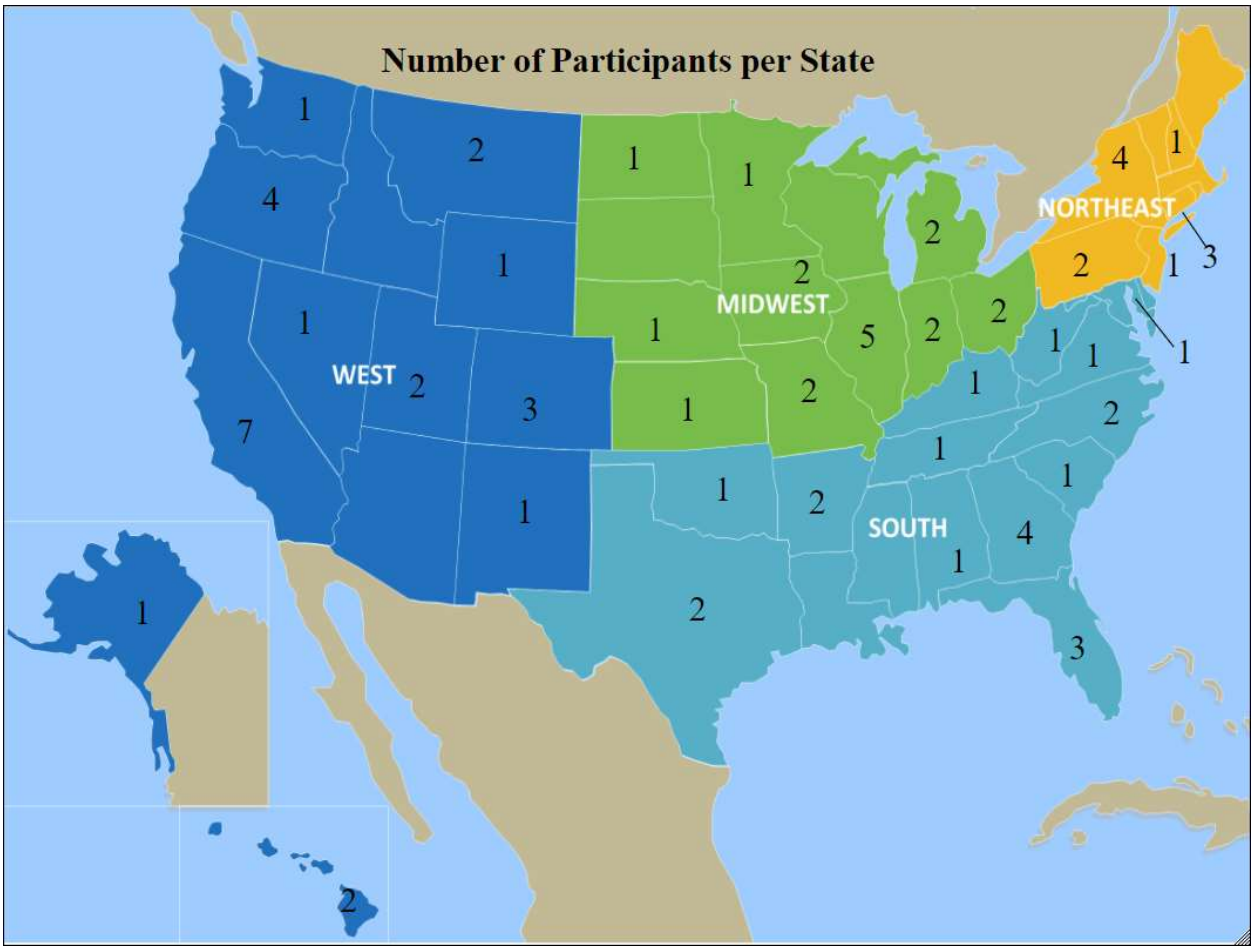

Figure 3. Number of Participants per State

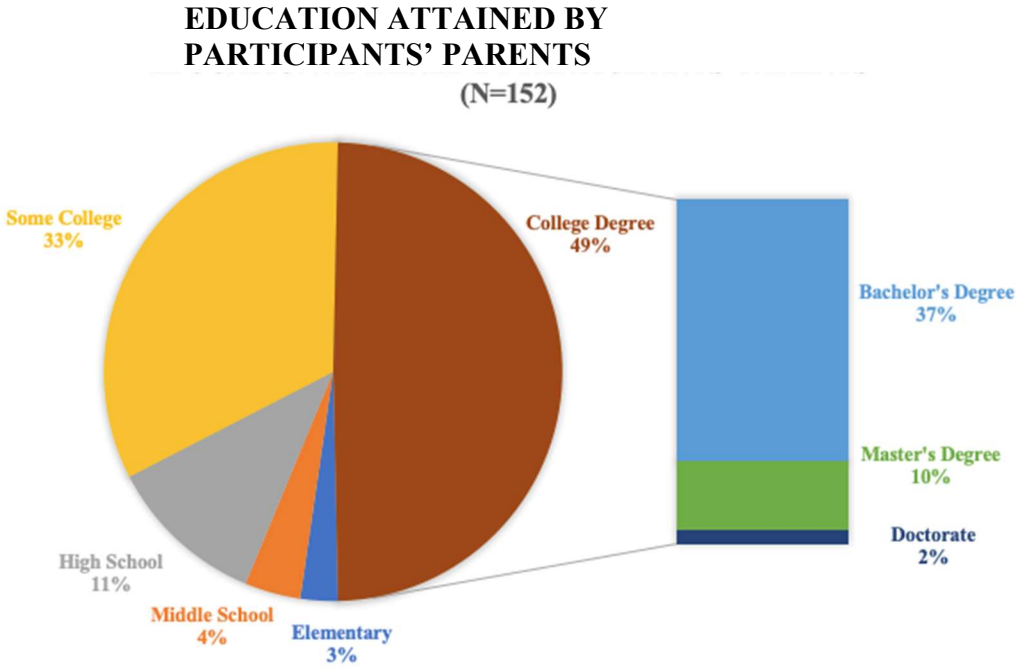

Figure 4. Education Attained by Participants' Parents

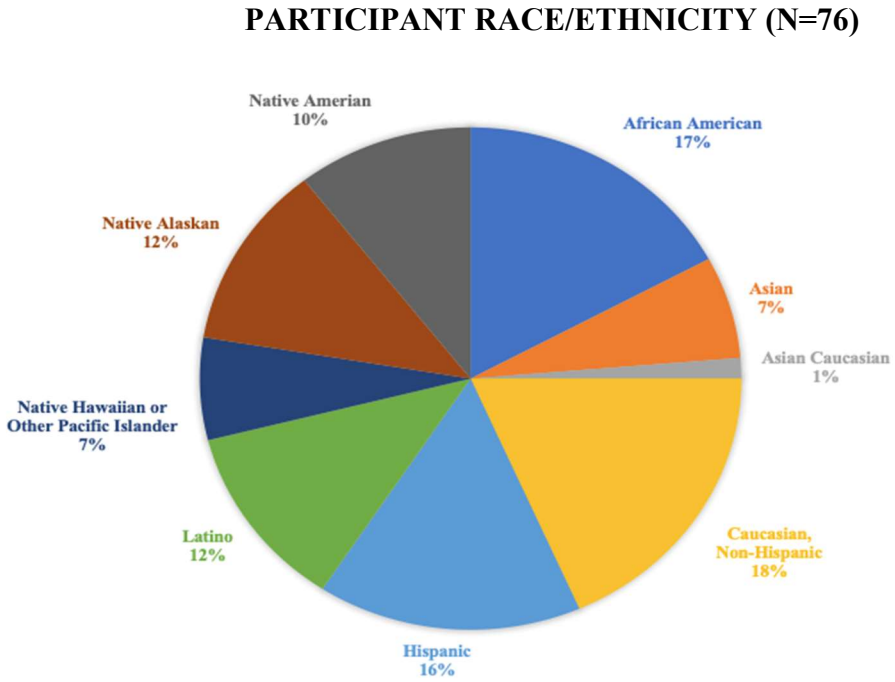

Figure 5. Participant Race and Ethnicity

Additionally, each participant was selected as an expert having acquired at least one skill in an online space, which they were able to transfer and apply in his/her life.

In addition to the above criteria, participants were identified as expert representatives in Gen Z in one of two panels (Academic and Nonacademic; further described in the Operational Definitions section) due to the following factors.

Academic

1. The individuals have chosen to enroll in and take at least two online, college courses, taught by at least two different educators.
    a. The panelist's number of courses taken are as followed: 2 (*n*=7), 3 (*n*=4), 4 (*n*=5), 5 (*n*=12), 6 (*n*=4), 7 (*n*=3), 8 (*n*=2, 10+ (*n*=1). Out of the 38 Academic panel participants, seven reported having two different teachers and 31 reported having more than two educators.
    b. This study purposefully selected participants representing a variety of academic levels to gather thoughts and opinions from students in various academic standings: 69% of participants received A's, B's or C's in their classes, 25% received Ds, and 6% received Fs.
    c. Academic panel participants represented 38 different colleges across the USA. For a list of the colleges, see Appendix P.
2. The college courses were taken within the United States.

Nonacademic

1. The individuals have not chosen to enroll in or take online college courses.
2. Individuals who have gone online to learn skills or gain knowledge on their own.

3. Individuals reside within the United States.

Delbecq et al. (1975), affirmed that the Delphi method worked best with participants with the following attributes:

1. Feel personally involved in the problem of concern to the decision maker.
2. Possess pertinent information to share.
3. Are motivated to include the Delphi task in their schedule of completing tasks.
4. Feel that the aggregation of judgment of a respondent panel will include information which they also value and to which they would not otherwise have access (pp. 87-88).

Adhering to the aforementioned criteria, two panels of experts where chosen to explore potential differences in members of Gen Z. The research question, which guided this research, explored how members of Gen Z approached learning, and explored the possibility of differences within the group. Further research will be needed to explore if differences in responses due to the participant background (i.e., online course experience vs no online course experience) or another variable.

Potential Benefits to the Participants

Individual monetary incentives were offered in the form of $5 in Amazon gift cards, not to exceed $25 per participant, given after participation in each round. Participant contributions to the research on identifying Gen Z's online learning approaches could help create instruction that future learners may receive.

Consent Forms

Before participation in the study began, participants agreed to consent through a consent form (Appendix C) describing the research, outlining their participation, stating the risks and

benefits of participation to them, and providing a list of rights for participation such as the ability to withdraw at any time for any reason.

Instrumentation

The surveys used in Round 1 were developed from the results of the pilot study and the literature review. The survey contained both quantitative (rank order and choose all that apply) and qualitative (open-ended) questions which experts reviewed. Subsequent rounds were based on the responses from the previous rounds' data. The Round 2 survey contained both quantitative (rank order and choose all that apply) and qualitative (open-ended) questions which culminated in expert consensus. Round 3 gathered rich qualitative data from participants for future use and potentially successful implementation of identified learning approaches.

University of Northern Colorado faculty members examined the survey instruments for content validity. Additionally, the surveys were pilot tested by members of Gen Z who were not involved in the study. The combination of review and pilot testing were implemented to improve clarity, usability and comprehension for the participants. Caution was taken not to overcomplicate the verbiage used in the surveys, or to develop surveys which may seem laborious to the participants.

Data Collection Procedures

The instrumentation and measurements used were unique to this study, as they were developed for this exploratory research. The validity of this research was supported by Tomasik (2010), who reports that Delphi research has "good reliability and satisfactory validity" (p. 1) due to the need for individuals to amalgamate individual responses to a group consensus. The surveys prepared for this study were developed with great attention to the research question.

The qualifying application survey (Appendix E) was used to collect demographic information, age, availability, information about learning approaches, inform participants about the study, and gain consent. Data collection followed traditional rules for a e-Delphi (expert panel of 15 +) study. Following a traditional Delphi study, this study consisted of three rounds, until consensus among the identified experts was met. Also in accordance with traditional e-Delphi studies, all contact with participants was on an individual level and conducted online via email. As this research utilized two Delphi studies simultaneously, the data collection process was the same for each of the two separate panels. Data were collected through anonymous Qualtrics surveys for each round. Upon completion of the final round, the two panels' data were compared.

The study was run in a qualitative-quantitative-qualitative approach, where the quantitative analysis informed the qualitative analysis and together the analysis suggested the need for further exploration. In Round 1 and Round 2, data were coded for frequency and rank order before being analyzed for qualitative open ended participant responses. The additional qualitative responses added depth and clarity to the quantitatively generated lists in each round. Quantitative questions were analyzed using descriptive statistics. Those questions which considered rank and frequency were analyzed using the Henry Garrett Ranking Technique (Garrett & Woodworth, 1969). The Garrett Ranking Technique is a descriptive statistical test which generates a score for each item according to participant rank. It was chosen to show order of preference along with rank order. Consensus was measured by the participant response mean. The data from Round 1 drove the instrument development in Round 2, and the data in Round 2 drove the instrument development necessary for Round 3. The qualitative data gathered in Round 1 and Round 2 were used to enrich the quantitative data gathered. The data analysis used in each

round was outlined in Figure 2. This Delphi study consisted of three rounds. Round 1 offered participants open-ended questions, checked all that applied, and ranked order questions in an effort to generate a list of participant constructed learning approaches they use in academic and nonacademic situations. In Round 2, participants were asked to rate each of the items accepted and generated in Round 1. Additionally, they were offered the opportunity to add comments or additional items. Round 2 was repeated (Round 2.5), as participants were unable to reach consensus. Round 3 consisted of open-ended questions which were structured to gather rich data on participants' perceptions of the best way to implement the consensus reached in Round 2.5.

Round 1

Round 1 began ahead of the anticipated start date of July 14, 2020. Due to the large quantity of applicants, the participant selection did not require as long as initially planned. All participants reported that they were over the age of 18 prior to July 8, 2020 which allowed the study to begin early. Participants were purposefully divided into two panels (38 in the Academic panel and 38 in the Nonacademic panel, n=76). Academic and Nonacademic participants were sent, via individual email invitation (Appendix F), a link to join the survey set up for this study. Each participant was given a unique, one-time use link, generated by Qualtrics, with which to take part in the survey (Appendix G). Participants were asked questions about how they approach learning. Participants were also asked to provide the nickname/pseudonym which would connect them to the study for purposes of Amazon gift card codes. Participants were given seven days to complete the survey. Email reminders (Appendix H) were sent out to participants on day 3 and day 5 if not all responses were submitted. 30 of the Academic participants and 27 of the Nonacademic participants engaged with the survey.

The following week the researcher analyzed both panels' responses. The goal of Round 1 was for the experts to generate a list of learning approaches in academic and nonacademic situations. To achieve this goal, the surveys offered a combination of open-ended qualitative questions, rank order, and choose all that apply lists, which were created using data from the pilot study. The practices selected by the panels of participants were used to create a list of Gen Z learning approaches, as identified by the participants, to be used in Round 2. Quantitatively, in each panel, responses were individually counted, and similar responses combined. Qualitatively, the researcher coded emerging ideas, combining them into thematic nodes. While the two panels' data were not combined, data between the two panels were compared for similarities and differences.

Table 1

Research Timeline

Time	Action
May 8, 2020	IRB Approval
May–June 2020	Call for Participants
June 2020	Participant Application Closed
July 1-July 8, 2020	Participants selected
July 9, 2020	Invitation email sent to panel members with a link to Round 1 survey
July 12, 2020	Reminder email to engage with survey sent out
July 14, 2020	Final reminder to engage with survey sent out
July 25, 2020	Round 1 closed
July 15- 8, 2020	Round 1 analysis began as soon as data began coming in
July 19-21, 2020	Round 2 development

Table 1, Continued

Time	Action
July 27, 2020	Final reminder to engage with survey sent out
July 28, 2020	Round 2 closed
July 28 2020	Round 2 analysis began as soon as data began coming in
July 29-2020	Round 2.5 development
July 30-2020	Invitation email sent to panel members with a link to Round 2.5 survey
August 2, 2020	Reminder email to engage with survey sent out
August 5, 2020	Final reminder to engage with survey sent out
August 6, 2020	Round 2.5 closed
August 2-6, 2020	Round 2.5 analysis began as soon as data began coming in
August 7, 2020	Round 3 development
August 8, 2020	Invitation email sent to panel members with a link to Round 3 survey
August 11, 2020	Reminder email to engage with survey sent out
August 13, 2020	Final reminder to engage with survey sent out
August 14, 2020	Round 3 closed
August 15-August 25, 2020	Round 3 analysis
August 26, 2020	Member checking, results and thank you email sent to participants
September 2 –September 10	Final analysis of data

Round 2

Using the most frequent responses identified in Round 1, Round 2 instruments (Appendix I) were created for each panel. Randomization of the responses was used so that participants did

not know how many votes each of the previous responses received. Randomization also aided the study in selection and accidental bias, as each participant received items in a different order. All 76 participants were invited via an email (Appendix J) with a personalized, one-time use, survey link generated by Qualtrics to join in this round. Participants were given seven days to complete the survey. Participants were asked to choose all that apply and rank in order the lists generated, with the fist being what aligned best with his/her approach to learning and the highest number being the one that aligned least with his/her approach to learning. Additionally, they were provided space to add additional items, comments or concerns. The academic panel had 12 participants who responded without appropriate identification, meaning that the pseudonym they gave did not match any participants. The results of the 12 participants were excluded from Round 2 data, and new emails were sent. Each email contained a new invitation with a new, personalized, one-time use, survey link generated by Qualtrics. The 12 participants were given the remaining five days to complete the survey. None of the twelve participated in this round. Survey two was completed by 20 Academic panel participants and 25 Nonacademic panel participants, for a total of 45 participants. Round 2 was repeated once, called Round 2.5, (see Appendix K for survey and Appendix L for email) to reach consensus. Round 2 instruments were evaluated, and similar items were combined and simplified while maintaining the integrity of previous participant derived data, as directed by Goldstein (1975). Survey 2.5 was completed by 20 Academic panel participants and 25 Nonacademic panel participants, for a total of 45 participants.

Once consensus was reached, the researcher analyzed both panels' responses. In both panels, responses were counted and similar responses combined. Quantitatively, in each panel, responses were individually counted and similar responses combined. Qualitatively, the

researcher coded emerging ideas, combining them into thematic nodes. As with Round 1, data between the two panels were compared for similarities and differences.

Round 3

The items which reached consensus in Round 2 were rephrased into questions for the final instrument (Appendix M). In this round, 76 panel members were asked, via a Qualtrics email invitation (Appendix N) with a personalized, one-time use, Qualtrics survey link, to explain and share examples of how they suggest each of the approaches identified could best be put into practice. They were also invited to share any failures, tips, frustrations, or advice at this point. The goal of this round was for each expert panel to respond to each of the identified approaches, offer further explanation and describe any suggestions they had for future use. Panelists' responses and recommendations were used to add rich data and clarifying content to the study. Academic panel participants (n=24) and Nonacademic panel participants (n=22) completed the assigned survey in Round 3 for a total of 45 participants. Due to the length of the study, attrition is likely (Ludwig, 1994). This study was successful in maintaining a minimum of 15 participants in each panel in each round. This may have been in part to the $5 Amazon gift card code incentives offered.

The following week was used by the researcher to analyze both panels' responses. In both panels, responses were counted and similar responses combined. Data between the two panels were compared for similarities and differences.

The results (Appendix O) from each panel were sent to all 76 participants respectively, according to their panel. Academic and Nonacademic panels were asked to look over the findings from the study, and respond with any comments. This included any additional thoughts, feelings on interpretation of data, or misrepresentation of data. This email was sent as a part of

member checking which enhanced the qualitative validation of the study. At no time in this study were panels made aware of the other panel. Nor were participants made aware of members within his/her panel. Anonymity was believed to have remained intact throughout the study.

Trustworthiness

Qualitative

The quality of a study can be determined in part by the criterion implemented to enhance trustworthiness or rigor (Schwandt, 2014). In Qualitative research, there are four main criterion which must be satisfied; credibility, confirmability, dependability, and transferability (Creswell & Poth, 2018). Each criterian was met in this study as outlined below.

Credibility, or the ability of the research to adequately report and represent the multiple realities defined by participants is established in this study with reflexivity and member checking. The iterative rounds provided the researcher with continual opportunities to reflect on any researcher bias, consciously seeking and acknowledging assumptions that might have had while running this study.

Member checking is when data is returned to the participants, and they are given the opportunity to check for accuracy (Creswell & Poth, 2018; Schwandt, 2014). The iterative rounds in a Delhi naturally involve member checking, as each round builds upon the previous round's findings. During and after each round notes were made regarding successes, failures, concerns, emerging themes, and other things of interest. Once the data were evaluated, the researcher created a preliminary findings email, unique for each panel. The Academic panel participants and the Nonacademic panel participants were sent individual emails asking them to look over findings and share any concerns they had about the findings. Participants were told that if they did not reply, the silence would be considered acceptance of the findings presented to

them. One participant in the Academic panel responded saying that they agreed with the findings. Furthermore, member checking should increase confirmability.

Confirmability, or the ability for other researchers to confirm the research findings of this study (Creswell & Poth, 2018), was implemented throughout the study by reporting details of the research process and procedure, as well as reporting detailed findings.

Dependability, the extent to which people can depend on this research and the ability of other researchers to follow the method used (Creswell & Poth, 2018), is satisfied by the researchers detailed audit trail and the mixed method approach. For qualitative components, close attention was given to the quality of the research design. It was important to keep an audit trail in the form of a researcher journal (Ziglio, 1996). The researcher's audit trail described how data were collected and analyzed, provided quotes from data, operational definitions, and a description of the design and research process. The iterative rounds and the member checking emails gave participants the opportunity to evaluate and check findings. Other researchers could use the findings presented in this study, as well as the responses from participants to check the interpretation of the findings. Furthermore, the interpretation and recommendations of the findings presented in Chapter V were supported and represented by data in this study.

Lastly, transferability should be heightened through the development of rich themes. *Transferability,* as the name alludes, is the extent to which qualitative research results can be used in other settings or contexts. In this research, transferability was achieved by the addition of thick, rich descriptions which came from the qualitative participant responses. These quotes describe the themes and provide narrative explanation.

Quantitative

For quantitative components, a pilot study was run to assess instrument accuracy. Adjustments to increase instrument accuracy were made for this study. Findings in this study were validated through ongoing reflection by the researcher and member checking with participants. This was achieved through iterative rounds, which restated the researcher's findings from the previous round. In Round 2, 80% agreement (or non-agreement) within each group, for each survey item, was a criterion for completion of the round. The agreement within each group is a reliability measure, as it ensures that participants show consistent results.

Ethical Practices

Ethical practices were constant checkpoints in this research. First, the researcher submitted a proposal to the IRB for institutional approval. Once received, the researcher ensured that participants were aware of expectations in the study and acknowledged understanding by consent. All digital artifacts were stored on a password protected computer which remained in the possession of the researcher. As mentioned above, the researcher ensured that participants remained anonymous throughout the research. All data were aggregated and any particularly poignant comment used in the findings or results were represented by pseudonyms or non-identifying terminology (e.g., "one participant") were used.

Data Analysis

As this study is exploratory in nature, all instruments were created for this research and no psychometric properties were assessed; a pilot study was the only preliminary analysis conducted. Both qualitative and quantitative analysis were used in this study. The qualitative questions were logically based on quantitative findings.

Qualitative

The Delphi panel's responses from the online survey were analyzed as follows. After each round, the data from each panel were cleaned. Cleaning the data were achieved by correcting misspellings, excluding and reporting skipped items, item responses that were not considered in line with the question asked, or data provided by inappropriately identified participants (e.g. nickname/pseudonym did not match participant). Furthermore, data were cleaned by organizing documented notes and the researcher journal. In each round, themes were identified by the researcher. In this study, participants were not required to participate in each round. As the rounds were iterative, missing one round was not considered an issue in analysis of responses.

Round 3 was designed to be Qualitative in nature. Thematic analysis was performed through memo writing and codebook creation. From the codes and nodes, themes within each panel were identified. Once themes were identified, interrelated themes were connected to develop narrative and define meaning to each learning preference.

For Round 3, thematic analysis was performed, following Braun and Clarke's six step method (2006).

Table 2

Braun and Clarke's Method for Thematic Analysis

Phase	Process	Process Description
1	Familiarization	Transcribe data; read and reread the data, recording any initial items of interest
2	Coding	Coding interesting features of the data in a systematic fashion across the dataset, collating data relevant to each code
3	Generating Themes	Collating codes into potential themes, gathering all data relevant to each potential theme
4	Reviewing Themes	Checking if the themes work in relation to the coded extracts and the entire dataset; generate a thematic 'map' of analysis
5	Defining and Naming Themes	Ongoing analysis to refine the specifics of each theme; the overall story analysis tells, generation of clear names for each theme
6	Interpretation and Reporting	Final analysis. Selection of poignant, and appropriate examples, discussion of the analysis; relation back to the research question and literature; production of a scholarly report of the analysis

Table adapted from Braun and Clarke's 2006 article, Using Thematic Analysis in Psychology.

Step 1: Familiarization

Beginning with familiarization of the data collected, the researcher read and reread the data while making notes and early impressions in a researcher journal. Below are examples of some early impressions recorded in the researcher journal:

Academic panel participants seem to prefer watching content (e.g., video, lectures, PowerPoints, and visual materials). Additionally, they repeatedly watch this content. Academic panel participants report relying on self as important to their learning process (e.g., read textbooks, take notes, plan, study before and after class). If they cannot find an answer they turn to classmates, educators, class materials, and the internet. It is interesting that Academic panel

participants give themselves pep talks. For example, "learn to adjust. When you start reading at 10:10 and your plan is to [end] at 10:10, don't blame yourself. It's a waste of energy. You don't have the extra energy to do it. Use let the fact that you're running over on time help you better anticipate the timing the next time you plan." Academic panel participants also show concern about connecting with the teacher (e.g., "I can't ask questions" and "I still want to know my professor"). Academic panel participants also prefer short, direct directions and information.

Nonacademic panel participants responded with ***why*** *they want to learn when asked about their preferred* ***way*** *to learn. Several Nonacademic panel participants mentioned needing skills, preparing for the future, even "survival." Nonacademic panel participants who did report learning processes included books, self-taught, friends/family, online (searches, YouTube) demonstrations, Facebook, Twitter, forums, Google (video and text). Nonacademic participants ask for recommendations in online spaces (e.g., Social Media (Facebook, Twitter, and Instagram) and forums).*

Step 2: Coding

The process of organizing codes in a meaningful and systematic way was achieved by printing hard copies of data onto colored paper designated by participant panel (Academic panel data were printed on purple paper and Nonacademic panel data were printed on green paper). Designating color helped keep the two participant panel data separated. Next to every line was a handwritten note which identified the round and question from which the data came. Associating each line with round and question strengthened research organization. To develop concrete initial codes, data were coded line-by-line, on hardcopies using highlighters and multicolored pens, to extract emerging themes (Charmaz, K, 2014). Open coding was used as no pre-set codes existed in this study. Rather, codes were generated and adjusted through the coding process. For

example, once initial codes were collected from the data, codes were sorted into potential and identified themes by combining like codes. Potential code ideas began after Round 1 analysis. For each panel, Rounds 2, 2.5, and 3 data were separately coded line-by-line in the same manner, developing preliminary codes. Next, for each panel, data were grouped over the entire dataset according to the relevance of preliminary codes.

Step 3: Generating Themes

Each line of individual panel data was cut into separate strips of paper. The strips of paper were first gathered into small groups of codes, by round. Each group of codes was combined and labeled on a sticky note. The sticky note codes were then combined and modified across the entire dataset by collating like groups of codes into larger groups of related codes. These groups of codes became potential themes.

Step 4: Reviewing Themes

Next, themes (interesting or significant patterns in the data and/or answers to the research question) were reviewed. This process was accomplished by refining, separating, discarding, or combining any codes which either lacked supportive data or did not appear to form a coherent pattern. This process was a literal movement of the paper codes (used in the coding process) and sticky note potential themes into related groups until significant themes were apparent. As outlined by Braun and Clarke (2006) groups of codes were explored to ensure themes were consistent and worked across the entire dataset. This step culminated in a thematic 'map' for each panel (see Chapter V for thematic 'map' illustrations). Each map was created by gathering all the individual participant panel data together then grouping codes relevant to each theme. The data were then checked to ensure they supported the theme they were associated with. Items of interest were evaluated to ensure support. Items of interest that appeared problematic were

reexamined as they did not depict the same overall story as the theme. New themes developed, and those which did not have sufficient support from the data were absorbed into themes or set aside as points of interest.

Step 5: Defining and Naming Themes

Defining and naming themes, as well as any sub-themes deemed necessary, was achieved in each panel by reexamining the overall story the thematic analysis told. Each theme was explored to "…identify the 'essence' of what each theme is about" (Braun & Clarke, 2006, p. 92). Subthemes were identified and interactions between theme and subtheme were examined. Additionally, this step of the analysis considered how themes related to each other.

Step 6: Interpretation and Reporting

In the final step, the researcher produced a report on thematic analysis. Word for word accounts collected from participants were used to provide further validity of the inductive thematic analysis and reasoning for themes.

Quantitative

The qualifying application data were examined using descriptive statistics, namely, frequency counts. These frequencies were then recorded by mean. Several of the questions asked participants to rank order their response. Questions in Rounds 1, 2 and 2.5 implemented Garrett's Ranking Technique (Garrett & Woodworth, 1969) to determine the importance of items. This technique enhances the frequency distribution because it generates a score for all the items according to participant rank. Garrett's Table (Garrett & Woodworth, 1969) was then used to convert the percent position into scores. The total value of score is calculated for each item by adding the scores of each participant. The total score is then divided by the total number of participants to determine the mean score for each item. The rank is then identified by the mean

score. The item having the highest mean score equates the most important, or in this study, the most desirable, item.

Round 1 data were aggregated by the mean. Each panel was measured for the percentage of agreement of concepts. The responses with the highest frequency (above 50%) were used to create the instrument for Round 2.

Round 2 data were aggregated by the mean. Each panel's data were measured for the percentage of agreement of rank order within concepts. Consensus in Round 2 was determined by the mean score of the item. Round 2 did not meet the 80% consensus in the Academic group and the Nonacademic group had an overabundance of items agreed upon in many questions. In both groups the data were cleaned by condensing and combining items into thematic nodes. Items that did not receive at least 50% consensus were not added to the instrument for Round 2.5. Items that were offered by participants, but were not compliant with the aim of this research, were removed in this round (e.g. location "at a library," atmosphere "in a quiet place"). The Delphi method maintains that Round 2 be repeated until the experts reach consensus or, it becomes clear that consensus is unattainable. Therefore, Round 2 was repeated, as Round 2.5. Data were aggregated by the mean. Each panel's data were measured for the percentage of agreement of rank order within concepts. Round 2.5 did meet the 80% consensus in both the Academic and Nonacademic group.

Round 3 data were measured by coding frequency of word use within the qualitative data. Frequencies were recorded. The two panels' data were compared at this point to check for similarities and differences.

Threats to internal validity include history, attrition, and instrumentation. The COVID-19 pandemic forced many colleges, including those which participants attend, and that which the

researcher attended, to take classes in an online setting. It is uncertain how this historical threat may have changed the results of this study. The pandemic may have some effect on the attrition rate. Some participants who qualified for the study, and had said they were available and willing to participate did not engage with the survey after the qualifying application round. Out of those who did complete the study, some did not have proper identification. These participants were given the opportunity to offer proper identification; any who were unable to supply the appropriate identification, their data were excluded. In the Academic group, 11 individuals either replied "no" or typed nonsensical words in response to questions. These participants were given the opportunity to repeat the survey, with a new link, and chose not to. Those surveys were excluded from the data. If all the participants had engaged with the instruments, the results may have varied from what is reported. Lastly, the internal validity threat of instrumentation was given heightened awareness as the aim of the instruments needed to stay the same during all instrumentation development. During the creation of instrumentation, research questions were revisited and questions were scrutinized for their ability to align with and answer the research questions. The items identified by panelists are illustrated in Chapter IV and recommendations provide by participants are identified in Chapter V as areas that require further discussion and research.

Summary

In this chapter, the research design and methodology for this study were introduced. The e-Delphi method, the two panels, and their unique Academic and Nonacademic lenses which differentiate them were explained. The e-Delphi was described and presented as an appropriate approach for this type of exploratory research. Participants were identified, and the criteria for participating in the study were set. The data collection and data analysis processes were

presented, and all instruments and communications were presented. Chapter IV will display the results of the study, and explain how the results answer the research questions.

CHAPTER IV

RESULTS

The purpose of this study was to deepen knowledge regarding how Gen Z prefers to learn. Specifically, this study sought to understand the learning approaches of Gen Z in online academic and online nonacademic learning contexts, as detailed by Gen Z. Additionally, this study explored alignments and misalignments between research defined 'best practices' and Gen Z defined learning approaches for online learning. The e-Delphi was chosen as an appropriate research method for its ease of use in online spaces, quick communication, usefulness in relatively unexplored topics and ability to maintain anonymity while reaching a group consensus from individual expert recommendations (Davidson, 2013). Furthermore, the e-Delphi lends itself to being a mixed methods study, providing a holistic approach. The following question guided the research:

Q1 How does Generation Z learn
   a. in online academic settings?
   b. in nonacademic settings?
   c. What, if any, are the differences in Generation Z's learning approaches in the two learning contexts?

To establish the learning preference from Gen Z, four distinct, iterative rounds of surveys were developed and presented to two unique panels of Gen Z experts using an e-Delphi method. Data Analysis by round is illustrated in Figure 6.

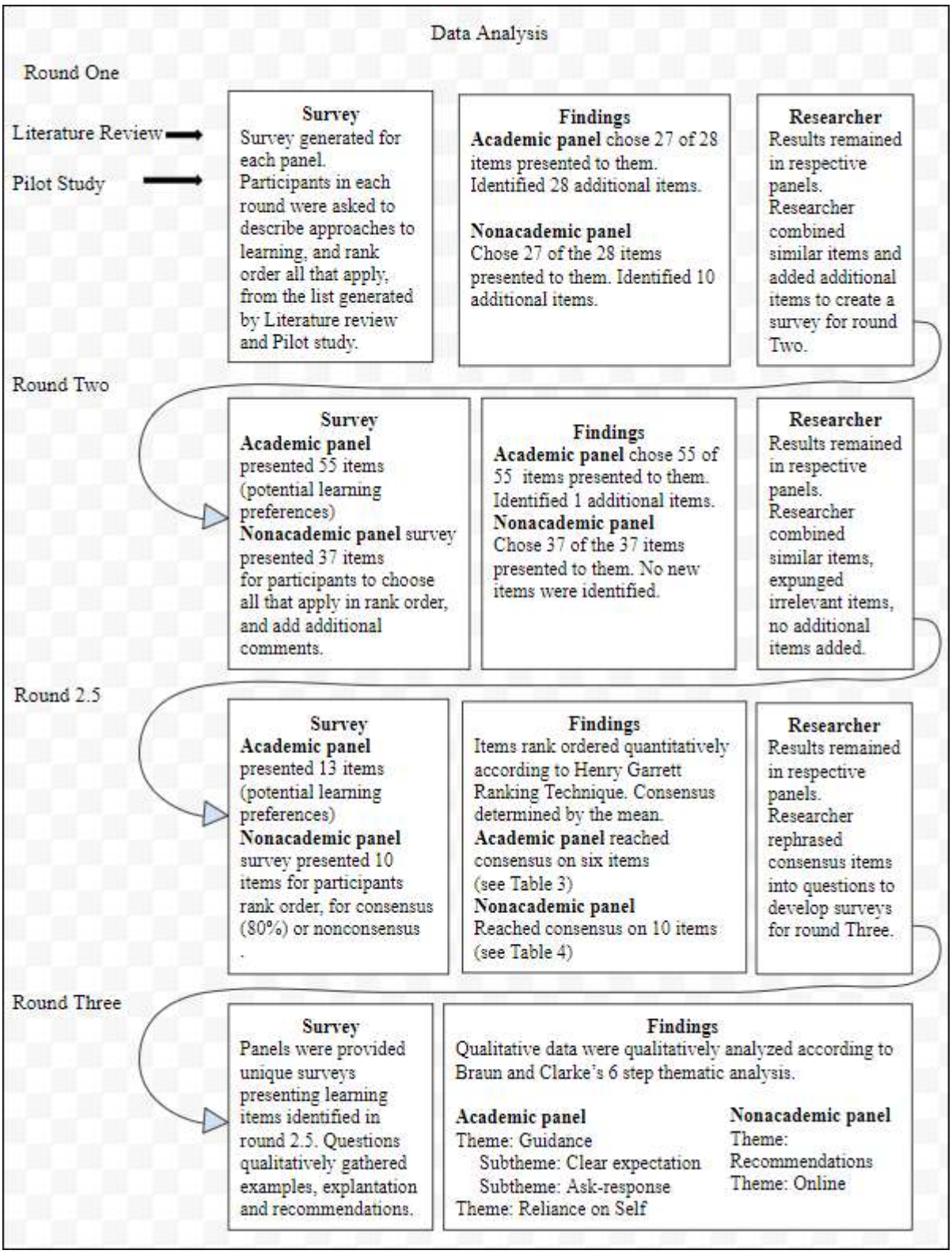

Figure 6. Data Analysis

Academic Panel

The goal of Round 1 was to familiarize participants with the topic and generate a list of learning preferences. To accomplish this goal participants were presented a list of potential learning preferences identified in the literature review and pilot study. The Academic panel chose 27 of the 28 learning preferences and added 28 learning preferences. All additional comments submitted by participants were included in the survey creation for Round 2. The researcher complied the 55 learning preferences provided by the Academic panel into a survey for Round 2.

The goal of Round 2 was to reach consensus (=80%) or determine consensus was not possible on each learning preference identified in Round 1. Several of the learning preferences, identified by Academic panel participants in Round 1, were similar (e.g. “go online,” “get online,” “search Google,”) or did not appear to be a learning preference (e.g. “at a library”). All participant added learning preferences were included in Round 2 providing participants the opportunity to further explain, refine, combine, and mitigate responses. Participants in this round offered no further explanation, refinement or combination of learning preferences. The Academic panel did not reach the >80% consensus, however, they chose all 55 learning preferences and added one. Data in Round 2 were cleaned by condensing and combining items and excluding items which did not receive 50% consensus or higher from instrumentation development for Round 2.5. After removing noncompliant participant panel identified learning preferences (e.g. location “at a library,” and atmosphere “in a quiet place”), 13 learning preferences remained.

The goal of Round 2.5 was to reach consensus (>=80%) or determine non-consensus (<80%) on each learning preference. Data were aggregated by the mean. Percentage of

agreement of rank order within concepts was determined through the Henry Garret Ranking Technique. Six of 13 items provided to the Academic panel participants met the >=80% consensus during Round 2.5 and are illustrated in Table 3 (see Appendix R for all Round 2.5 data).

Table 3

Academic Panel Quantitative Results Round 2.5: Learning Preferences

Learning Preference	Learning Preference Description	Frequency (*n* =23)	Average Score	% Consensus
1	Completing course materials	23	81.52	100
2	Rely on self	20	67.96	89.96
3	Projects that I can choose what to do and learn material by myself	13	75.50	86.96
4	Search Internet	15	60.52	86.96
5	Ask expert	14	65.20	82.61
6	Work/discuss with others in class	20	63.92	82.61

Note. Average score was determined through the Henry Garrett Ranking Technique

As illustrated in Table 3, six learning preferences satisfactorily met 80% consensus. The seven learning preferences which did not meet consensus were not included in Round 3 instrument development.

The learning preferences in Table 3 were agreed upon in Round 2.5 by Academic panel participants. However, as is traditional in the e-Delphi method, results are not defined until Round 3. The goal of Round 3 was to gather recommendations, explanations and examples through qualitative analysis. Round Three survey rephrased Round 2.5 consensus learning approaches into open-ended questions.

Academic Panel Qualitative Analysis

Braun and Clarke's six-step thematic analysis of reviewing themes, and ongoing analysis, worked well with the multiple e-Delphi rounds and culminated in a final analysis of the dataset across all rounds. The following process outlined the qualitative analysis of this research. At the end of Round 1, Braun and Clarke's (2006) step one was performed by reviewing all qualitative data to increase familiarity. The researcher journal captured potential codes, emerging themes, and repeated comments, such as "by myself." This process was repeated after Round 2 and Round 2.5. Round 3 of an e-Delphi is generally qualitative in nature. Therefore, once participants returned surveys, Braun and Clarke's (2006) six-step analysis was applied across the entire dataset. First, all data were read and reread, making notes of frequent comments (e.g. Academic panel participant responses often included the word "help"). Steps two and three were achieved by writing each qualitative response on an individual paper. The papers were organized into codes, which were then reviewed examining codes for potential themes across the entire dataset and gathering all data which supported the potential theme. To review themes (step four) a thematic 'map' of analysis was generated for each panel (see Figure 7).

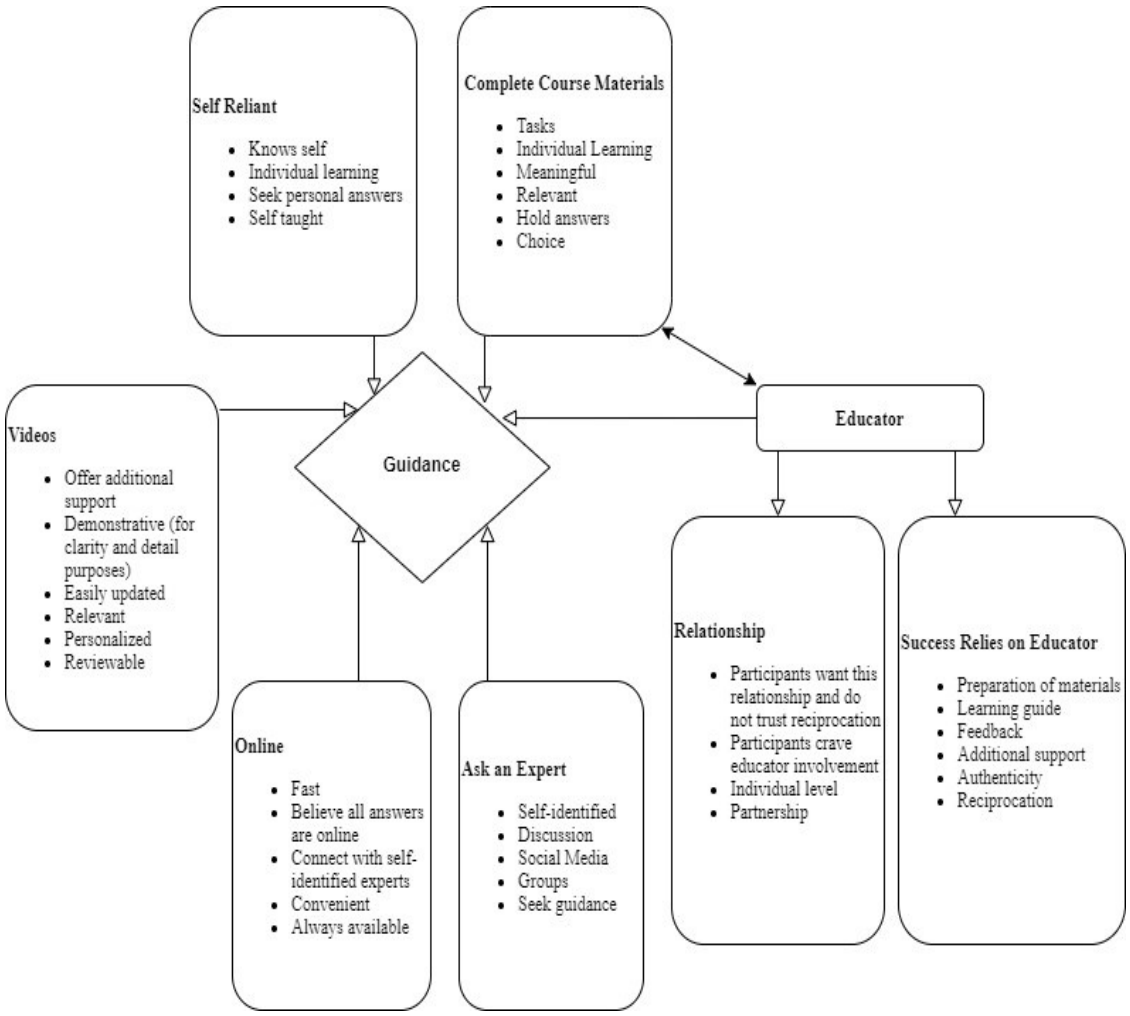

Figure 7. Thematic Map Academic Panel

As depicted in Figure 7, thematic mapping identified one potential theme (Guidance) and eight related items of interest.

The thematic map was used in an ongoing process of naming themes as outlined by Clarke and Braun (2013). The fifth step, defining and naming themes, refined potential themes by reviewing the thematic map and overall story the thematic analysis told, resulting in clear names for each theme. This step, identified a second theme, reliance on self (see Figure 8).

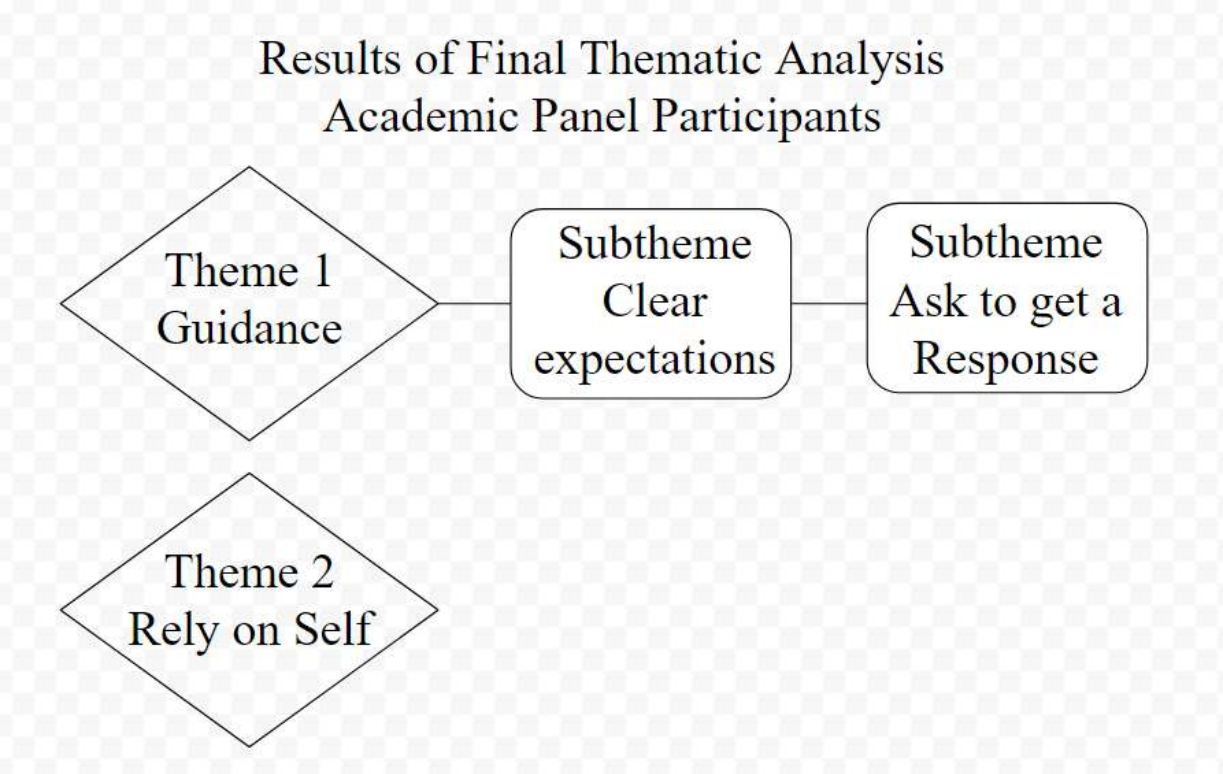

Figure 8. Results of Final Thematic Analysis: Academic Panel Participants

Upon Academic panel participant analysis completion, two themes and two subthemes emerged: (1) guidance with subthemes (a) clear expectations and (b) ask to get a response and (2) reliance on self. As previously described, the collective dataset supported emergent themes. As suggested by Braun and Clarke (2006), Academic panel participant quotes and examples supported themes. These themes provide evidence of participant learning preferences and support the interpreted data.

Guidance

Guidance was intertwined throughout Academic panel participant survey responses. Many participants offered comments which expressed good course material guided students through the learning process. For example, one Academic panel participant said:

> I think online educators should lay out all the material. This way, if there is a question, the student doesn't have to go and ask the teacher, but rather just look back at the material given.

A second Academic panel participant offered, "[the] best way to learn in online courses is to read textbooks and complete learning tasks." Multiple Academic panel participants requested that course materials be supplemented with educator recorded "instructional video[s that] ask and answer questions." Other Academic panel participants asked educators to "provide timely and effective learning materials." The explanation offered as to what Academic panel participants deemed effective included "detailed" and "clarity." The guiding components of materials are illustrated by following Nonacademic panel participant example:

> A class I really enjoyed was very project oriented. For each project there was detailed instructions, but many creative choices were still up to you. As long as the basic criteria was met, you could experiment and try out new things. Also, for each project, there was a video going over the instructions. If there was ever a question, you could always go look at the video for more clarification. This was a perfect example of a successful online class.

Across the dataset, Academic panel participants provided comments and examples of materials offering student choice and voice while guiding them along the learning path, providing evidence of importance. Academic panel participants provided additional evidence, supporting the importance of guidance, through comments regarding the educator, the educators' guiding materials and videos. For example, some Academic panel participants specifically asked for "guidance" from the educator while others asked that educators provide specific support, such as "some technical guidance." Additionally, some Academic panel participants looked for

guidance beyond the course materials asking for educators to “create a plan for us,” “investigate our needs,” and “help students recognize themselves.”

Many of the Academic panel participants’ comments talked about the educator being someone they turn to during the learning process in an online class; explaining when they have questions they, “consult teachers” or “professors.” In addition to being someone who students can turn to, many Academic panel participants referred to the educator as someone who leads them. Over half of the Academic panel participants provided comments requesting that educators help keep them on course. For example, several comments began with “help me.” Academic panel participants generally requested educator help with understanding “errors,” ensuring “they stay on track” or finding “answers” when “in trouble.”

Clear Expectations

Participants sought and valued “clear” expectations from their guide, depicting clear expectations as a valuable component of guidance. Although participants reported wanting to learn on their own, they also provided comments expressing clear expectations ensured successful, independent learning. For example, one participant shared:

> I believe online educators just need to have everything prepared. If the material is available and it is clear, then the student can do the work. If we don’t know what to expect or how much homework we will be receiving, it just adds more stress.

Academic panel participants explained in order for participants to be successful, online courses needed to be clearly laid out, expectations needed to be detailed, and educators needed to clearly explain what class participants needed to do. Comments, such as “I really like having an online calendar with the due dates, allowing me to schedule out my class,” express voice and choice, offering evidence that Academic panel participants want to rely on themselves and need

educators who put forth guidelines (e.g. due dates, materials, and explanatory videos) which move them along the learning path.

Academic panel participants asked for educators to ensure explicit clarity when preparing materials, ensuring that all materials and videos pertain to the course, and educators "provide reading materials where the answers can be found." One participant explained: "be very clear about expectations and due dates so that students can pace themselves in a way that works best for them individually." Another Academic panel participant added: "be clear about the grading." Other Academic participants asked for "clarity" and "detailed" explanations in the form of "in-depth videos." Still another participant encouraged educators to: "follow it [instructions educators provide] exactly. If that's all that we are given, that's what we will follow. If the teacher starts doing something different, it just will create confusion."

When asked to explain why participants get online to answer questions, one Academic panel participant responded, "It always stems from vague explanations or not understanding." A second participant reported:

> If I look for answers online, it is because the answer was not given in the material. If there is an assignment, but no reading, discussion, or anything is given, I might look up answers online! If I look up answers online, it is because the class doesn't have the answer."

A third participant offered they get online "because I have a lot of doubts." A fourth participant commented that students get online to "find solutions when they have difficulty finding knowledge." A fifth responded: "I don't understand the material, I'm too lazy to search through the textbook to find the answer, or I don't know where else to look for the answer."

While Guidance emerged as an important theme, the many comments referring to the need for clarity and detailed explanations provided validation for the subtheme, clear expectations. In short, Academic panel participants felt that course materials and directions needed to clearly explain what students should do, directive videos needed to clarify and support course materials, and if students ask for guidance, they expect a timely answer to ensure they know exactly what to do.

Ask and Get Response

Many Academic panel participants reported the importance of being able to ask a guide a question and get a timely answer. Academic panel participants in this study expected "detailed" directions to be provided by the educator, which guide them in the learning process. Academic panel participants repeatedly shared a resiliency process which they followed if that expectation was not met. If Academic panel participants did not understand something, they would first "check the materials" (e.g., "teacher instructions," "textbooks," and "videos" supplied by educator). If materials were not sufficiently supportive, participants indicated they would ask the educator: "if I still have a question, I will send the teacher an email. If they don't get back to me, I will ask a classmate. In doubt, I use the internet to look for a solution." This participant's comment was summative of 15 Academic panel participant comments seeking answers to questions in online classes in the Round 3 survey. If Academic panel participants did not receive a response, or did not receive it fast enough, they took it upon themselves to get an answer. This was accomplished by asking others (e.g. "classmates," "family," "friends," and "tutors"). If asking did not provide answers, Academic panel participants "Google it," or "search online."

Academic panel participant comments placed value on guidance as a learning preference and a theme throughout the study. Their responses provided insight that clear expectations and

asking with the expectation of getting a response defined what guidance entailed for Academic panel participants.

Throughout the study, Academic panel participants presented guidance as one of the most important, if not the most important, learning preferences. Academic panel participant comments explicated guidance requires clear expectations and asking with the expectation of getting a response. Without the guidance of clear expectations and explanations (e.g. directive videos needed to clarify and support course materials), Academic panel participants felt they could not be successful. Additionally, Academic panel participant comments showcased the belief if further guidance became necessary, asking would produce timely responses, clarity and set them back on their learning path.

Reliance on Self

As indicated by a plethora of comments, learning at an individual level was important to Academic panel participants. For example, one Academic panel participant commented, “I like to study by myself online and learn something useful to enrich myself.” A second participant suggested online learners “try it [learning a new skill] yourself, practice it yourself.” Several Academic panel participants shared the idea learning occurred when an individual valiantly engaged in the learning process until he/she achieved success (e.g. learning a skill online). For instance, one Academic panel participant stated, “I try to solve it [answer to questions I don’t know] by myself.” A few Academic panel participants said, “take responsibility for your own learning.” Other Academic panel participants added to be successful in online classes one needed to “organize yourself” and “make a study plan for yourself.” Comments such as these provide evidence that Academic panel participants value and expect to learn through their own devices. A few Academic panel participants offered responses which detailed not just a desire to learn at

the individual level, but also a “need.” For instance, one Academic panel participant stated, “My teachers didn’t set up a single zoom conference or anything and so I had to teach everything to myself.” Another Academic panel participant said, “I don’t think there is anything I can do about it [improve online classes] even if I feel discontented… I can only improve myself and then I have a chance to change something.”

In addition to the themes, the qualitative findings provided description adding insight into the Academic panel participant learning preferences. The Academic panel participant learning preferences and connected descriptive learning preference quotes are illustrated in Table 4.

Table 4

Academic Panel Learning Preferences and Descriptive Quotes

Panel	Learning Preference	Descriptive Learning Preference Quotes
Academic	Completing coursing material	"The best way to learn in online course is to read textbooks and complete learning tasks" "know the syllabus" [to be successful in online classes] "read textbooks and complete learning tasks"
Academic	Rely on self	"I like to study by myself online and learn something useful to enrich myself." "Try it [learning a new skill] yourself, practice it yourself." "I try to solve it [answer to questions I don't know] by myself." "Take responsibility for your own learning." "like, suit yourself" "organize yourself" "make a study plan for yourself"
Academic	Projects that I can choose what to do and learn material by myself	"For each project there was detailed instructions, but many creative choices were still up to you. As long as the basic criteria was met, you could experiment and try out new things. Also, for each project, there was a video going over the instructions."
Academic	Search Internet	"I like to find answers on the internet" "it [searching online to find an answer] always stems from vague explanations or not understanding." "I am use to going online to find answers"
Academic	Ask expert	"I will turn to my tutor [to answer questions]" "I will ask students with good academic performance [to answer questions]"
Academic	Work/discuss with others in class	"I will discuss with several students to get the answer." "work with classmates" "I prefer to learn a skill with others to get others' ideas then practice the skill myself." "First, I will discuss it [questions I don't know the answer to] with my classmates."

While quotes align with learning preferences, no firm description of the learning preferences was provided by Academic panel participants. Therefore, definitions are discussed in Chapter V.

Peer review provided interpretation and reporting opportunities, as well as offered a valuable opportunity for further reflection and refinement, completing step six (Braun & Clarke, 2006). Identifying and connecting appropriate, poignant examples, discussion of the analysis, connecting the research questions to the literature, resulted in the production of this scholarly report.

Nonacademic Panel

The research process and data analysis processes for the Nonacademic panel were parallel to the Academic panel with a separate group of participants who approached the survey as nonacademic learners. Round 1 familiarized Nonacademic panel participants with the topic and generated a list of learning preferences. The Nonacademic panel chose 27 of 28 learning preferences and added 10 learning preferences. Survey creation for Round 2 included all additional comments submitted by Nonacademic panel participants. The Round 2 survey consisted of 37 Nonacademic panel participant learning preferences.

Round 2 attempted to reach consensus and further refine and explain learning preferences. The Nonacademic panel chose all 37 learning preferences, without refining, combining or offering support for similar learning preferences. No new learning preferences were provided. Therefore, the data in Round 2 were cleaned by condensing and combining items, as well as removing items which did not align with the aim of this research, were removed in this round (e. g. location “at a library,” atmosphere “in a quiet place”). The Nonacademic panel survey presented 10 learning preferences.

The goal of Round 2.5 was to reach consensus (>=80%) or determine non-consensus on each learning preference. Data were aggregated by the mean. Nonacademic panel data were measured for the percentage of agreement of rank order within concepts. Nonacademic panel participants met, or exceeded the 80% consensus for all items Round 2.5, as illustrated in Table 4 (see all Round 2.5 data see Appendix R).

Table 5

Nonacademic Panel Quantitative Results Round 2.5: Learning Preferences

Learning Preference	Learning Preference Description	Frequency (*n* =29)	Average Score	% Consensus
1	Search online	29	81.52	100
2	Search for online resource, which is detailed	28	60.07	96.55
3	Very detailed, written instructions	27	76.00	93.10
4	Try to learn a new skill by self	27	72.28	93.10
5	Projects that I can choose what to do and learn material by self	26	74.14	89.99
6	Visual examples of finished projects	26	71.24	89.66
7	Videos that show me how to do the project	26	71.24	89.66
8	Ask expert	26	70.41	89.66
9	Ask in social media group	25	67.62	89.66
10	Watch video	26	70.97	86.21

Note. Average score was determined through the Henry Garrett Ranking Technique

As illustrated in Table 5, all 10 learning preferences in the Nonacademic panel satisfactorily met 80% consensus. The 10 learning preferences were included in Round 3 Nonacademic panel instrument development.

As depicted in Table 5, rank (determined by the rank score of each individual learning preference combined as a whole), could be lower than consensus (determined by the number of participants who selected the learning preference, not the rank order of their choice in selecting it). For example, in Table 5, items 6, 7, 8 and 9 reached consensus at 89.66%, however, learning preference 6 ranked higher than learning preferences 8 and 9.

Table 5 delineated agreement upon 10 Nonacademic panel participant learning preferences in Round 2.5; however, as is traditional in the e-Delphi method, results are not defined until Round 3. The goal of Round 3 was to gather recommendations, explanations and examples through qualitative analysis. Round 3 survey rephrased the Nonacademic panel participant learning approaches which met consensus in Round 2.5 into open-ended questions.

Nonacademic Panel Qualitative Analysis

The following process outlined the qualitative analysis of this research. At the end of Round 1, Braun and Clarke's (2006) step one was performed by reviewing all qualitative data to increase familiarity. The researcher journal captured potential codes, emerging themes, and repeated comments, such as "google it." This process was repeated after Round 2 and Round 2.5. Round 3 of an e-Delphi is generally qualitative in nature. Therefore, once participants returned surveys, Braun and Clarke's (2006) six-step analysis was applied across the entire dataset. First, all data were read and reread, making notes of frequent comments (e.g. Nonacademic panel participant responses often included the word "recommendations"). Steps two and three were achieved by writing each qualitative response on an individual paper. The papers were organized

into codes, which were then reviewed examining codes for potential themes across the entire dataset and gathering all data which supported the potential theme. A thematic 'map' of analysis (see Figure 9) reviewed Nonacademic panel participant themes (step four).

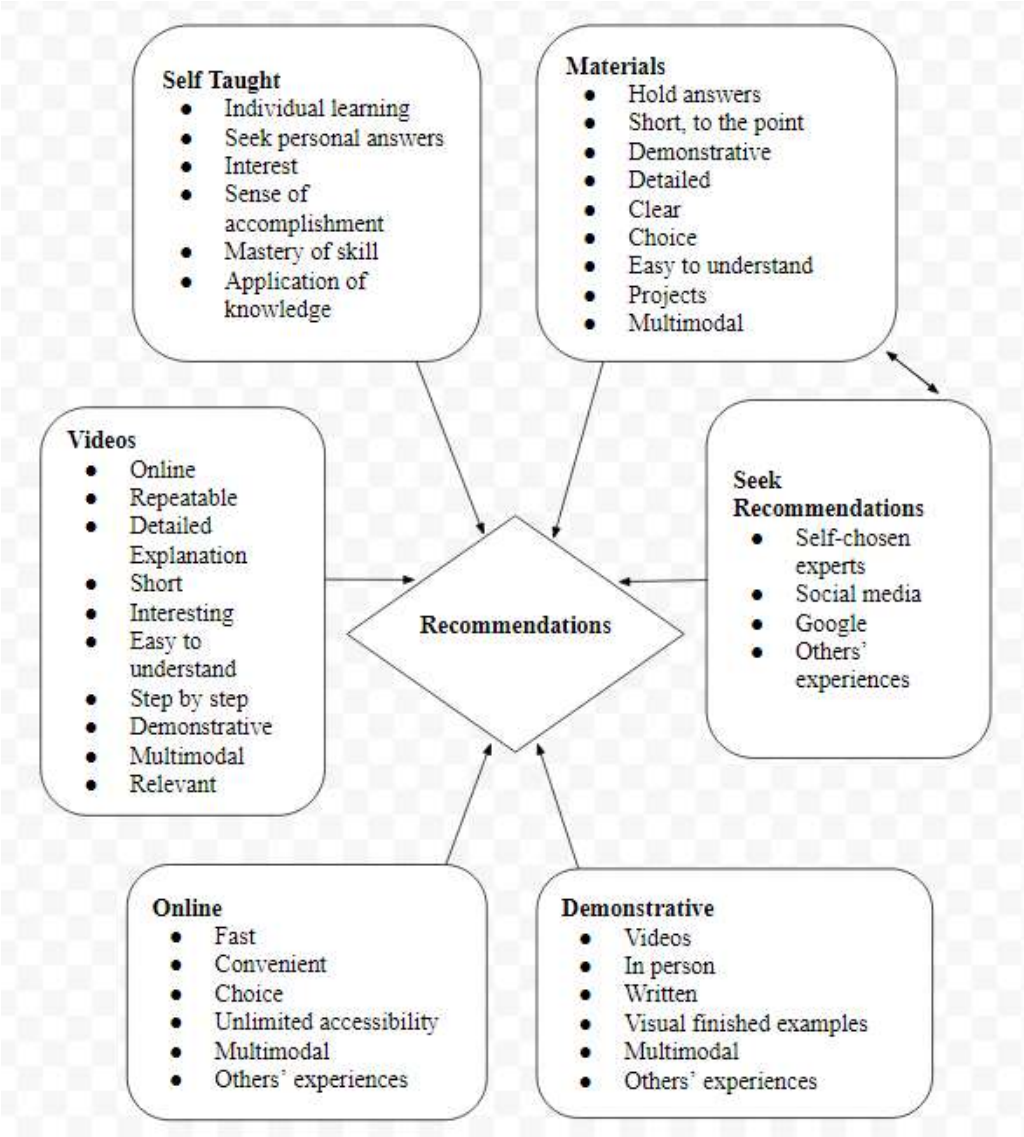

Figure 9. Thematic Map Nonacademic Panel

As depicted in Figure 9, thematic mapping identified one potential theme (Recommendations) and six related items of interest.

As outlined by Clarke and Braun (2013), the thematic map was used in an ongoing process of naming themes. Refining potential themes and reviewing the overall story the

analysis told completed the fifth step, resulting in clear names for each theme. The fifth step identified a second theme, search online (see Figure 10).

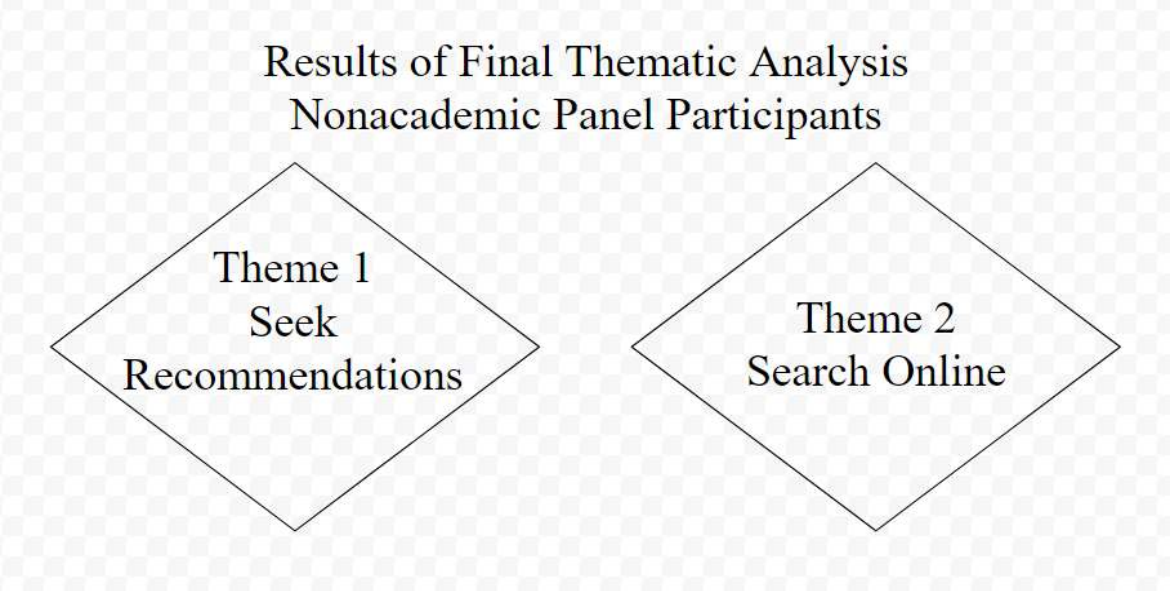

Figure 10. Results of Final Thematic Analysis Nonacademic Panel Participants

Upon Nonacademic panel participant analysis completion, two themes emerged: (1) seek recommendations and (2) search online. As previously described, collective dataset supported emergent themes. As suggested by Braun and Clarke (2006) Nonacademic panel participant quotes and examples supported themes. Themes provide evidence of learning preferences identified by Nonacademic panel participants and support interpretation of data.

Seek Recommendations

Nonacademic panel participants valued seeking recommendations as the most important learning preference. Common Nonacademic panel participant responses to the prompt, when I learn a new skill I… included, “ask parents” “ask friends,” “ask Google,” “ask in forums,” “Facebook discussion groups,” “consult teachers,” read major news media,” and “search online.” One Nonacademic panel participant reported using “Apple voice assistant to help me.” A second Nonacademic panel participant shared they “consult experts around me if applicable.” A third

Nonacademic panel participant commented they "ask a friend or search online to answer a question I don't know." Recommendations came from one of three descriptive categories, humans, crowd sourcing or AI bots.

Humans

Human recommendations were reported in two forms, examples and explanations. Nonacademic panel participants readily shared personal experiences of learning through the experiences of others. One Nonacademic panel participant expressed that they learned a new skill, "by learning from other teachers' successful experiences in online teaching." A second Nonacademic panel participant offered, "I'll find new ways to learn and see how others do it."

Equally important recommendations came through explanations. For example, one Nonacademic panel commented: "I find what I am looking for through professional explanations." A second Nonacademic panel participant remarked, "I choose resources recommended by many people to learn new skills, online videos, documents, etc." A third Nonacademic panel participant offered, "I prefer to learn a skill with others to get others' ideas then practice the skill by myself." Additional Nonacademic panel participants stated to find answers they "discuss with the group," "search or consult many times," "search for related questions," "ask some professionals on Facebook." Several Nonacademic panel participants voiced variations of "I find experts through a friends introduction, [or] through a friend's recommendation," providing evidence for the need of recommendations and introductions to experts by friends. An additional Nonacademic panel participant added, "I choose resources recommended by many people to learn new skills: online videos, documents, etc."

Crowdsourcing

Multiple Nonacademic panel participants commented they sought recommendations through crowdsourcing. For example, several identified “Facebook,” “Facebook discussion groups,” and “Twitter” as valuable places to ask and receive answers to questions. A Nonacademic panel participant explained, “I learned computer programing through Facebook discussion group.” Nonacademic panel participants even used crowdsourcing to determine which social media group to use “I will ask my friends or teacher what social media group I should ask questions in.”

Artificial Intelligence Bots

The final descriptor commonly mentioned by Nonacademic panel participants were AI bots. For example, one Nonacademic panel remarked, “I ask Siri and that comes up with short answers, usually.” When responding to the prompt, what online resource do you use to learn a new skill, one Nonacademic panel participant encompassed multiple responses by stating “Google, Siri, sometimes YouTube.” Some Nonacademic panel participants reported that YouTube had videos on every topic imaginable. Additionally, Nonacademic panel participants reported the majority of them did not choose YouTube as their first choice to answers questions. Instead they provided responses such as. “When I want to know the answer to my question, I search through Google. Google is convenient, and fast, and can find the answer I want accurately and timely.” and “When I want to know the answer to my question, I will solve my problem through Google. There are many professionals in Google.” Nonacademic panel participants even use AI bots as one step in the recommendation process to choose where to crowdsource, “[I] use Google to search and then find the right social media group to ask questions.”

The responses of Nonacademic panel participants provide evidence that recommendations, whether they come through humans, crowdsourcing or AI bots are a valued learning preference.

Online

Nonacademic panel participants frequently commented about their learning preference to learn new skills in an online setting. One Nonacademic panel participant stated, "[I] use the internet to learn a new skill." A second Nonacademic panel participant stated, "there's everything I want to know on the internet." As illustrated in the AI bots section, Google was a valuable online resource. Google is both an AI bot and an online resource. Nonacademic panel participants reported value in both the AI bot and the online search engine. This is illustrated by a Nonacademic panel participant who said, "I ask Google [when I want to learn something, or have a question], whatever Google brings up, video or text."

Multiple participants reported reviewing multimodal online materials. For example, one Nonacademic panel participant sought "detailed explanation of the video" while a second Nonacademic panel participant preferred "descriptions with pictures." A second participant offered, "I searched for the answer I wanted in the video, which was narrated and demonstrated by a person." Two Nonacademic panel participants offered similar responses, "We [Gen Z] can take video and text combination way, let us better understand." A Nonacademic panel participant reported learning happened best when "watching videos on how to do a certain skill, reading short online articles to better understand the logistics behind a skill, as well as listing to podcasts on that skill."

Searching for answers online is a valuable learning preference of the Nonacademic panel participants, as evident by their various comments detailing searching online for answers.

In addition to the themes, the qualitative findings provided description to give insight into the learning preferences. The learning preferences and connected descriptive learning preference quotes are illustrated in Table 6.

Table 6

Nonacademic Panel Learning Preferences and Descriptive Quotes

Panel	Learning Preference	Descriptive Learning Preference Quotes
Nonacademic	Search Online	"when I want to know the answer to my question, I search through Google. Google is convenient fast, and can find the answer I want accurately and timely." "there's everything I want to know on the internet." "I use the internet to learn a new skill."
Nonacademic	Search for Online Resources, Which are Detailed	"The detailed presentation helps me." "The content is clear and easy to understand." "Materials should not be too ridged and should be updated from time to time."
Nonacademic	Very Detailed, Written Instructions	"Sometimes content is more detailed in writing." "[written] content is simple and easy to understand." They [written instructions] have to be sure to be descriptive an easy to understand" "mark key points" "search key words" "description [of written instruction] is complete" Ability to "read many times" "Clear, precise and simple writing" Written "description with pictures"
Nonacademic	Try to Learn a New Skill by Self	"practice the skill by myself" "learn online by myself using social networking sites and some forums"
Nonacademic	Projects That I Can choose what to do and Learn Material by Myself	
Nonacademic	Visual Examples of Finished Projects	

Table 6, Continued

Panel	Learning Preference	Descriptive Learning Preference Quotes
Nonacademic		"step by step video" "video should be a successful example" "I learn best from watching online videos on how to do a certain skill…" "Look for successful experiences in video" "[videos] not boring and show me how to do something, not just telling"
Nonacademic	Videos That Show me How to do the Project	"steps are detailed, easy to understand"
Nonacademic	Ask Expert	"ask a friend" "I ask Google" "I'll find what I am looking for through professional explanations" "ask my parents and friends, or search online" "consult mentor" "consult the parents" "consult teacher"
Nonacademic	Ask in Social Media Group	"To answer a question I ask in Facebook, Facebook discussion group, or forum" "join the Facebook group" "I decide what social media to ask [my questions] in by asking Facebook, Instagram [and] Forums" "Twitter" "Instagram" "Ask some professional of Facebook" "when I want to know an answer to a question I have I will check some forums, Facebook discussion group."

While quotes align with learning preferences, Nonacademic panel participants provided no firm description of the learning preferences. Therefore, definitions will be discussed Chapter V.

Conclusion

This chapter illustrated the results of the study and identified, Gen Z's learning approaches, as defined by Gen Z. The Academic panel reached consensus on six learning

preferences: (a) completing course materials; (b) rely on self; (c) projects that I can choose what to do and learn material by myself; (d) search internet; (e) ask expert; (f) work/discuss with others in class. Thematic analysis of the Academic panel data identified two themes: (1) guidance with subthemes (a) clear expectations and (b) ask to get a response and (2) reliance on self. The Nonacademic panel reached consensus on 10 learning approaches: (a) search online; (b) search for online resources, which are detailed; (c) very detailed, written instructions; (d) try to learn a new skill by self; (e) projects that I can choose what to do and learn material by self; (f) visual examples of finished projects; (g) videos that show me how to do the project; (h) ask expert; (i) ask in social media group; and (j) watch video. Thematic analysis of the Nonacademic panel data identified two themes (1) Recommendations and (2) Search Online. Chapter V links the results with the literature to draw conclusions and provides suggestions for further research.

CHAPTER V

DISCUSSION AND CONCLUSIONS

This chapter expounds upon the results reported in Chapter IV. The purpose of this study was to deepen the understanding of Gen Z learning approaches. Specifically, in online academic and online nonacademic learning contexts, as detailed by Gen Z. Every aspect of this study, including the results have been encapsulated by the research question:

Q1 How does Generation Z learn
- d. in online academic settings?
- e. in nonacademic settings?
- f. What, if any, are the differences in Generation Z's learning approaches in the two learning contexts?

Three e-Delphi rounds were used to explore and gather insight into Gen Z's unique way of learning. This study added to the research regarding Gen Z and their preferred learning approaches by asking Gen Z directly about their learning approaches and preferences. Furthermore, this research explored the similarities and differences in Gen Z academic online learners, and members of Gen Z who were not in academic classes, but chose to go online to learn skills. Additionally, this study explored alignments and misalignments between research defined 'best practices' and Gen Z defined learning approaches for online learning. This research further offered insights and directions updating pedagogical practices specifically designed for Gen Z.

This chapter includes a brief summary of the study results, and three additional sections: (a) pedagogical recommendations, (b) constraints, and (c) conclusion.

Summary of Study Results

Research Question 1a: How Does Generation Z Learn in Online Academic Settings?

The Academic panel identified six learning preferences: (a) completing course materials, (b) rely on self, (c) projects that I can choose what to do and learn material by myself, (d) search internet, (e) ask expert, (f) work/discuss with others in class. As detailed in the literature review self-directed learning (SDL) aligned with relying on self, choice of projects, choice in learning materials, and discussing with others in class. SDL is student-centered and places great value in the individual taking responsibility for their learning (Knowles, 1975). Responsibilities identified in this study are similar to those found in Harrison (1978), which included materials offering choice, personal organization of materials, as well as moral, emotional, and intellectual development. SDL aligns well with learners who are autonomous (Song & Bonk, 2016). Additionally, SDL promotes symbiotic relationships between peers as part of the learning process (Fullan & Langworthy, 2014), which includes discussions. This study concurred with literature which presented Gen Z's constant connection to online sources (Kardaras, 2016) and AI bot searches (Lovato et al., 2019) as learning preferences. This study added to the literature two learning preferences, complete course materials and ask experts. These two learning preferences detailed Gen Z preference to learn independently and their inability to do so without completing clear, detailed course materials, provided by the educator. Furthermore, if Gen Z does not understand any part of the course materials, they will turn to the educator, or whomever they feel will provide them a timely answer, getting them back on their learning path.

Thematic analysis of the Academic panel data identified two themes: (1) guidance with subthemes (a) clear expectations and (b) ask to get a response and (2) reliance on self. Themes will be discussed further in the discussion of themes section of this chapter.

Research Question 1b: How Does Generation Z Learn in Nonacademic Settings?

The Nonacademic panel identified 10 learning approaches: (a) search online; (b) search for online resources, which are detailed; (c) very detailed, written instructions; (d) try to learn a new skill by self; (e) projects that I can choose what to do and learn material by self; (f) visual examples of finished projects; (g) videos that show me how to do the project; (h) ask expert; (i) ask in social media group; and (j) watch video. SDL (Knowles, 1975) aligns with some of the Nonacademic panel participants' learning preferences. Searching online has also previously been identified as matching literature which explored Gen Z's learning preferences. This study added to the Gen Z learning preferences literature, searching online for detailed, resources, including written instructions and videos. Previous Gen Z literature identified YouTube as a highly valued and frequently utilized learning preference for Gen Z (Bazilian, 2017). This study agreed with Bazilian (2017), as Nonacademic panel participants chose watching videos, such as exemplary videos, found on YouTube, as valued learning preferences. These results indicated if educators wished to connect with Gen Z learners, they could produce exemplary videos.

Thematic analysis of the Nonacademic panel data identified two themes, (1) Recommendations and (2) Search Online. These themes indicate that outside of academic settings, Gen Z preferred learning by seeking recommendations in an online setting.

Research Question 1c: What, if any, are the Differences in Generation Z's Learning Approaches in the Two Learning Contexts?

Comparison between the Academic panel and Nonacademic panel data in all three rounds answered RQ 1c. The Academic and Nonacademic panels both identified: (a) rely on the self; (b) ask experts, whom participants identified; (c) view videos; and (d) search online as learning

preferences. Differences noted included: (a) Academic panel participants desired demonstrative videos, which clarified and offered detail, while Nonacademic panel participants sought demonstrative videos for replication purposes; (b) Academic panel participants sought guidance, which came in the form of instructor created video, course materials, and online searches, while the Nonacademic panel participants sought recommendations by participant identified experts; (c) Academic panel participants desired a relationship with the educator, while Nonacademic panel members sought recommendations to learn and reported a preference for multimodality learning opportunities. The comparison and contrast of the two learning contexts depicts that Gen Z participants in this study preferred searching online and watching videos to learn. The similarities ended there as Academic panel participants largely sought guidance and clarity and Nonacademic panel participants sought recommendations and materials they could replicate or further explore on their own. These similarities and differences offered the opportunity to explore the differences, and introduced a need to further explore why the two participant panels learning preferences differed in the two contexts.

Discussion of Themes

Academic Panel

Guidance

As presented in the results chapter, Academic panel participants in this study valued guidance above other learning preferences. Interestingly, regardless of the strategy which Academic panel participants implemented to learn a new skill (e.g. complete course material, search online, watch videos, etc.), they wanted someone to guide them through the process. Even though they were independently learning, they wanted to be reassured they were doing a good job or getting the right answer. In short, they sought validation.

As guidance was evident in all Academic panel participants learning preferences, it was deemed quite important to them. When discussing course materials, Academic panel participants expressed that the materials held great value in part because the educator created them. Academic panel participants believed that materials created and chosen by the educator aligned with the topic they were learning, provided direction, helped them successfully complete the course, and helped them gain new information. For example, one Academic panel participant stated:

> A class I really enjoyed was very project-oriented. For each project, there was detailed instructions, but many creative choices were still up to you. As long as the basic criteria was met, you could experiment and try out new things. Also, for each project, there was a video going over the instructions. If there was ever a question, you could always go look at the video for more clarification. This was a perfect example of a successful online class.

Particularly interesting is the idea which this Academic panel participant explained; the guide set parameters which kept the learner on track. Within those parameters the individual had choice and opportunity to explore the learning process however he/she felt best suited them. Similar to Gibby et al. (2002), this study suggested that regardless of the level of experience, technology created new challenges (e.g. working with technology students bring, accessibility, clarity of purpose, technological training) for educators who supported thoughtful and purposeful development of instructional design. This study further supported researchers such as Bawa (2016), Goldie (2016), and Rue (2018) who suggested successful instructional design for Gen Z encouraged guided discovery through challenging, supportive projects and student-centered learning experiences.

Just as course materials relied on thoughtful educators, so too did successful online learning (Goldie, 2016). Participants were quick to point out educators should "help students recognize themselves." Some Academic panel participants requested educators think about students as an entire package (e.g. academic, personal, familial and emotional) to determine individual learning needs. Academic panel participants looked for educators who not only "create a plan" for students but were also part of the plan.

Academic panel participants provided comments depicting clear expectations of students were needed. Additionally, they expected a response when they asked a question. These two subthemes were important components of guidance. Particularly significant was the finding, when Academic panel participants were provided materials which offered clear expectations, they could continue on the learning path. While traveling on their clear learning path they felt confident they could "experiment" and learn on their own. If the materials were not clear enough for them to stay on their individual learning path, then they followed a plan of resilience. Generally, this plan first attempted to find an answer to their problem by themselves, often by reviewing course materials. If they could not find the answer in the course materials, they contacted the educator (the guide). If the educator did not respond (i.e. offer guidance) or did not respond quickly enough, participants turned to friends, family, classmates, and then online resources to answer questions, which guided them along their learning path. The Academic panel participants' need for clarity supported research (e.g. Ng, 2016) which depicted clarity as a common concern in online classes.

Academic panel participants wanted more than a guide, they approached learning through a relationship with the guide. One Academic panel participant shared, "even though I do not like zoom meetings, I still want to know my professor." Gen Z contemporary learning

environment literature (e.g. Mohr & Mohr, 2017) supported the notion educators as guides, and the student/educator relationship was important to Gen Z learning experience. Constructivist learning theory literature additionally supported the idea of a guide. For example, Vygotsky's ZPD, depicted educators who provided minimal amounts of support, allowing the learner to work independently (Vygotsky, 1997).

Academic panel participant responses about videos illustrated videos offered a form of guidance. Academic panel participants clearly felt successful online classes had videos which were unique to the class, created by the educator, and offered explicit direction, which students could refer to repeatedly. In addition to videos which offered direction, Academic panel participants felt secure in their learning path when provided videos which were demonstrative for clarity and increased detail purposes.

The idea that educators were guides and not information receptacles aligned with Gen Z literature (e.g. Morey & Mouratis, 2016; Seemiller & Grace, 2016; Tomei & Nelson, 2019) which suggested that teachers were facilitators of experience. As noted in the results chapter, Academic panel participants desired to learn by themselves (Poague, 2018; Siemens, 2005), and as Mohr & Mohr (2017) explained, Gen Z needed guidance to navigate unfamiliar or new learning challenges. The balance of independence and guidance was a constant thread in this study. Throughout this study Academic panel participants turned to "teachers," "Facebook discussion groups," "forums," "social media," and other online platforms as a means of connecting with others to answer questions. These responses provided evidence Academic panel participants go online to connect with those who offer guidance in solving issues or answering questions to keep them on their individual learning path.

Reliance on Self

As touched on in the guidance theme, Academic panel participants reported they approached learning at an individual level, agreeing with research conducted by Poague (2018). Some Academic panel participants suggested learning happened when an individual was engaged in the process and was willing to work at the process until success, which in this case was learning a skill online or completing the course, was achieved. This research supported Goldie's (2016) findings which included being invested in a student's unique future, was beneficial for the learner. The idea of dependency upon self was echoed by the remarks of another Academic panel participant who reported online academic learners should "take responsibility for your own learning." This quote supported Marton and Säljö (1976), who found autonomous individuals learned on a deeper level, a level which required individuals to critically examine new information and formulate connections to past and current knowledge, as well as past and current theories. Deep learning produced individuals who could apply knowledge and skills learned into their daily tasks.

The multiple Academic panel participant responses provided evidence that reliance on self was a strong learning preference. Interestingly, a couple of Academic panel participants shared suggestions that reliance on self was not only a preference, but at times a need; "My teachers didn't set up a single zoom conference or anything and so I had to teach everything to myself." While it was possible this was an isolated instance, the following comment caused reason for a deeper look into why Gen Z preferred learning online by themselves: "I don't think there is anything I can do about it [improve online classes] even if I feel discontented… I can only improve myself and then I have a chance to change something." The two comments Academic panel participants provided suggested reliance on self may have been a learning

preference and part of a resiliency plan. The two different voices raise the question whether online students wanted to learn by their own means, or felt they had to. The literature (e.g. Poague, 2018) supported the notion Gen Z held self-directed learning as a preference. For the most part, this study supported the notion when students were properly supported they took on personal responsibility and ownership for their learning; however, the aforementioned comments raised the question, if relying on self was a learning preference, why did two participants voice discontent in this learning preference?

Nonacademic Panel

Seek Recommendations

The Nonacademic panel participants approached learning by connecting with those they identified as 'experts,' who offered recommendations which lead to increased knowledge. Nonacademic panel participant descriptors for seeking recommendations were threefold, humans, crowdsourcing, and AI bots. Common answers for the Nonacademic panel participants included when I learn a new skill I ask my "parents," "friends," "Google," in "forums," "Facebook discussion groups," "consult teachers," read "major news media," or "search online." One participant explained, "I choose resources recommended by many people to learn new skills, online videos, documents, etc." A second participant echoed the other stating, "I prefer to learn a skill with others to get others' ideas then practice the skill by myself." These Nonacademic panel participant comments unearthed the belief importance lied with the information, not who or what provided it. Once they had recommendations and ideas from others, Nonacademic panel participants were prepared to make sense of it and tested it out for themselves. The multiple responses which sought recommendations provided by Nonacademic

participant panel participants were evidence of the value placed on recommendations of experts whom they identify.

Interestingly, Nonacademic panel participants not only sought recommendations through those they deemed experts, some Nonacademic panel participants learned through others' experiences. Experiences were largely sought through YouTube videos and group discussions (e.g. Facebook discussion group and forums). Results of this study supported Gale's (2015) finding, Gen Z learns by observation and experimentation.

One participant expressed they learned a new skill "by learning from other teachers' successful experiences in online teaching." A second participant explained, "I wanted to make homemade pizza but couldn't get the recipe from my family, so I looked it up online." Looking up and using a recipe which someone else offered suggested the Nonacademic panel participant assumed the recipe was successfully used by the contributor and accepted the experience as a recommendation that the participant would be successful as well. As previously mentioned, seeking recommendations through humans, crowdsourcing, and AI bots were important to the Nonacademic panel participants as evidenced by the various comments and examples they provided in the results chapter. Additionally, the examples provided here suggest that recommendations were part of a multifaceted, symbiotic learning preference.

Seeking recommendations as a learning preference was not a focus in Gen Z literature. However, seeking recommendations identified in this study supported a collaborative learning component of the social constructivist learning theory (Vygotsky, 1962). Additionally, connectivist learning theory literature supported the idea that new knowledge constantly changes. One way the Nonacademic panel participants generated new knowledge was by gathering information (e.g. recommendations) which they used to make connections from past and current

knowledge creating new knowledge. Additionally, as noted in the results chapter, Nonacademic panel participant comments supported Wise et al. (2013), who suggested that successful online collaboration (which could include seeking and sharing recommendations) fostered successful, online learning spaces.

Searching Online

Gen Z literature suggested one reason Gen Z learned through online searches was Gen Z's belief that technology was an extension of who they were (Cassandra, 2015; Cilliers, 2017). These 21st century students had instant access through their mobile devices most of their life (Shay & Rees, 2004; Turner, 2015). They often asked AI bots (e.g. Siri and Google) questions, sought human connections (e.g. individual recommendations or crowdsourcing thoughts), and gathered information to draw their own conclusions.

Results from this study noted Nonacademic panel participants frequently commented when they learned new skills in an online setting they searched online or searched via Google. Additionally, participants believed that "there are many professionals in Google." If Google did not provide Nonacademic panel participants the answer they sought, they looked elsewhere online, because they believed "there's everything I want to know on the internet." Cilliers (2017), found a similar affinity for technology use, noting that the technological dependency created new challenges for educators (e.g. false news, netiquette).

As detailed in the results section, multiple Nonacademic panel participants reported accessing online materials in multimodal ways for optimal learning. Nonacademic panel participants considered video, visual and text combinations. Other participants added a desire to talk through new information with friends to deepen understanding. O'Brien et al. (2018), also found that multimodal learning was beneficial to students' learning.

Searching online for answers to questions and for information was a response present in every round of the study and appeared repeatedly the identified learning preferences. The repetitive comments provided evidence searching online was extremely important to the Nonacademic panel participants' learning process. Therefore, future efforts should be made to incorporate Gen Z's online learning preference and multimodal materials into lesson plans.

Comparison and Contrast of Themes

The findings in this section were drawn from a comparison between the Academic panel participant responses and Nonacademic panel participant responses. Results included both Academic panel participants' and Nonacademic panel participants' preferred learning approaches which were rely on the self, ask experts (whom they identify), view videos, work as groups, engage with social media, and search online.

Through the study, it became clear, while both groups preferred videos, their reasoning differed. Academic panel participants preferred videos which clarified, increased understanding, and offered detailed instructions. Nonacademic panel participants also preferred demonstrative videos; however, these demonstrative videos offered recommendations, and step-by-step examples which Nonacademic panel participants duplicated on their own.

Another thing that became clear, over the course of this study, was the driving learning approach between the two panels was unique. The Academic panel participants sought a guide. They desired an individual relationship where they learned from each other and were guided through the learning process. The Nonacademic panel participants were content with recommendations, from which they unpacked truth and created new knowledge.

The Nonacademic panel participants sought multimodal experiences embedded in recommendations. They experienced the world of learning through demonstrations, online

searches, videos and multimodal materials which shared others' experiences. The Academic panel participants did not offer thoughts on multimodal learning, but relied on whatever materials the educator created.

Both panels got online to learn new skills. Once online, their purposes were different. The Academic panel connected with those they identified (e.g. Facebook discussion groups, educators, experts in the field of study) as experts in hopes of gaining clarity and/or validation. The Nonacademic panel also connected with those they considered experts (e.g. Google, Facebook discussion groups, field related forums) to gather information and recommendations for further information.

Academic panel participants hinged on there being an instructor who set up the class, materials, and learning guidelines in a comprehensive way. The teacher was a valuable piece of their learning process. The human behind the class was important, and without that human, the Academic panel participants could not continue on their learning path. Nonacademic panel participants did not care who put the instruction/material online, or if it made complete sense. They had the ability to identify and utilize quality materials and information. Additionally, if Nonacademic panel participants did not know where to gain information, they sought recommendations. The Nonacademic panel participants needed fewer guidelines than the Academic panel participants. No matter the twist and turn, Nonacademic panel participants felt if they wanted to learn something, the opportunity was there.

How Do Gen Z Preferences Align with Best Practices?

Comparison of the list of themes, subthemes and panel identified learning preferences, with the research defined best practices: look to the future, deep learning as the pedagogical lens, cognitive load, creation and application of new knowledge, focus on the learning process,

training for the educator, create meaning, course design, student/faculty relationship, and collaboration identified alignments and misalignments between research defined ‘best practices’ and Gen Z defined learning approaches for online learning. Results indicated that Gen Z, participants in this study learning approached, aligned with: look to the future, deep learning as a pedagogical lens, creation and application of new knowledge, training for the educator, course design, student/faculty relationship, and collaboration. Determined to be a component of deep learning pedagogy, both panel’s participants preferred self-directed learning. This finding suggested deep learning pedagogical practices (e.g. self-directed leaning) were beneficial to both participant panels. Therefore, deep learning practices may help bridge the differences identified in this study, between the Academic and Nonacademic learners. Bridging differences between the two learning contexts could help educators whose classes encompass learners from both Academic and Nonacademic backgrounds. As Academic panel participants depicted a guide with whom they had a relationship, their preference for a guide aligned loosely under the umbrella of student/faculty relationship.

There were no misalignments; however, Nonacademic panel members did not provide data valuing or disvaluing focusing on the learning process. Academic panel participants reported steps to complete tasks, but not any thought as to the process through which they gathered knowledge. Create meaning also lacked data providing support or nonsupport from either panel. Academic panel participants mentioned cognitive load; however, participants mistook workload for cognitive load.

Descriptions of Learning Preferences

These descriptions were generated using participant quotes throughout the study.

Academic Panel Participant Learning Preferences

The Academic panel identified six learning preferences.

Completing Course Materials was defined by the Academic panel participants as any material, learning task, video, or project created by the educator to guide and direct students on a successful learning path, where they could learn on their own, while leaning on the support of the educator as needed.

Rely on Self was defined by the Academic panel participants as the ability to organize and create an individual study plan, taking responsibility for their unique learning path. While the Academic panel manifested a preference for self-directed learning, they also found it imperative that guidelines were in place and frequent validation was offered.

Projects that I can Choose What to do and Learn Material by Myself was defined by the Academic panel participants as projects which had a set framework, detailed expectations, and a large space for learners to experiment, implementing unique voice and choice.

Search Internet was defined by Academic panel participants who offered two descriptions: (1) searching the internet for answers was part of their natural learning process, where they connected with others to converse, gather advice, and deepen understanding and (2) searching online was part of a resilience plan. When unable to check with a guide they turned to online sources to clarify, gain validation, and increase understanding.

Ask Expert defined by Academic panel participants who identified experts as individuals (e.g. classmates, educator, tutors, professionals, discussion forum members) who had more

knowledge or greater skill in a desired topic area. Academic panel participants asked the identified experts to validate theories or offer clarity.

Work/Discuss with Others in Class defined by the Academic panel participants as having had the ability and opportunity to share ideas with several people, gathering opinions and thoughts to make an informed decision on the topic being learned.

Nonacademic

The Nonacademic panel identified 10 learning preferences.

Search Online was defined by Nonacademic panel participants who reported getting on the internet due to a belief that the internet holds answers to all questions. These participants often referred to online searching through Google.

Search for Online Resources, Which are Detailed defined by Nonacademic panel participants as multimodal, detailed, easy to understand resources found in online spaces. Furthermore, online resources needed to make key words easily identifiable, which increased searchability. Additionally, key words increased the source's ability to present clear, precise and detailed writing.

Very Detailed, Written Instructions was described as one component of Nonacademic panel participant's multimodal learning preference. Written instructions needed to be detailed for clarity which nourished individual use, without further assistance. Multimodal components such as pictures accompany detailed, written materials.

Try to Learn a New Skill by Self was chosen by the Nonacademic panel participants as a learning preference; however, there were not many descriptive explanations, other than the ability to teach themselves with the help of recommendations from social networking sites. The literature, such as SDL, agreed learning by self was a favored Gen Z learning preference

(Poague, 2018). The SDL literature offered individuals who take responsibility for individual learning support autonomous learning (Song & Bonk, 2016).

Projects that I can Choose what to do and Learn Material by Self was chosen by the Nonacademic panel participants as a learning preference; however, no further explanation was provided. The literature exploring how a learner chooses, constructs, and organizes an individual learning process and context (Candy, 1991) is common in self-directed learners (Knowles, 1975). Nonacademic panel participants desire for projects, and choice also aligned with constructivist theories (e.g. personal learning process; Goldie, 2016), and deep learning (e.g. project-based learning, and student voice and choice; Fullan & Langworthy, 2014). In both learning methods, the individual was largely responsible for his/her learning (Vygotsky, 1997).

Visual Examples of Finished Projects was chosen by the Nonacademic panel participants as a learning preference; however, Nonacademic panel participants did not add any explanation of this learning preference. Literature on Gen Z did not talk specifically about this learning preference. The closest research depicted Gen Z sharing out projects and newly acquired knowledge (Schwieger & Ladwig, 2018). Gen Z shared experiences through visual examples (e.g. photos and video) on social media (Turner, 2015). Instagram and Snapchat are two places Gen Z daily shared projects and examples of things they learned (Ernst & Young, 2016; Graham et al., 2001).

Videos That Show me how to do the Project was described by Nonacademic panel participants as step-by-step, successful examples, which were engaging, detailed and simultaneously easy to understand.

Ask Expert was defined by Nonacademic panel participants as personally identified experts as friends, parents, mentors, teachers and others with whom they could converse and gather recommendations.

Ask in social Media Group as described by Nonacademic panel participants, social media groups (largely Facebook and content specific forums Nonacademic panel participants belong to) were identified by recommendations from Nonacademic panel participant friends and network connections. Social media groups were places participants went to gather information and sought recommendations for more places to inquire about topics they wanted to learn about.

Watch Video was defined by Nonacademic panel participants as detailed, easy to understand, demonstrative videos, one of their multimodal learning preferences. They desired videos which offered up-to-date material, implemented interesting, relevant and detailed explanations in simple, easy to understand ways (often demonstrative).

Pedagogical Recommendations

Educators may wonder how they can teach Gen Z, when the learning approaches may seem foreign and the generational gap leaves some baffled. One of the benefits of growing up in a world with constant communication capabilities may be Gen Z has no problem telling people what they want. What follows are recommendations which participants in both panels provided.

Educator Should be a Guide

As depicted in Chapter IV, Gen Z felt learning was a continual and multifaceted path, embedded with various learning relationships. The item which seemed to be interwoven in multiple comments was the idea of a guide (Academic panel participants) and that of seeking recommendations (Nonacademic panel participants). Educator as a guide appears to be an underlying learning approach for Gen Z. It appeared that if educators wanted to implement only

one of the recommendations provided by participants, being a guide (e.g. providing clear, detailed learning materials, building a relationship with the student, and checking in with the student on a consistent basis) could be the one that made the most difference. As guidance was interwoven with other learning preferences, it may also be the most difficult.

The idea of seeking recommendations could be loosely conceived as seeking a form of guidance. The idea that an educator was a guide closely aligned with Vygotsky's social constructivist learning theory (Vygotsky, 1997). Vygotsky stated, "ultimately, the child teaches himself" (1997, p. 47). The teacher could guide, lead and offer direction; however, in the end it was the learners who taught themselves. The data in this study suggested educators who were willing to guide and constantly supported their Gen Z students would build relationships with them which enriched their learning experiences. Past learning theory research (e.g. deep learning (Fullan & Langworthy, 2014); and connectivism; Siemens, 2005) support these findings.

Build a Relationship

As set forth in the literature review and validated in Chapter IV, Gen Z were particularly self-reliant and desired SDL opportunities (Poague, 2018). Furthermore, as stated in the literature review and outlined in the educator is a guide section, this study supported the notion that teachers were guides and had a two-way learning relationship with Gen Z. Both Academic and Nonacademic panel participants wanted someone who connected with them, built a relationship with them, and supported them. Additionally, Academic panel participants sought a learning relationship which offered help, guidance as needed, and frequent checks on the learning situation. Previous Gen Z literature suggested Gen Z was adept at maintaining daily, on demand relationships (Mohr & Mohr, 2017; Rue, 2018), which may be why one Academic panel participant asked for educators who checked in "daily." This research suggested the majority of

Academic participants accepted "checking in" as weekly, instructional videos generated by educators, or weekly emails. Additionally, "checking in" was seen as educators who set up and kept online office hours and were willing to meet with students or responded to students' emails in "timely" manner. Open communication letting students know when educators were available, and letting students know of changes, may have also fostered student/educator relationships. As one Academic panel participant stated, "Just be available. Don't answer in two days. Give a time where you will be on, specifically looking at the class. This gives students a time to ask the teacher any questions and get a response." Gen Z is drawn to educators who "Interact with students while teaching" (Academic panel participant). Another Academic panel participant commented on how simple this interaction could be, "teachers need to talk to the students, have everything ready, and don't overload on reading. As long as the teachers are prepared, I believe everything will go great." This research suggested for Gen Z, materials and connections did not need to be lengthy to be of value.

Participants in this study wanted to connect with educators to get their questions answered. Cook (2015) proposed Gen Z's "most pressing need is for immediate response" (slide 8). This need to connect may have been directly related to Get Z's innate technical existence, as outlined in the literature review and drove the final recommendation in this section. Participants in this study repeatedly asked for online classes and online learning spaces which were up-to-date. For instance, Academic panel participants called for "real-time updates" and "frequently" updated learning material, practices, and "give us more experience, advance with the times!" Gen Z participants approached learning at the speed of Google, and perhaps unrealistically, expected anyone who wanted to assist them to respond just as quickly.

Set Appropriate Work Load

Both panels provided comments which connected to what they referred to as "cognitive overload"; however, what participants described was work overload. Participant descriptions had nothing to do with in-the-moment processing issues. Instead, Academic panel participants, in particular, reported being concerned about online courses which had an abundance of "busy work," various projects (e.g. discussion boards and discussion posts), and multiple assignments at once.

Learn the Individual "Why"

When responding to survey questions regarding online learning approaches, participants in both panels often gave their reasoning for learning a new skill, or their experience learning a new skill instead of an approach. For example, a couple of Nonacademic panel participants talked about needing skills to "survive." One Nonacademic panel participant explained they learn: "…to prepare for the future survival." Participants in both panels frequently reported learning skills was to increase personal knowledge or gain ability to use a new skill (e.g. work-related promotions or increase quality of life). Poague (2018), of LinkedIn Learning, found 43% of Gen Z were self-directed learners, and felt rushed to gain knowledge as quickly as possible to achieve career goals. As the literature on SDL suggested, establishing career goals relies on learners who acquired knowledge to achieve unique achievements (Knowles, 1975). While SDL goals were expected, participant responses (e.g. learning "some skills that can survive in the future") were not. While participants offered no further explanation, the literature states Gen Z preferred to look to the future, vigilantly aware of the end result (Goldie, 2016). This study agreed with the literature. As discussed in the literature review, it was important for both the educator and the student to look to the future (Joordens et al., 2019; Nash, 2015). At the time of

this study it was estimated that 65% of future Gen Z jobs did not exist yet (Fisch & McLeod, 2008). With our ever-changing world, and constant technological advances, the future of education needed to be a constant focus (Joordens et al., 2019). Therefore, it was imperative educators and researchers prepare for incoming and upcoming generations of learners. Awareness of Gen Z's motivation for education was beneficial in shaping education helping Gen Z prepare for their future.

Increase Regulations for Search Results

This research agreed with previous Gen Z research, Gen Z had an affinity for online searches (Kardaras, 2016). One Nonacademic panel participant explained they search the internet, "because it is convenient and I have the internet in my hand or pocket all day long." This comment aligned with Jaschik (2013) findings. Gen Z generally reached for their phone about once a minute. Another Nonacademic panel participant shared the reason they search online was because, "there's everything I want to know on the internet." Was it any wonder a generation with so many questions expected to use the gift of technology and instant answers in their daily learning? As with any advancement, technology and access to instant answers had downfalls. This study suggested Gen Z had unique concerns with online learning, and an abundance of unregulated search results was one of them. Gen Z literature suggested Gen Z did not properly validate online search findings (Sinatra & Lombardi, 2020). This research offered hope Gen Z was ready to address this need. Participants from both panels called for better "screening" of search results, and wanted to ensure "valid" information. One Academic panel participant reported when they have a question, "I just look up the answer. I use multiple source s to make sure I'm right, and then I investigate. It's pretty simple." Interestingly, more Nonacademic panel participants sought valid results than Academic panel participants. One

Nonacademic panel participant cautioned, “Yes, search engines can basically solve every problem, but there will be some junk information, we have to learn to filter, find quality information.” A second Nonacademic panel participant explained the validation process, “It’s simple, do more screening, do more thinking.” These participants echo the warning and simple solution of Sinatra and Lombardi (2020) when searching for answers online, ask yourself, “is this explanation plausible, and how do I know?” (p.1). Technology may have made online searches fast and convenient and offered a variety of multimodal answers, but it was up to the individual to extract the truth from all potential sources. This concern may have been one of the reasons participants, in this study, reported online classes needed more support from the educator. Academic panel participants seemed to see educators as their filter, or at least as the means of learning how to critically sift through search results.

Create Videos

One of the ways Gen Z participants, in this study, preferred to gather information was by watching video, which supported literature stating when Gen Z gathered information, online searches and YouTube were prevalent. Bazilian (2017) contended for Gen Z school was not school without YouTube videos. This research noted that YouTube was not always the first learning preference, but it was a preferred approach to learning. Academic panel participants in this study wanted “short” videos which “pertain to assignments given.” They further explained “detailed, instructional videos” were particularly helpful in online learning situations. Academic panel participants further suggested they wanted videos, created by the teacher, specific to the class or topic of study. The facts that videos could be updated in “real-time” and specific to each class, were not lost on the Academic panel participants of this study. Both panels offered the following criteria for those creating quality, supportive videos: “filter relevant information”

(Nonacademic panel participant), “create content which is real and interesting” (Nonacademic panel participant), “are of high quality” (Academic panel participant), “are easy to find” (Nonacademic panel participant), and “can teach individuals with varying levels of previous knowledge and offer the educators unique talents” (Academic panel participant). Additionally, participants from this study supported Lithner’s (2008) finding, those who were simply observing something gathered data to engage in the imitation or replication of the observation to gain knowledge. This research proposed videos were one component of the learning preferences of Gen Z in which they repeatedly gather data until they were comfortable combining prior knowledge and experience to generate new knowledge.

Implement Deep Learning Pedagogy

Some of the identified learning preferences (e.g. both panel participants chose “projects that I can choose what to do and learn the material,” and both panels reported motivation behind knowledge acquisition was the ability to apply knowledge to enhance the quality of life) align with deep learning pedagogy. As outlined in the literature review, and supported by the results of this study, deep learning, with the intent for knowledge acquisition and implementation, was a successful pedagogical lens for educating Gen Z learners. Although the LinkedIn Learning research (Poague, 2018) was not focused specifically on Gen Z’s recommended learning preferences, it did explore how Gen Z was “shaping a new era of learning” (Poague, 2018 p.1). Results from this study supported the notion an evolution of pedagogical practices may better suit Gen Z’s unique learning approaches.

Future Research

In this research, similarities and differences among online academic learning and nonacademic settings was identified. However, future research was needed to better understand

Gen Z learning preferences in the two settings. For example, why when learning happened in an academic setting did Gen Z use Facebook as an educational space, when for other generations Facebook was a social space.

Participants in both panels repeatedly asked for personalized, demonstrative videos, produced by the educator which provided evidence suggesting videos may have been another way students liked to connect with the teacher. Further research could provide additional insight to the possible connection between students in an online setting who received weekly videos from their professor and their perceptions of connection to the educator.

Academic panel participants made comments such as “help me,” “guide me,” “check in on me,” one even requested “daily” checking in. More research was needed to identify what exactly was meant by checking in, and parameters for what checking in looked like.

As identified in this research, those in the academic online world sought a guide; someone checked on them, and ensured they correctly understood the material and were concerned with the well-being of the individual student. Interestingly, Nonacademic panel participants were not as interested in a guide as they were recommendations from those they identify as experts. More research was needed to explore this difference, and what, if any, reason for the difference. Furthermore, it would have been beneficial to explore if those who are in the academic realm preferred recommendations when they were learning outside of school, or if they preferred guidance in both.

In this study, participants were asked about how they learned (e.g. what processes they used, what steps were taken). When participants responded, they did not provide commentary which descripted steps taken to learn, but rather with their motivation to learn. They did not have the metacognition in this study to detail the process through which they learned; instead they

explained their unique why (e.g. when asked to describe the process through which they learn, one Nonacademic participant responded: “I will learn some skills that can survive in the future”). Therefore, an area for further research was exploring Gen Z’s learning process.

Constraints

To address any potential technological issues, four mitigation measures were made, as outlined by Donohoe et al. (2012). First, a pilot study was run testing all instrumentation, communication, and potential technical difficulties. Second, technical support was offered, and various opportunities for participation were offered for the duration of the study. For example, the instruments were sent through a secure survey software; however, if any issues arouse, participants could contact the researcher and ask for the survey to be administer via email. Third, clear instructions were given to participants, including a preface guiding participant’s thought process to align with their specific expertise. Fourth, paper copies were created and retained for all data, instruments, reports and communication in case of technical difficulties or failures.

A second constraint, according to Donohoe et al. (2012), was “Experimental Control” (p. 43). This constraint dealt with potential misrepresentation, secure survey access, anonymity and potential distractions. To mitigate misrepresentation, the researcher kept a researcher journal, sent emails asking for clarification when responses were not clear, provided iterative rounds for participants to respond via qualitative means providing additional information or challenging survey items, and sent a member checking email inviting each participant to respond with concerns or comments regarding findings. To ensure secure survey access, surveys were generated in a secure survey software; personal, one- time use, invitation links were generated for each participant, and participant validation was ensured with pseudonyms. Anonymity was upheld as surveys did not gather any identifying information; survey pseudonyms were used only

as a means of participant validation and not in connection with the data collected. To diminish potential distractions, this research was not planed during holidays or potentially stressful times (e.g. finals week) for participants. Participants were also given one week in which they could respond to instruments at their leisure.

One unforeseen constraint was the COVID-19 pandemic. The researcher attempted to control for issues participants might have had due to COVID-19 shutdowns, such as contacting participants to ensure they were still available for the study, and allowing them to participate, even if they were unable to participate in all arounds. It is not known what results may have been if COVID-19 had not occurred.

Conclusion

Two unique panels of experts were chosen to explore a wide variety of Gen Z's learning preferences, in both academic and nonacademic, online settings. Consensus was reached on several learning approaches within each panel. Perhaps the most interesting result was the Academic panel participants preferred self-directed learning which was dependent on a guide to validate and support them through the learning process, while Nonacademic panel participants sought only recommendations. The Nonacademic panel participants filtered recommendations and continued the learning process on their own. The results of this study paralleled literature which suggested constructivist learning theories (Goldie, 2016), connectivist learning theories (Siemens, 2005), and deep learning pedagogical practices (Fullan & Langworthy, 2014) most closely aligns with Gen Z's preferred learning approaches.

In conclusion, pedagogical practices, which at the time of this study were being updated for Millennials, only partially aligned with Gen Z's learning preferences. The unique characteristics of Gen Z were best met by updating pedagogical practices. Based on the results

and discussion presented in this study, updated pedagogical practices and awareness of Gen Z's learning preferences, potentially enhanced learning experiences for online Gen Z learners and prepared them for their future. Additionally, this research offered suggestions and examples for how educators could support Gen Z learners in their educational goals and set groundwork for further research regarding Gen Z online learning approaches and best practices. Understanding the differences between Gen Z online academic learners and Gen Z nonacademic learners deepened understanding on how Gen Z approached learning.

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APPENDIX A

INSTITUTIONAL REVIEW BOARD

APPROVAL FOR STUDY

UNIVERSITY OF
NORTHERN COLORADO

Institutional Review Board

Date:	05/29/2020
Principal Investigator:	Letha Mellman
Committee Action:	**IRB EXEMPT DETERMINATION – New Protocol**
Action Date:	05/08/2020
Protocol Number:	2004000564
Protocol Title:	Getting Online with Generation Z: Learning Approaches
Expiration Date:	

The University of Northern Colorado Institutional Review Board has reviewed your protocol and determined your project to be exempt under 45 CFR 46.104(d)for research involving

You may begin conducting your research as outlined in your protocol. Your study does not require further review from the IRB, unless changes need to be made to your approved protocol.

As the Principal Investigator (PI), you are still responsible for contacting the UNC IRB office if and when:

- You wish to deviate from the described protocol and would like to formally submit a modification request. Prior IRB approval must be obtained before any changes can be implemented (except to eliminate an immediate hazard to research participants).
- You make changes to the research personnel working on this study (add or drop research staff on this protocol).
- At the end of the study or before you leave The University of Northern Colorado and are no longer a student or employee, to request your protocol be closed. *You cannot continue to reference UNC on any documents (including the informed consent form) or conduct the study under the auspices of UNC if you are no longer a student/employee of this university.
- You have received or have been made aware of any complaints, problems, or adverse events that are related or possibly related to participation in the research.

If you have any questions, please contact the Research Compliance Manager, Nicole Morse, at 970-351-1910 or via e-mail at nicole.morse@unco.edu. Additional information concerning the

UNIVERSITY OF
NORTHERN COLORADO

Institutional Review Board

requirements for the protection of human subjects may be found at the Office of Human Research Protection website - http://hhs.gov/ohrp/ and https://www.unco.edu/research/research-integrity-and-compliance/institutional-review-board/.

Sincerely,

Nicole Morse
Research Compliance Manager

University of Northern Colorado: FWA00000784

APPENDIX B

RECRUITMENT EMAIL

Hello!
My name is Letha Mellman. I am a graduate student at UNC. I am conducting a study looking at Generation Z's learning approaches. I was given your name by (Dr. David Slykhuis) as someone who may be interested in participating in this study.

This research is important because many researchers have looked at how Generation Z learns, but I have not found any that have asked you if you agree with what they have said about their research. This study will ask you if you agree and have you help create the best methods of teaching which could make online classes better and more enjoyable.

You should not spend more than an hour or two total in your part of the research. There were approximately 3 to 5 rounds of emails sent to you over a 8-10 week period of time. Each round is one email with a link to a survey and will take you about 5-20 minutes, and the entire study should take less than two hours of your time.

If you were born between January 1, 2001 to July 14, 2002, and are interested in being a part of my study, please either respond back to this email or follow this link (hyperlink was inserted) to apply for- the study.

Thank you for your time!
Letha Mellman

APPENDIX C

CONSENT FORM

Thank you for your interest in my study!

CONSENT FORM FOR HUMAN PARTICIPANTS IN RESEARCH
UNIVERSITY OF NORTHERN COLORADO

Project Title: Getting Online with Generation Z: A Delphi study of Best Practices for Generation Z's Online Learning approaches in Higher Education

Researcher: Letha Mellman, Ph.D. student, Technology, Innovation, and Pedagogy
Phone Number: (970) 347-0534 e-mail: letha.mellman@unco.edu

Research Advisor: Dr. David Slykhuis, Ph.D. Assistant Dean, College of Natural and Health Science / Director, MAST Institute
Mathematics and Teaching Institute; Natural and Health Sciences, Phone Number: 970-351-1214, email: David.Slykhuis@unco.edu

I am researching the ways Generation Z prefers to learn. If you choose to participate, your thoughts and opinions may help educators understand how you learn and how they can use that knowledge in future online classes. This research is important because many researchers have looked at how you prefer to learn, but I have not found any that have asked you if you agree with what they have said about their research, or that ask about your learning process. This study will ask you about how you learn, and what that looks like to you, which could make online classes better and more enjoyable.

You should not spend more than an hour or two total in your part of the research. There will be approximately 3 to 5 rounds of emails sent to you. Each round is one email which will take you to a survey, and will take you about 5-20 minutes.

The first survey will come once I have sufficient participants, hopefully no later than July 14, 2020 and the last should be completed no later than August 27, 2020. Each round will be open for one week, so you will be able to respond to the questions and complete it at a time and place that is convenient for you.
There are no right or wrong responses. You may decline to answer any questions and may decide to withdraw from the research at any time.

I will take every precaution in order to protect your confidentiality. To keep your identity safe, no identifying information will be gathered. Data (your responses) collected and analyzed for this study will be kept in a locked cabinet and/or password-protected software. Confidentiality will also be maintained in any reports as all results are reported in aggregate form. No report will include individually identifying information.

There is no further risk to you than normally encountered during regular classroom participation. Your insight is instrumental in creating relevant practices for online Generation Z learners.

PLEASE NOTE: Those who qualify to participate will receive an email around July 10 with further instructions. For those who participate in the study, upon completion of each round, you can select whether or not you would like a $5 Amazon.com gift card. The gift card will be sent to you as an Amazon.com gift card code.

Participation is voluntary. You may decide not to participate in this study and if you begin participation you may still decide to stop and withdraw at any time. Your decision will be respected and will not result in loss of benefits to which you were otherwise entitled. Having read the above and having had an opportunity to ask any questions, please complete the questionnaire if you would like to participate in this research. By completing the questionnaire, you give your permission to be included in this study as a participant. You may keep this form for future reference. If you have any concerns about your selection or treatment as a research participant, please contact Nicole Morse, Research Compliance Manager, Office of Research, Kepner Hall, University of Northern Colorado Greeley, CO 80639; 970-351-1910.

College of Education and Behavioral Science
◆◆501 20th Street, Campus Box 124, Greeley, Colorado 80639 ◆(970) 351-2807 ◆◆

APPENDIX D

GARRETT'S TABLE

GARRETT RANKING CONVERSION TABLE

The conversion of orders of merits into units of amount of "socres"

Percent	Score	Percent	Score	Percent	Score
0.09	99	22.32	65	83.31	31
0.20	98	23.88	64	84.56	30
0.32	97	25.48	63	85.75	29
0.45	96	27.15	62	86.89	28
0.61	95	28.86	61	87.96	27
0.78	94	30.61	60	88.97	26
0.97	93	32.42	59	89.94	25
1.18	92	34.25	58	90.83	24
1.42	91	36.15	57	91.67	23
1.68	90	38.06	56	92.45	22
1.96	89	40.01	55	93.19	21
2.28	88	41.97	54	93.86	20
2.69	87	43.97	53	94.49	19
3.01	86	45.97	52	95.08	18
3.43	85	47.98	51	95.62	17
3.89	84	50.00	50	96.11	16
4.38	83	52.02	49	96.57	15
4.92	82	54.03	48	96.99	14
5.51	81	56.03	47	97.37	13
6.14	80	58.03	46	97.72	12
6.81	79	59.99	45	98.04	11
7.55	78	61.94	44	98.32	10
8.33	77	63.85	43	98.58	9
9.17	76	65.75	42	98.82	8
10.06	75	67.48	41	99.03	7
11.03	74	69.39	40	99.22	6
12.04	73	71.14	39	99.39	5
13.11	72	72.85	38	99.55	4
14.25	71	74.52	37	99.68	3
15.44	70	76.12	36	99.80	2
16.69	69	77.68	35	99.91	1
18.01	68	79.17	34	100.00	0
19.39	67	80.61	33		
20.93	66	81.99	32		

Source; http://sadakath.blogspot.com/2010/11/blog-post.html

APPENDIX E

QUALIFYING APPLICATION SURVEY

1. What year were you born in?*

A dropdown menu said
2000 or before - if chosen they were directed to end of survey
January -July 14, 2002 -if chosen directed to the next question in the survey
After July 14, 2002 - if chosen directed to end of survey

2. Are you 18 years of age or older?

Yes
No

If they answer yes, they are taken to the next question, if they answer no, they are directed to the end of the survey and thanked for their time.

3. Do you meet the availability needs?*

Availability: You can expect 3-5 rounds of emails. Each email will take you to a new survey each round. Each survey will take you approximately 15 minutes. The entire study should take about 1-2 hours (total) of your time. All emails are expected to come between June 24 - August 7, 2020). You are expected to receive emails approximately once every other week once they begin.

Please check each box showing that you have read and understand the time commitment.

- Round 1, in which you will be asked to answer questions about how you learn. You will have a week to answer the survey. (1)
- Round 2, This round will ask you to rank top practices picked by the panel in Round 1. You will have one week to answer the survey. (2)
- You may receive an additional email asking you to rank top practices if needed. (3)
- Round 3, In this round you will be asked to share your thoughts and examples on how teachers can incorporate the way you learn in classes. You will have one week to answer the survey. (4)
- This final email will be an invitation to review the findings. You will have one week, to respond with any comments (8)

NOTE: Each date had a check box for participants to check. If they were available, they were taken to the next question, if not, they were taken to the end of the survey, and thanked for their time.

4. Do you meet the availability needs listed above?

Yes
No

If they answer yes, they are taken to the next question, if they answer no, they are directed to the end of the survey and thanked for their time.

5. Have you ever chosen to take an online college class? NOTE- if you have only taken online college classes due to COVID 19/Coronavirus, please select no.

Yes
No

If they answer yes, they were taken to the next question, continuing on the path for potential participation in Panel Academic. If they answer no, they were directed to the Panel nonacademic questions to see if they qualify for that panel.

Panel Academic Application Continued

1. How many online college courses have you completed?

0
1

2
3
4
5
6
7
8
9
10 or more
0-1 skip to Nonacademic questions
2-10 r more, skip to next question

2. How many different professors have you had in your online college courses?

1
2
3
4
5
6
7
8
9
10
More than 10

Two or more will take them to the next question,
One will take them to the end of the survey.

3. Please select from the following list. You may select more than one answer. On average, what grade did you receive in your online classes?

A
B
C
D
F
Prefer not to say

All responses move to next question.

4. Please provide the email address that you would like study survey to come to

Open text box for responses

5. What school do you attend?

Open text box for response

6. What state do you live in?

Open text box for response

7. Where do you go to learn for online classes? Please list any specific websites, apps, etc.

Open text box for response

NOTE: Both potential participants will receive the rest of the questions

8. Thinking about your elementary education was it:

In a traditional school building
Online

Homeschool
Did not attend
If it was a combination, please explain _____

9. Thinking about your middle school education was it:
In a traditional school building
Online
Homeschool
Did not attend
If it was a combination, please explain _____

10. Thinking about your high school education was it:
In a traditional school building
Online
Homeschool
Did not attend
If it was a combination, please explain _____

11. Please select a pseudonym that you will remember and use for the study
Open text box.

NOTE: This is only for participant validation purposes, and will not be used in future survey data.

12. What email would you like the study emails to come to?
Open text box

13. What Gender do you identify as?
Male
Female
Non-binary
Other _____
Prefer not to say

14. What is your ethnicity?
African American
Alaska Native
American Asian
Asian
Caucasian (White)
Hispanic
Latino
Native American
Native Hawaiian or Other Pacific Islander.
Other _____
Prefer not to say

15. Rank the devices you use most often for school. 1 used most, 6 used least often. Note, if you do not use an item, you do not need to rank it. To rank, drag and drop items into the box
Desktop computer
iPad/Tablet
Laptop/Chromebook
Smartphone
Smartwatch

Other_____

16. Rank the devices you use most often when **NOT** in school. 1 used most, 6 used least often. Note, if you do not use an item, you do not need to rank it. To rank, drag and drop items into the box.

drop-down box

Desktop computer
iPad/Tablet
Laptop/Chromebook
Smartphone
Smartwatch
Other_____

17. What is your preferred device (devices) to use when doing schoolwork? Check all that apply. Boxes next to each item.

Desktop computer
iPad/Tablet
Laptop/Chromebook
Smartphone
Smartwatch
Other_____

18. What device(s) do you use to access the internet?

Check box next to all that apply

Desktop computer
iPad/Tablet
Laptop/Chromebook
Smartphone
Smartwatch
Other_____

19. What is Parent 1's highest level of schooling?

Dropdown box

Elementary school
Middle school
High school
Some college
College
Masters degree
Doctoral level, e.g., Ph.D., MD, Ed.D., J.D., etc
Not applicable
Unknown

20. What is Parent 2's highest level of schooling?

Dropdown box

Elementary school
Middle School
High school
Some college
College
Masters degree

Doctoral level, e.g., Ph.D., MD, Ed.D., J.D., etc
Not applicable
Unknown

End of survey. Thank you for your time, your responses have been recorded.

Panel Nonacademic Application Continued

1. Have you ever gone online to learn a skill?
   Yes
   No

(Yes will take them to the next question, no will take them to the end of the survey.)

2. How often do you go online to learn a skill?
   Daily
   Weekly
   Monthly
3. What kinds of skills do you go online to learn?
   Open text box for responses

NOTE: Both potential participants will receive the rest of the questions

4. Thinking about your elementary education was it:
   In a traditional school building
   Online
   Homeschool
   Did not attend
   If it was a combination, please explain _____
5. Thinking about your middle school education was it:
   In a traditional school building
   Online
   Homeschool
   Did not attend
   If it was a combination, please explain _____
6. Thinking about your high school education was it:
   In a traditional school building
   Online
   Homeschool
   Did not attend
   If it was a combination, please explain _____
7. Please select a pseudonym that you will remember and use for the study
   Open text box
   NOTE: This is used only for participant validation only, and will not be used in future survey data.
8. What email would you like the study emails to come to?* text box
9. What Gender do you identify as?
   Male
   Female
   Non-binary
   Other _____
   Prefer not to say

10. What is your ethnicity?

African American
Alaska Native
American Asian
Asian
Caucasian (White)
Hispanic
Latino
Native American
Native Hawaiian or Other Pacific Islander.
Other _____
Prefer not to say

11. Rank the devices you use most often for school. 1 used most, 6 used least often. Note, if you do not use an item, you do not need to rank it. To rank, drag and drop items into the box

Desktop computer
iPad/Tablet
Laptop/Chromebook
Smartphone
Smartwatch
Other_____

12. Rank the devices you use most often when **NOT** in school. 1 used most, 6 used least often. Note, if you do not use an item, you do not need to rank it. To rank, drag and drop items into the box.

Drop-down box

Desktop computer
iPad/Tablet
Laptop/Chromebook
Smartphone
Smartwatch
Other_____

13. What is your preferred device (devices) to use when doing schoolwork? Check all that apply.

Boxes next to each item

Desktop computer
iPad/Tablet
Laptop/Chromebook
Smartphone
Smartwatch
Other_____

14. What device(s) do you use to access the internet?

Check box next to all that apply

Desktop computer
iPad/Tablet
Laptop/Chromebook
Smartphone
Smartwatch
Other_____

15. What is Parent 1's highest level of schooling?
Dropdown box
- Elementary school
- Middle school
- High school
- Some college
- College
- Masters degree
- Doctoral level, e.g., Ph.D., MD, Ed.D., J.D., etc
- Not applicable
- Unknown

16. What is Parent 2's highest level of schooling?
Dropdown box
- Elementary school
- Middle School
- High school
- Some college
- College
- Masters degree
- Doctoral level, e.g., Ph.D., MD, Ed.D., J.D., etc
- Not applicable
- Unknown

End of survey. Thank you for your time, your responses have been recorded.

APPENDIX F

EMAIL FOR ROUND 1

Hi!

Congratulations, you have been selected as a participant in my research.
Thank you for agreeing to participate in my research. Your insights are quite valuable to me and I appreciate your time. It should not take you more than 10 minutes to complete this survey.

Please follow the link HERE (hyperlink inserted) to begin the survey.
You may also copy and paste the following into your web browser.
URL pasted here

You will find directions for your gift card code once you finish the survey.
Please complete the survey by 11 PM Mountain Standard Time on Friday, July 16, 2020.
If you have any questions or have any trouble with the link, please contact me right away at letha.mellman@unco.edu.
Thank you again for your support.

Best Wishes,
Letha Mellman

APPENDIX G

ROUND 1 SURVEY

NOTE: The questions in this round were randomized for participants. All questions have response required to go to the next question.

Panel 1 (Academic)

This survey will ask you questions about the ways you prefer to learn in online college courses. Please be honest in your answers.

1. Please provide your nickname/pseudonym. Please make it something that you will remember such as your pet's name, a nickname or your initials.
    Open text box for responses
2. When I'm learning something for an online course in school, my preferred way to learn is... (Please add much detail as possible)
    Open text box for responses
3. When I want to know the answer to a question I have in an online class I...
    Open text box for responses
4. The best way for me to learn something for an online class is…
    Open text box for responses

(Please rank order your responses, #1 is the best way #20, or your highest, is the least helpful way)

5. The best place to learn something outside of school is...

IF YOU DO NOT FEEL LIKE ANY OF THESE ITEMS ARE HELPFUL PLACES TO LEARN, YOU DO NOT NEED TO INCLUDE THEM IN THE RANKING

(Responses were randomized)

- Facebook
- Twitter
- Watching YouTube videos
- By visiting websites suggested in class. If you are thinking of specific sites, please fill them in below
- Open text box for responses
- Study for a test
- At a library
- View PowerPoint Slide from class
- Ask Siri/Google
- Ask a friend/classmate
- Ask the teacher
- Try it myself, a hands on activity
- Watch a lecture
- Read the textbook or other course materials
- By visiting free online instruction/tutoring site like Khan Academy or Code Academy
- Participate in online discussions
- Complete course projects
- Use a pay online tutor site like Chegg
- Instagram
- Other (Open text box for responses)

6. When I want to complete a project for my online college course I prefer…

(Items were randomized for participants)

- To figure out how to do the project myself

Finished examples to look at
Videos that show me how to do the project
Written line by line, detailed instructions
Open ended projects that give you a lot of choice
To work with a partner
To work with a group
Projects that do not give me a choice
Other (Open text box for responses)

7. Thank you for completing this survey. Would you like to receive an Amazon gift card code?
Yes, please!
No, thank you.

If Yes, please! is selected skip to next question.
If No, thank you is selected skip to end of survey.

8. Amazon gift card code information
Please provide the email address you would like your Amazon gift card to come to
Open text box for response.
Please provide your nickname/pseudonym
Open text box for response.
Please provide survey email address (if different from Amazon gift card code)
Open text box for response.

Panel 2 (Nonacademic)

This survey will ask you questions about the ways you prefer to learn new skills, in informal situations. Please be honest in your answers.

1. Please provide your nickname/pseudonym associated with this study. Remember to make it something that you will easily remember, such as your pets name, a nickname, or your initials.
Open text box for response.
2. When not in school, my preferred way to learn a new skill is…
(Please provide as much detail as possible)
Open text box for response.
3. When I want to know the answer to a question I have, I...
Open text box for response.
4. The best place to learn something outside of school is...
Open text box for response.
5. Please rank these with #1 being the best place, and #16 being the least good place to learn something outside of school.
IF YOU DO NOT FEEL LIKE ANY OF THESE ITEMS ARE HELPFUL PLACES TO LEARN, YOU DO NOT NEED TO INCLUDE THEM IN THE RANKING
NOTE: Items were randomized for participants.
Drag items into this box to rank order of useful places to learn when not in school.
Facebook
Twitter
Watching YouTube videos

Visiting websites. If you are thinking of specific sites, please fill them in below (open text box for response)
Taking formal classes on the subject
Read a book
Google it (type in the browser bar)
Ask Siri/Google
Ask a friend/colleague
Try it myself, a hands on activity
Watch a lecture
Participate in a MOOC (Massive Open Online Course)
View lectures posted online
Free Online instruction/tutoring site like Kahn Academy or Code Academy
Instagram
Other (open text box for response)

6. When I want to learn something (choose 1)
I want to work by myself
I want to work with others

7. When I want to complete a project, for something I am learning, I prefer…

NOTE: Items were randomized for participants
To figure out how to do the project myself
Finished examples to look at
Videos that show me how to do the project
Written line by line, detailed instructions
Open ended projects that give you a lot of choice
To work with a partner
To work with a group
Projects that do not give me a choice
Other (Open text box for responses)

8. Thank you for completing this survey. Would you like to receive an Amazon gift card code?
Yes, please!
No, thank you.

If Yes, please! is selected skip to next question.
If No, thank you is selected skip to end of survey.

9. Amazon gift card code information

Please provide the email address you would like your Amazon gift card to come to
Open text box for response.

Please provide your nickname/pseudonym
Open text box for response.

Please provide survey email address (if different from Amazon gift card code)
Open text box for response.

APPENDIX H

REMINDER EMAILS

First Reminder Email

Happy Saturday!

This is a quick reminder that the survey needs to be completed by time Mountain Standard Time on date.

You will need your personalized link from the original email sent last week.
I hope that you have an amazing weekend!

Letha Mellman

Final Reminder Email

Hi!

This is the final reminder for the online research survey #!.
Please complete the survey by tomorrow, date, at time Mountain Standard Time. **You will need your nickname and email address associated with the study to receive your gift card.**
You will need the individual link given to you last week. If you have questions or concerns, please email.

APPENDIX I

ROUND 2 SURVEY

NOTE: All questions are forced to move to the next question.
Panel 1 (Academic) will receive the following first paragraph:
Below you will find a randomized list of the most frequent responses in each category as identified by you and your peers in Round 1.

1. Please rank this randomized list of the most frequent responses in each category as identified by you and your peers in Round 1. #1 is the MOST important to you. If IT IS NOT IMPORTANT TO YOU, DON'T ADD IT. YOU DO NOT NEED TO ADD ALL ITEMS

Simply drag items into the box. They will appear in the order you drop them. You may rearrange them once they are in the box.
When I'm learning something for an online course in school, my preferred way to learn is…
Participants will drag items into a box labeled "ways I prefer to learn."

- Watch videos/power point presentation
- From the teacher
- Flexibility is important
- Listen to lectures
- Read textbook/materials
- Straight to the point
- Short, defined time increments
- I only want to learn about things that are important to me
- Take notes
- Study outside of class time
- In a quiet space
- Create a plan
- Find joy in what I am learning
- Practice by myself
- Listen to music
- Discuss what I am learning with friends/classmates
- Google for more information
- Add any additional comments here. (Open text box for responses)

2. Please rank this randomized list of the most frequent responses in each category as identified by you and your peers in Round 1. #1 is the MOST important to you. If you don't agree with an item, DO NOT add it. YOU DO NOT NEED TO USE ALL ITEMS.

Simply drag items into the box. They will appear in the order you drop them. You may rearrange them once they are in the box.
When I want to know the answer to a question I have in an online course I...
Participants will drag items into a box labeled "In order, I answer questions I have in an online course by..."

- Working/discussing/studying with others in my class
- Searching the internet
- Solving it by myself
- Asking a tutor
- Asking a teacher
- Add any additional comments here. (Open text box for responses)

3. Please rank this randomized list of the most frequent responses in each category as identified by you and your peers in Round 1.

PLEASE CHOOSE YOUR TOP 5 in order of importance #1 most important #5 being the least important.

Simply drag items into the box. They will appear in the order you drop them. You may rearrange them once they are in the box.

The best way I learn in an online class is....

Participants will drag items into a box labeled "In order, the top 5 ways I prefer to learn in an online class."

- Watch YouTube videos related to the class
- Facebook
- Study
- At a library
- Watch a lecture
- Read the textbook/course materials
- Instagram
- Trying things myself
- Ask a friend/classmate
- Pay an online tutor
- Ask the teacher
- View course power points
- Participate in class discussions
- Complete course projects

Add any additional comments here. (Open text box for responses)

4. If you use Facebook for educational purposes, please explain how.

- Open text box for responses.

5. When I want to complete a project in my online college course I...

please CHOOSE UP TO 3

- want to figure out how to do the project by myself
- want to look at finished examples so I know how to do the project
- want WRITTEN instructions, which are very detailed
- want open ended projects that I can choose what to do
- want videos that show me how to do the project
- want to work with a partner
- want to work in a group

6. Thank you for completing this survey. Would you like to receive an Amazon gift card code?

- Yes, please!
- No, thank you.

If Yes, please! is selected skip to next question.

If No, thank you is selected skip to end of survey.

7. Amazon gift card code information

Please provide your nickname/pseudonym associated with this study. Please note that it must match the nickname/pseudonym given for study 1.

- Open text box for response.

Please provide the email address you would like your Amazon gift card code to come to.

- Open text box for response.

IF DIFFERENT from your Amazon gift card code email, please provide your STUDY EMAIL. Please note that this email must match your study email to receive the gift card.

Open text box for response.

Panel Nonacademic

Below you will find a randomized list of the most frequent responses in each category as identified by you and your peers in Round 1.

In this section you are asked to think about the way that you prefer to learn new skills, in informal, non school situations.

Thank you!

1. RANK the following list. # 1 is most important to you. YOU DO NOT NEED TO RANK THEM ALL only those you use.

Simply drag items into the box. They will appear in the order you drop them. You may rearrange them once they are in the box.

When I am not in school, my preferred way to learn a new skill is…

Participants will drag items into a box labeled "my preferred way to learn a new skill is"

Watch YouTube videos
Find information online, with detailed content that is easy to understand.
Search online
Take an online course
Study by myself
Watch someone do it
Have someone who knows how to do it teach me step by step
Listen to a podcast
Read short, online articles about what I want to learn
Figure it out by myself
Take a face to face course
Add any additional comments here. (Open text box for responses)

2. In this section you are asked to think about the way that you prefer to answer a question you have.

Thank you

RANK the following list. # 1 is most important to you. YOU DO NOT NEED TO USE THEM ALL.

Simply drag items into the box. They will appear in the order you drop them. You may rearrange them once they are in the box.

Participants will drag items into a box labeled "when I want to know an answer to a question I have I..."

Search Google
Search online
Ask in a forum
Ask in a Facebook discussion group
Look on YouTube
Ask a friend
Ask a relative
Ask an expert (teacher)
Add any additional comments here. (Open text box for responses)

3. In this section please think about the best place to learn something outside of school. The items below are a randomized list that you and your
Please rank these items with #1 being the best place and #5 being the least good place to learn something outside of school.
Below you will find a randomized list of the most frequent responses in each category as identified by you and your peers in Round 1.
PLEASE CHOOSE ONLY your top 5 ITEMS
Thank you!
Participants will drag items into a box labeled "5 best ways to learn a new skill"

- Google it (type it in)
- Use a free instruction/tutoring site such as Khan Academy
- Facebook
- Ask a friend/colleague
- Try to learn the new skill myself through trial and error
- Watch YouTube videos
- Use an app
- Listen to educational podcasts
- Consult a parent
- Read a book
- Watch lectures online

4. I learn best

- Working by myself
- Working with others

5. When I want to complete a project for something I want to learn I...
please CHOOSE UP TO 3

- want to figure out how to do the project by myself
- want to look at finished examples so I know how to do the project
- want WRITTEN instructions, which are very detailed
- want open ended projects that I can choose what to do
- want videos that show me how to do the project
- want to work with a partner
- want to work in a group

6. If you use Facebook to learn skills, how?

- Open text box for responses.

7. Do you prefer to

- Type in searches in Google
- Verbally ask Google/Siri to search for you
- There is no difference to me

8. Thank you for completing survey #2. Would you like to receive an Amazon gift card code?

- Yes, please!
- No, thank you.

If Yes, please! is selected skip to next question.
If No, thank you is selected skip to end of survey.
9. Amazon gift card code information
Please provide your nickname/pseudonym associated with this study. Please note that it must match the nickname/pseudonym given for study 1.

Open text box for response.

Please provide the email address you would like your Amazon gift card code to come to.

Open text box for response.

IF DIFFERENT from your Amazon gift card code email, please provide your STUDY EMAIL. Please note that this email must match your study email to receive the gift card.

Open text box for response.

APPENDIX J

ROUND 2 SURVEY EMAIL

Hello (name),

Thank you for your thoughts in Round 1. Welcome to Round 2! Your insights were quite valuable to me, and I appreciate your time.
Please complete the survey by time Mountain Standard Time on DATE.
Please follow the link HERE (hyperlink inserted to a Qualtrics survey).

If you have any questions or have any trouble with the link, please contact me right away at letha.mellman@unco.edu.
Thank you again for your support.

Best Wishes,
Letha Mellman

APPENDIX K

ROUND 2.5 SURVEY

Academic Panel

Below you will find a randomized list of the most frequent responses as identified by you and your peers in Round 2.

1. Please rank this randomized list. #1 is the MOST preferable to you. If IT IS NOT preferable TO YOU, DON'T ADD IT. YOU DO NOT NEED TO ADD ALL ITEMS

Simply drag items into the box. They will appear in the order you drop them. You may rearrange them once they are in the box.

When I'm learning something for an online course in school, my preferred way to learn is…

Participants will drag items into a box labeled "Ways I prefer to learn"

- rely on myself to create a plan, study outside of class time
- engaging in short, direct units
- discuss what I am learning with friends/classmates/experts
- search online for more information
- completing course materials (e.g. reading textbooks/materials, taking notes, listening to lectures from the teacher)
- Add any additional comments here. (open text box for responses)

2. Please rank this randomized list. #1 is the MOST preferable to you If you don't agree with an item, DO NOT add it. YOU DO NOT NEED TO USE ALL ITEMS.

Simply drag items into the box. They will appear in the order you drop them. You may rearrange them once they are in the box.

When I want to know the answer to a question I have in an online course I…

Participants will drag items into a box labeled "To answer questions I have in an online course I..."

- prefer working/discussing/studying with others in my class
- prefer searching the internet
- prefer to find the answer myself
- prefer asking an expert (e.g. teacher, tutor, friend, etc.)
- Add any additional comments here. (open text box for responses)

3. Please rank this randomized list. #1 most preferred. Simply drag items into the box. They will appear in the order you drop them. You may rearrange them once they are in the box.

The best way I learn in an online class is....Participants will drag items into a box labeled "In order, the ways I prefer to learn in an online class"

- watch online video (e.g., YouTube Videos)
- try to learn the new skill myself (read a digital book, listen to podcasts, apps, etc)
- ask an expert (e.g., the teacher, a friend, classmate, tutor, professional, etc.)
- completing course materials (e.g. reading textbooks/materials, taking notes, listening/watching lectures from the teacher, participate in online class discussion, complete course projects etc.)
- Add any additional comments here. (open text box for responses)

4. Please rank this randomized list. #1 is the MOST preferable to you If you don't agree with an item, DO NOT add it. YOU DO NOT NEED TO USE ALL ITEMS. Simply drag items into the box. They will appear in the order you drop them. You may rearrange them once they are in the box.

When I want to complete a project in my online college course I…

Participants will drag items into a box labeled "When I want to complete a project in my online college course I..."

want projects that I can choose what to do and learn the material by myself
want visual examples of finished examples
watch videos that show me how to do the project
want WRITTEN instructions, which are very detailed

5. Thank you for completing survey #2. Would you like to receive an Amazon gift card code?
Yes, please!
No, thank you.

If Yes, please! is selected skip to next question.
If No, thank you is selected skip to end of survey.

6. Amazon gift card code information

Please provide your nickname/pseudonym associated with this study. Please note that it must match the nickname/pseudonym given for study 1.
Open text box for response.

Please provide the email address you would like your Amazon gift card code to come to.
Open text box for response.

IF DIFFERENT from your Amazon gift card code email, please provide your STUDY EMAIL. Please note that this email must match your study email to receive the gift card.
Open text box for response.

Nonacademic Panel

1. Below you will find a randomized list of the most frequent responses in each category as identified by you and your peers in Round 2. In this section, you are asked to think about the way that you prefer to learn new skills, in informal, non-school situations.

Thank you!

Please RANK the following list. #1 is the MOST preferable to you. You DO NOT NEED TO RANK THEM ALL only those you use.

Simply drag items into the box. They will appear in the order you drop them. You may rearrange them once they are in the box.

When I am not in school, my preferred way to learn a new skill is

Participants will drag items into a box labeled “my preferred way to learn a new skill is”
watch someone do it (e.g., YouTube videos, step by step video, etc.)
find information online, with detailed content, that is easy to understand
engage with short, to the point content that I can view or read quickly
figure it out by myself (e.g., trial and error, study, listen to podcasts on the topic, read about it online, etc.)
Any other comments can be entered here. (open text box for responses)

2. In this section, you are asked to think about the way that you prefer to answer a question you have. RANK the following list. #1 is the MOST preferable to you, YOU DO NOT NEED TO USE THEM ALL. Simply drag items into the box. They will appear in the order you drop them. You may rearrange them once they are in the box.

Participants will drag items into a box labeled “When I want to know an answer to a question I have I...”
search online (e.g., google, websites)
ask in a social media group (e.g., forum, Facebook discussion group, Instagram, Twitter, etc.)
watch videos (e,g. YouTube, Tik Tok, documentaries etc.)
ask an expert (e.g. friend, relative, teacher, etc.)

Any other comments can be entered here. (open text box for responses)

3. In this section please think about the best way to learn something outside of school.
Please rank these items with #1 being the most preferred way learn something outside of school.
Below you will find a randomized list of the most frequent responses as identified by you and your peers in Round 2. Participants will drag items into a box labeled "Best way to learn a new skill is"

search online to find a resource (e.g., google, websites, a free instruction tutoring site such as Khan Academy)
ask on an online group (e.g. Facebook, Slack)
ask an expert (e.g. friend, relative, teacher, professional etc.)
try to learn the new skill myself (read a digital book, listen to podcasts, apps, etc)
watch online video (e.g., YouTube Videos)
Any other comments can be entered here. (open text box for responses)

4. Please rank these items with #1 being the most preferred way learn something outside of school. You do not need to choose all the items if you do not prefer them.
Below you will find a randomized list of the most frequent responses as identified by you and your peers in Round 2.
Participants will drag items into a box labeled "The most preferred way to learn something outside of school"

want projects that I can choose what to do and learn the material by myself
want visual examples of finished examples
want videos that show me how to do the project
want WRITTEN instructions, which are very detailed
Any other comments can be entered here. (open text box for responses)

5. Thank you for completing survey #2. Would you like to receive an Amazon gift card code?

Yes, please!
No, thank you.

If Yes, please! is selected skip to next question.
If No, thank you is selected skip to end of survey.

6. Amazon gift card code information
Please provide your nickname/pseudonym associated with this study. Please note that it must match the nickname/pseudonym given for study 1.

Open text box for response.

Please provide the email address you would like your Amazon gift card code to come to.

Open text box for response.

IF DIFFERENT from your Amazon gift card code email, please provide your STUDY EMAIL. Please note that this email must match your study email to receive the gift card.

Open text box for response.

APPENDIX L

ROUND 2.5 EMAIL

Welcome to Round 2.5!

This round we are narrowing down your online learning preferences.
Thank you for your continued support!

Please remember to enter your nickname and email associated with this study.
You will need to complete the survey by Wednesday, date and time Mountain Standard Time.

Follow this link to the Survey:
Link inserted here.
Or copy and paste the URL below into your internet browser:
Link inserted here.
Please contact me at letha.mellman@unco.edu if you have any concerns or issues with the survey.

Best Wishes,

Letha Mellman

APPENDIX M

ROUND 3 SURVEY

Academic Panel

Welcome to Round 3

Thank you for your participation and insights!

This round is going to ask you about what you want in online classes. You will also be asked to provide examples of what works or does not work for you. This round is expected to take 10-20 minutes of your time.

Below you will find, in no particular order, the top online learning preferences identified by you and your peers.

Please answer the following questions. Share examples of what you want in an online class, what as been successful or unsuccessful for you. You may also share any other information that would be helpful for teachers to successfully support you in online learning. If you would like to share pictures or anything that you cannot share here, please feel free to email me at Letha.Mellman@unco.edu

Be sure to share any additional comments, venting, frustrations and joys with me :) If you make comments specific to issues/successes you dealt with during COVID-19, please reference COVID-19.

Please think about how you prefer to learn in an online college setting while answering these questions. Your responses may help educators enhance the online learning experience.
In this survey, you were asked about how you learn when you were learning **for** school. Please follow the link to complete the survey Thank you!

1. What tools can online educators use to support you in completing course materials?
   Open text box for response.
2. What is an example of a successful online learning experience?
   Open text box for responses.
3. What can online educators do (what practices) to ensure that they are offering you support in your desire to rely on yourself during your online education?
   Open text box for responses.
4. What suggestions do you have for professors to give you the most successful opportunities to discuss what you are learning with friends/classmates/experts?
   Open text box for responses.
5. What can professors do to assist and support you as you find answers for yourself?
   Open text box for responses.
6. What advice do you have on how educators can set up a successful online course?
   Open text box for responses.
7. What, if anything, do you wish you could change about materials you complete in online classes?
   Open text box for responses.
8. What steps can online educators take to ensure that the videos they offer you are helpful?
   Open text box for responses.

9. What advice can you give to professors who are creating projects that give you choice and the ability to learn by yourself?

Open text box for responses.

10. What, if anything, would you like professors to know about WHY you search for answers online? If nothing, please respond, "none."

Open text box for responses

11. What, if anything, would you like professors to know about HOW you search for answer online?

If nothing, please respond, "none."

Open text box for responses.

12. Do you prefer to ask experts (e.g. friends, teachers, professionals, etc) questions

During class time

Outside of class

13. What, if anything, can professors do to help you connect with experts?

If nothing, please respond, "none."

Open text box for responses.

14. Do you have any additional frustrations, vents, comments, suggestions or examples on how educators can have successful online classes? This is your chance to share all your frustrations, and joys! This can include anything going on with the current change due to the COVID-19 as well. If nothing, please respond, "none".

Open text box for responses.

15. Tell me anything else about your online learning experience that you want to, or anything else you would like me to know about how you prefer to learn in online classes. :)

If nothing, please respond, "none".

Open text box for responses.

16. Thank you for completing survey #3. Would you like to receive an Amazon gift card code?

Yes, please!

No, thank you.

17. Amazon gift card code information

Please provide your nickname/pseudonym associated with this study. Please note that it MUST MATCH the nickname/pseudonym given for study 1, or YOU WILL NOT QUALIFY for the gift card.

Please provide the email address you would like your Amazon gift card code to come to.

Open text box for responses.

IF DIFFERENT from your Amazon gift card code email, please provide your STUDY EMAIL.

Open text box for responses.

Please note that this email MUST MATCH your study email to receive the gift card.

Open text box for responses.

Nonacademic

Welcome to Round 3

Thank you for your participation and insights!

This round is going to ask you about what you want in online learning situations. You will also be asked to provide examples of what works or does not work for you. This round is expected to take 10-20 minutes of your time.

Below you will find, in no particular order, the top online learning preferences identified by you and your peers. Please answer the following questions. Share examples of what you want in an online learning experience, what as been successful or unsuccessful for you. You may also share any other information that would be helpful for successful in online learning. If you would like to share pictures or anything that you can not share here, please feel free to email me at Letha.Mellman@unco.edu

Be sure to share any additional comments, venting, frustrations and joys with me :) If you make comments specific to online learning issues/successes you dealt with during COVID-19, please reference COVID-19.

Please think about how you prefer to learn in an informal/ non-school online setting while answering these questions. Your responses may help enhance the online learning experience.

1. How do you decide which social media group (e.g., forum, Facebook discussion group, Instagram, Twitter, etc.) to ask questions in?
    Open text box for responses.
2. What is an example of a successful online learning experience?
    Open text box for responses.
3. What do you do (what practices) to help you find short, to the point content that you can view or read quickly?
    Open text box for responses.
4. What suggestions would you give to someone who wants to learn a new skill online, by themselves?
    Open text box for responses.
5. What do you look for in a video that shows you how to complete a new skill (e.g., YouTube videos, step by step video, etc.)?
    Open text box for responses.
6. What online resources do you use to figure out new skills by yourself?
    Open text box for responses.
7. What, if anything, do you wish you could change about materials you use to learn a new skill online?
    Open text box for responses.
8. What steps can an online submitter take to ensure that the videos they offer you are helpful?
    Open text box for responses.
9. What advice can you give to people who are creating online projects?
    Open text box for responses.
10. What, if anything, would you like people to know about how you search for an answer online? If nothing, please respond, "none."
    Open text box for responses.
11. What, if anything, would you like researchers to know about WHY you search for answers online? If nothing, please respond, "none."
    Open text box for responses.
13. What makes a video that shows/teaches you how to do a project successful?
    Open text box for responses.
14. How do you find experts (e.g. friend, relative, teacher, professional etc.) to connect with?
    Open text box for responses.

15. What makes written instructions helpful for you?

Open text box for responses.

16. Do you have any additional comments, suggestions or examples for online learning? This is your chance to share all your frustrations, and joys! This can include anything going on with the current change due to the COVID-19 as well.

If nothing, please respond, "none."

Open text box for responses.

17. Tell me anything else about your online learning experience that you want to, or anything else you would like me to know about how you prefer to learn in online spaces. :)

If nothing, please respond, "none."

Open text box for responses.

18. Thank you for completing survey #3.

Would you like to receive an Amazon gift card code?

Yes, please!

No, thank you

19. Amazon gift card code information

Please provide your nickname/pseudonym associated with this study. Please note that it MUST MATCH the nickname/pseudonym given for study 1, or YOU WILL NOT QUALIFY for the gift card.

Please provide the email address you would like your Amazon gift card code to come to.

Open Text box for response.

IF DIFFERENT from your Amazon gift card code email, please provide your STUDY EMAIL.

Open Text box for response.

Please note that this email MUST MATCH your study email to receive the gift card.

Open Text box for response.

APPENDIX N

ROUND 3 EMAIL

Hello (name),

Thank you for your participation and insights thus far. Welcome to Round 3! Your insights were quite valuable to me, and I appreciate your time.
Please complete the survey by 11 PM Mountain Standard Time on Sunday, DATE.
Please follow the link HERE (hyperlink inserted to a Qualtrics survey).

If you have any questions or have any trouble with the link, please contact me right away at letha.mellman@unco.edu.
Thank you again for your support.

Best Wishes,
Letha Mellman

APPENDIX O

MEMBER CHECKING EMAIL

Academic

Thank you for your participation and insights. I believe that you have shared a lot of valuable information on how to improve online education. This email is the last email in the study. It briefly will share with you the findings from your part of the study. This is your chance to comment back, and let me know if you feel I interpreted and represent you well, or if you think I am way off base. If I do not hear back from you in a week (Wednesday, Sept 2, 2020) I will interpret the non-response as you agree with what I present you in this email. At that time, I will begin writing up the final results of the study.

Thank you again for your time and insights, it has improved my teaching philosophy and enriched my educational experience. Here's to our chance to improve our world!
Letha Mellman

Please note that while individual comments, thoughts, and insights are taken into consideration, this type of study (an e-Delphi) suggests 80% consensus for generalizability and agreement (Lynn, 1986).

For those who responded "no, none, no comment" etc., I interpret that to mean that you are fine with the way things are now, and you do not have any thoughts on how to improve.
The way those in this study prefer to learn in an online academic setting:

1. Completing course materials ……...84 %
2. Relying on self…….80%
   -Good tools for educators to use in assisting you with this preferred method are:
   -Online videos and software for video editing
   -Social software
   -Offering you additional support
   -Connect with each student and continue to build a relationship with each student.
   -Have clear set dates for items due and put it on the calendar
   -Clear and detailed instructions/materials

When those in this study want to know the answer to a question in an online course:

1. Prefer to search the internet ……....84%
   It is fast, convenient and when you can't find the answer in class, you believe you can find it online
2. Prefer working/discussing/studying with others in the class…..80%
   While you feel that discussion boards are currently acceptable, you would like to see a new way of discussing with peers. Something more interactive and motivational
   . Many of you feel that discussion boards are fine the way they are.

The Best way to learn in an online class is:

1. Complete the course materials……100%
2. Ask an expert……..84%
   -Networks (FB discussion groups, forums, social media) are an important part of your educational experience
   -Professors should set up opportunities to meet experts

When desiring to complete a project in online classes:

1. Want projects that allow choice, and learn the material by self……84%

Overall, successful online classes would have (feel that you are not getting) the following:

1. In which you complete tasks or projects
2. Instruction is detailed and set out at the beginning of class
3. More detail and clarity
4. Offer choice
5. Educators who are prepared, provide timely feedback and check in on you
6. Where you can build a relationship with the educator, at the very least be able to connect with them
7. Less reading, especially reading online articles, books, etc
8. Short bits of information (video, text, digital media, outside resources, etc)
9. Teachers who keep it real, are current and enthusiastic
10. Want the teacher to guide you, but not tell you
11. Set office hours, and open time to Zoom, or otherwise talk with educator
12. Classroom traditions- I interpret this to mean that each educator may set up unique traditions and then they need to continue them
13. Interactive learning experiences
14. Real-time updates
15. More teacher involvement, more checking in
16. Currently, your needs are not being explored or met, you want teachers who are willing to research this and meet your needs
17. Implement videos, which can be reviewed as often as desired
    -Constantly updated and reviewed
    -Weekly videos created by the educator with relevant information

Nonacademic

Thank you for your participation and insights. I believe that you have shared a lot of valuable information on how to improve online education. This email is the last email in the study. It briefly will share with you the findings from your part of the study. This is your chance to comment back, and let me know if you feel I interpreted and represent you well, or if you think I am way off base. If I do not hear back from you in a week (Wednesday, Sept 2, 2020) I will interpret the non-response as you agree with what I present you in this email. At that time, I will begin writing up the final results of the study.

Thank you again for your time and insights, it has improved my teaching philosophy and enriched my educational experience. Here's to our chance to improve our world!
Letha Mellman

Please note that while individual comments, thoughts and insights are taken into consideration, this type of study (an e-Delphi) suggests 80% consensus for generalizability and agreement.

For those who responded "no, none, no comment" etc., I interpret that to mean that you are fine with the way things are now, and you do not have any thoughts on how to improve.

The way those in this study prefer to learn a new skill in a NON school setting:

1. Engage with short, to the point content online……...…...83 %
2. Watch someone do it online…..……..…….90%
3. Find detailed information online…….……...…….90%
4. Figure out how to the skill by myself…….…….93%

-I learn a new skill because I am interested in it
-I feel a sense of achievement when I master a new skill
-I learn new skills to enrich my daily life

When you want to know an answer to a question:

1. Ask an online social media (forum, Facebook etc.) group…….86%
   -I prefer Facebook discussion groups, ask google, friends, for a good social media group to join, or I search for information or experts about my question
2. Watch an online video (e.g. YouTube)..……..…...90%
   -Best ones have a detailed explanation
   -Are short
   -Interesting
3. Ask an Expert (e.g. friend, relative, teacher, professional, etc.).....90%
4. Search online……..100%
   -Search keywords
   -Sift through results to find quality instruction
   -A way to find information quickly
   -Is convenient

The Best way to learn a new skill:

1. Ask an online social media (forum, Facebook etc) group…….…….....83%
   -Learn from the success/failure of others
2. Watch online videos……....83%
   -Learn from the success/failure of others
   -Watch it over and over until I understand it
3. Ask an expert……...……...90%
   -Experts are found by
   -Asking friends/teachers/relative
   -Major websites
   -Online searches
   -Social media
4. Learn it by myself…….93%
   -Be persistent until I get an answer
   -Set goals
5. Search online……...…….97%
   -The goal is to gain knowledge
   -Information is quick and offers a variety of learning options
   -Searches need to be filtered for quality

When I want to learn a new skill, I prefer:

1. Projects that allow choice, and learn the material by self……...……90%
   -Try out the new skill
   - Patience
2. Online visual examples of finished projects…..……....90%
3. Online videos that show me how to the project…….90%
   -Videos should be
   -Created by professionals
   -Step by step
   -Explain things well

-Narrated and demonstrated interesting
-Relevant
-Repeatable

4. Very detailed written instructions, that I find online……...93%
   -Clear, easy to understand
   -Used with videos
   -Keywords are important
   -Easy to find
   -Invite action
   -Explanation highlights key points
   -Can offer very detailed instruction, which is easy to understand
   -Should include pictures

Overall, successfully learning a new skill involves the following:

1. Online videos
2. Gaining knowledge and applying it in your daily life
3. Fast answers
4. Watch someone do it
5. Detailed explanations
6. Written instructions with the video
7. Talk about it in a social media group
8. There is no end to learning
9. There is no limit to where or when you can learn
10. Persistence
11. Time management
12. Accessible any time
13. Repeatable videos
14. Updated constantly
15. simple, clear instructions
16. Being shown, not just told

You wish the online content

1. was more detailed
2. clearer
3. had richer content
4. Had better quality control

APPENDIX P

LIST OF COLLEGES ACADEMIC PARTICIPANTS ATTENDED

Baylor University
Blue Mountain Community College
Boston College
Brigham Young University
Brigham Young University Hawaii
Brigham Young University Idaho
Brown University
Duke University
Florida State University
Georgia Institute of Technology
Harvard University
Lawrence Woodmere Academy
Michigan state university
New York University
Northeastern Illinois University
Northwestern Connecticut Community College
Rutgers Preparatory School
Stockbridge Senior High School
Tennessee Tech University
The Ohio State University
The University of Iowa
Transylvania University
University of Arkansas at Little Rock
University of California, Berkeley
University of Hawaii (Manoa)
University of Illinois at Chicago
University of Illinois at Urbana-Champaign
University of Michigan
University of Minnesota Twin Cities
University of Missouri
University of Richmond
University of Rochester
University of South Carolina
University of South Florida
University of Wisconsin–Madison
Wake Forest University
Western Michigan University
Yale University

APPENDIX Q

LIST OF PARTICIPANT STATES OF RESIDENCY

Alabama
Arkansas
California
Colorado
Connecticut
Florida
Georgia
Hawaii
Iowa
Illinois
Indiana
Kansas
Kentucky
Maryland
Michigan
Minnesota
Missouri
Montana
North Carolina
North Dakota
New Hampshire
New Jersey
New Mexico
Nevada
New York
Ohio
Oklahoma
Oregon
Pennsylvania
South Carolina
Tennessee
Texas
Utah
Virginia
Washington
West Virginia
Wyoming

APPENDIX R

QUANTITATIVE RESULTS ROUND 2.5

Academic panel results

Preferred Way to Learn in an Online College Course Academic Panel

Item	Item Description	Frequency (n =23)	Average Score	Rank	% Consensus
1✓	Completing Course Materials	20	67.96	1	89.96
4	Rely on Myself to Create a Plan	18	58.64	2	78.26
2	Discuss What I am Learning With Others	16	50.6	3	69.56
3	Engage in Short Direct Unit	11	43.64	4	47.82
5	Search Online for More Information	13	40.32	5	56.52

Note. ✓Item reached consensus (at least 80% agreement)

Preferred Way to Answer a Question in an Online College Course Academic Panel

Item	Item Description	Frequency (n=23)	Average Score	Rank	% Consensus
4✓	Work/Discuss With Others in Class	20	63.92	1	82.61
3✓	Search Internet	15	60.52	2	86.96
1	Find Answer by Self	18	58.08	3	73.91
2	Ask Expert	16	53.72	4	73.91

Note. ✓Item reached consensus (at least 80% agreement)

Best Way to Learn in an Online College Course Academic Panel

Item	Item Description	Frequency (*n*=23)	Average Score	Rank	% Consensus
2✓	Complete Course Materials	15	81.52	1	100
1✓	Ask Expert	14	65.2	2	82.61
4	Try to Learn New Skill by Self	13	54.16	3	78.26
3	Watch Online Video	14	46.84	4	60.83

Note. ✓Item reached consensus (at least 80% agreement)

Preferred Way to Complete a Project in an Online College Course Academic Panel

Item	Item Description	Frequency (*n*=23)	Average Score	Rank	% Consensus
1✓	Projects That I Can Choose What to do and Learn the Material by Myself	13	75.57	1	86.96
4	Videos That Show me How to do the Project	12	57	2	65.21
3	Visual Examples of Finished Projects	12	55.74	3	73.91
2	Written Instructions Which are Very Detailed	12	48.83	4	60.87

Note. ✓Item reached consensus (at least 80% agreement)

Nonacademic panel results

Best Ways to Learn Nonacademic Panel

Item	Item Description	Frequency (*n*=29)	Average Score	Rank	% Consensus
1✓	Search Online to Find a Resource	28	74.55	1	96.55
5✓	Try to Learn a New Skill by Self	27	72.28	2	93.10
4✓	Ask Expert	26	69.21	3	89.66
2✓	Watch Online Video	24	65.31	4	82.76
3✓	Ask in Social Media Group	24	63.79	5	82.76

Note. ✓Item reached consensus (at least 80% agreement)

When Gen Z Wants to Answer a Question Nonacademic Panel

Item	Item Description	Frequency (*n*=29)	Average Score	Rank	% Consensus
1✓	Search Online	29	81.21	1	100
2✓	Watch Video	26	70.97	2	86.21
3✓	Ask Expert	26	70.41	3	89.66
4✓	Ask in Social Media Group	25	67.62	4	89.66

Note. ✓Item reached consensus (at least 80% agreement)

Best Way to Learn a New Skill Nonacademic Panel

Item	Item Description	Frequency (*n*=29)	Garrett Value	Total Score	Average Score	Rank	% Consensus
1✓	Search For Online Resource, Which is Detailed	28	90	1742	60.07	1	96.55
4✓	Try to Learn it Myself	27	73	1676	57.79	2	93.10
3✓	Ask an Expert	26	77	1657	57.14	3	89.66
2✓	Ask in an Online Social Media Group	24	82	1430	49.31	4	82.76

Note. ✓Item reached consensus (at least 80% agreement)

Most Preferred Way to Learn Outside of School Nonacademic Panel

Item	Item Description	Frequency (*n*=29)	Average Score	Rank	% Consensus
4✓	Very Detailed, Written Instructions	27	76.00	1	93.10
2✓	Projects that I can Choose What to do and Learn Material by Self	26	74.14	2	89.66
3✓	Visual Examples of Finished Projects	26	71.24	3	89.66
1✓	Videos That Show me How to do the Project	26	71.17	4	89.66

Note. ✓Item reached consensus (at least 80% agreement).