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Heritage Walking:
a Popular Geopolitics Study of the *AYA* Application and its role in
Nation-Building and Heritage as a Motivational Factor for Walking

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Heritage Walking:
a Popular Geopolitics Study of the *AYA* Application and its role in Nation-Building and Heritage
as a Motivational Factor for Walking

a Thesis Approved for the
Department of Geography and Environmental Sustainability

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Abstract

The *AYA* application (hereafter, app) released by the Chickasaw Nation in 2018, is a fitness app with a gamified rewards system built around the history and culture of the Chickasaw Nation. The Chickasaw Nation as a tribal nation within the US is vulnerable to being assimilated into American culture. Therefore, looking at *AYA* as a nation-building tool to identify efforts by the Chickasaw government to instill their identity into citizens, is vital to help other endangered cultures. The citizenry's own desire to learn about their heritage through a rewards system is leveraged by the developers by encouraging physical exertion in the form of walking to achieve progression in the app. However, the app is using an unproven method to reach its goals. Prior walking apps have used history as a motivator but not in tandem with a user's own heritage sculpted by their government. Government applications are blunter in their approach to nation building, as they create apps purely focused on civic education when related to nation building. It is the combination of walking applications and nation building in *AYA* that makes it a unique application to test its approach towards fitness through heritage as a motivation for both. A survey was conducted to test users' feelings towards the Chickasaw Nation and a change in their walking habits. The results show an inconclusive but slight positive correlation between the two. The nation-building aspects of *AYA* were examined using qualitative coding of the app's content to discover the main themes used in crafting a heritage for the Chickasaw people to practice. This work highlights the effectiveness of new technologies in promoting national identity and fitness and how they are received when melded together.

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Chapter 1: Introduction

From the terrific treks to the terrible trails of history, from Indian removal trails to space walks, such historic routes create a national consciousness ingrained in cultures. With the passage of time and incorporation into historical accounts, they become a part of the people's heritage and national identity. These travels were made of necessity to find new resources or forced through external pressures which shaped the people that went on them, justifying their veneration in a cultural canon. Of these journeys, the removal of the southeastern tribes of the US to Oklahoma is remembered for the transformation of the tribes before and after this tragedy. The Chickasaw nation has chosen to remember this in a ritualized form through the *AYA* (which means “journey” in the Chickasaw language) application (hereafter app). Developed by the Chickasaw Nation, *AYA* is a walking app with unique paths that each equal 444 miles, the distance from the Chickasaw homelands in Tupelo, Mississippi, to Tishomingo, Oklahoma (Cooke and Parker 2021). Through the application, history is communicated to the Chickasaw citizenry to help build the nation by sharing history and culture to instill heritage into the community.

The *AYA* app does this primarily through storytelling with the initial intention of replicating the oral tradition of the tribe. A story is told to a user through a walking companion, a virtual assistant conveying information to the user about the trail they are on. The assistants are mostly based on fictitious people portrayed to be authentic to the time period of the trail one is on. These trails, however, are historic paths shown in the app through a map that shows the paths' true location and provides many details about the tribe or the individual that went on the path (Cooke and Parker 2021). Through this, the tribe educates its citizenry about the tribe's history and creates a shared experience between those of the present and those of the past by

going down a similar path of their ancestors with other members of the tribe using *AYA* to bring them closer together.

The goals of the *AYA* app are extensive, with gamification providing a framework for the app developers to create a system that will bring people back to the app to achieve the next milestone in reaching those goals. These aspects serve a dual purpose as the information achieved at each milestone is the only incentive provided to get tribal members to be more physically active. As the Chickasaw Nation faces multiple health challenges due to its citizens' unhealthy lifestyles, the tribal government seeks to promote changes in lifestyles to improve the app users' general health.



Figure 1. *AYA* Promotional Banner in a Chickasaw Health Clinic

As a result, the app has been promoted by the Chickasaw Nation through multiple approaches, ranging from mail promotions, newspaper and magazine coverage and advertisements at health facilities (see Figure 1). The app tracks the steps of its users to mark where they would be if they were on the historic trail, relative to the 444-mile sum. Thus, it is primarily a health app that gamifies physical activity by offering information about the tribe to motivate members to keep walking.

I have chosen to study the *AYA* app to evaluate the effects of gamification on heritage as reward items for a health app. One *AYA* staffer describes the app as a tool which “empowers users to embark on a virtual journey to the Chickasaw Homeland while unlocking content about

Chickasaw culture, language and history” (Johnson, 2023 p. 31). It is the content which makes the *AYA* app unique among health apps, as it uses content about one’s own nation to motivate exercise. Additionally, the content is designed by the Chickasaw Nation’s tribal government, thus it is a prime example of how a nation wishes to represent itself towards its people. This has prompted questions such as ‘will people be motivated to exercise by their heritage, wanting to learn about this heritage’ and “what national identity is constructed by *AYA* for its citizens to learn”? *AYA* is a conduit to creating national identity via its association with the nation-state adding this association to any of the content within the app and given value through the app’s promotion. By examining what the Chickasaw Nation decides to include in the app we can note what aspects of its past it wishes to incorporate into its culture cannon as part of a nation-building process in forging its own identity.

Chapter 2: Literature Review

The research questions I address are informed by two distinct and yet complementary literatures. The first is popular geopolitics and the other is game studies. As the thesis looks at both the nation-building processes through gamification of content as well as the gamification of exercise, this literature review will position the thesis research in both fields.

2.1 Popular Geopolitics

The 1990s saw changes in geography's approaches to geopolitics and international relations. Much of the previous work was based on realist assumptions about power, thus researchers held that states were enabled and constrained by absolute and relative location, access to resources, the size of populations, among other objective and measurable attributes. The impact of Michel Foucault's writings in concert with the cultural turn seen across geography and international relations led to questions about the power of texts and representations in geopolitics, specifically the practices that comprised knowledge and understandings of specific logics of geopolitics Toal (1996). Realist conceptualizations did not recede from view, but scholars broadened the scope of what could be seen as geopolitical, which became the core of what would become known as critical geopolitics.

In light of Foucault's writings, Toal (1996) conceived of three types of geopolitical practices. The first was formal geopolitics, the realm of thinkers and statesmen that provided visions for states, in concert with today's think tanks and academics trying to shape the actions of states. The second area was practical geopolitics, the implementation of formal geopolitics and management of relations between states (e.g., US Department of Defense, US State Department, various Ministries of Foreign Affairs.) The final one was popular geopolitics, the arena where the ideas of formal geopolitics and the actions of practical geopolitics are conveyed

to domestic and international audiences through incorporation in artifacts of popular culture (Toal 1996, p.72). These can be either supportive or critical of ideas and actions of the other types of geopolitics through these artifacts of popular culture.

Popular geopolitics exploded in the early 2000s and has spawned research into a variety of media and cultural forms such as *Readers' Digest* (Sharp, 1993), *Captain America* comic books (Dittmer, 2007), political cartoons (Moore and Purcell, 2021, Dodds, 1996) James Bond Films (Dodds, 2003, Dodds and Funnell, 2018), American late-night comedy (Purcell, et al., 2016) , and video games (Bos, 2016.) Much of this work has explored the representations of key components of national identity and the definition of the other through popular culture, specifically the representation of tropes and stereotypes that are often used to frame a group or issue. For my purposes, it is the emphasis on games that my research contributes to. As film and television project specific world views that are often created with the approval of the state (See U.S. Department of Defense support for the production of both *Top Gun* movies (Löfflmann 2013)), apps such as *AYA* do as well.

2.1.1 Games in Geopolitics

Games are a neglected part of the study of popular geopolitics as state-centered views have been the dominant view in the field and games are not seen to be advancing overt policy goals of the state. The hegemony of state studies of the field has been criticized by critical scholars in postcolonialism, poststructuralism, feminism, and Marxian analyses for ignoring other actors, issues, forces, and cultural items in geopolitics (Hirst 2022). Games ranking towards the bottom of the most common topics of cultural studies research is a surprise due to recreational gaming being the most popular form of entertainment globally resulting in the 'ludic century' (Hirst 2022). Studies in gaming and simulation began in earnest with international

relations studies involvement in the 1950s and 60s; used by the U.S. Department of Defense to teach global politics at universities. Simulations of global politics based on economic modelling, game theory, and quantitative methods, became increasingly popular due to their automation on computers, allowing for controlled and deductive scenarios (Hirst, A 2022). Games and simulations have since grown into private forms of entertainment and have become a cultural phenomenon to study in popular geopolitics.

2.1.2 Civic Games

Civic studies is an interdisciplinary field emerging from the social sciences to study the governing policy of states. In civic studies the digital turn has sparked new terms like ‘Digital Democracy’, or ‘e-democracy’ being coined to describe what Tseng (2022) defines as “the array of information and communication technologies (ICT) for the purpose of enhancing political democracy or the participation of citizens in democratic communications” (Tseng 2022). The early development of these ideas of a digital democracy was dominated by the (techno-optimist) idea that the Habermasian’ public sphere could be reinvigorated by digital space (Tseng 2022). For gamification this means an application of civic education in a game that allows for social elements to influence the public discussion and opinions in the digital public square (Mwengenmeir 2014). E-democracy can thus be found in any digital realm that allows for ICT including gamified applications. This increases the reach of governmental actors to influence the citizenry of the state.

Optimism for how digital games contribute to civic learning abounds from scholars, educators, and game designers. Raphael et al. (2015) helps define civic learning games as “when the players develop knowledge, skills, and dispositions that are then applied to the public sphere” (Raphael et al. 2015). However, Raphael et al. (2015) doubts their potential, arguing there are

three main barriers to advancing games' potential for civic education: "the current practices of formal schooling, a dearth of evidence about what kinds of games best inspire learning about public life, and divergent paradigms of civic engagement" (Raphael et al. 2015, p.199). Some evidence gathered by Toda shows the traditional pedagogy of schools may perform better than digital pedagogies, casting doubt on the potential of civic education (Toda et al. 2018). On the contrary, Kahne, et al. gives specific examples with gamified civic education's promise to engage with American teenagers. Finding a significant relationship between teens who play civic games and the teens' "real-world" civic engagement (Kahne et al. 2008: Raphael et al. 2015, p.201). Civic games encompass state management titles such as the *Civilization*, *Victoria*, and *Europa Universalis* series and overt nation-building apps like *Haki2* and *Your Excellency* (Raphael et al. 2015 p.201: Fisher 2020, p.1). This study shows an engagement with teens already engaged with civic gaming which is rather limiting with less than 10% of the sample population (Raphael et al. 2015). Thus, those already engaged in the public sphere may already be playing or attracted to play civic games. Further research is needed to draw any conclusions in either case.

To solve the low levels of civic engagement with younger generations Fisher (2020) touts a "focus on creating games with civic content and facilitating exposure to civic gaming experiences" (Fisher 2020). Fishers' belief is rooted in Pew's 2008 Teens, Video Games and Civic Survey, concluding there was a connection between civic engagement, interest, and political activity with civic gaming experiences in the United States (Fisher 2020). The ability for those not interested in civics to be invested in civic games is thought to be high by Barthel (2013) because "the ways the youth conceptualize civic engagement also lends itself to a less traditional, more 'fun' media format" such as campaigning and state administration (Barthel

2013: Fisher 2020). However, Bennett (2007) disagrees as digital media is used for entertainment and social relations by the youth, thus they will not associate digital media with the public sphere or civic world (Bennett 2007: Fisher 2020). Bennett is supported by Hassan (2017) who discusses how civic games intended to facilitate civic engagement have adverse effects because the impersonal elements of the games used de-emphasized human interaction (Hassan 2017: Fisher 2020). A contributing factor towards the disinterest in these civic educational games are troughs of facts and civic skills, not letting players engage and reflect upon these ideas with their own choices and within their public sphere (Raphael et al. 2015). The games for civic learning henceforth hit roadblocks in gaining broad appeal and producing citizens who will leave the game for a podium.

Gamification's application to solving low motivation, boredom, and distrust has made it a prime tool for governments to use for democratic participation such as discussions in the public sphere of social issues in Nigeria and Kenya (Fisher 2020), facilitating digital democracies with town proposals in *Decide Madrid* or public consultation in *vTaiwan* (Tseng 2022), and participatory budgeting in Canada and Argentina (Lerner, 2014) (Tseng 2022). A trend in these studies is a focus on established democracies over emerging democracies, due to the time needed for game production (Fisher 2020). The cases of Nigeria and Kenya saw Fisher (2020) investigate how civic learning games in developing democracies perform in their goals to facilitate civic engagement and learning. Fisher's work was conducted to see the growth of these applications in the global south because of the lack of studies due to a historic lack of game production in the region (Fisher 2020).

The lack of game production in the global south is changing as digital games help solve several issues facing nations in the global south because telecommunication infrastructure is

growing at a faster rate than other infrastructure needed for civic learning. Digital games overcome the cost of transportation of trainees, students, and educators and construction to places of learning that impede the implementation and growth of civic programming in poorer nations (Fisher 2020). They help disseminate through time-space compression (the shrinking of time as a resource over space) to populations geographically dispersed and demographically imbalanced (Fisher 2020: ScienceDirect). This has allowed for the growth of a new gaming industry in Africa by Africans to more closely link civic participants with game development (Fisher 2020). Civic games thus provide a solution for nations with diasporas or limited physical resources to reach its citizens to engage them in the state structure.

The results of the Fisher study (2020) saw governments able to create better digital message delivery through the infrastructure of the game networks. Overcoming the challenges of transforming the consuming constituency of games without their influence or control by developing their own games locally in Nigeria. However, these games only found “players actively engaged with the puzzle portion of their game, they tended to bypass the quiz questions, which made up the core education content” (Fisher 2020, p.1320). This finding made it hard for researchers to establish any link between playing the game and any educational, civic, or behavioral outcome (Fisher 2020).

2.1.3 Citizenship

Citizenship is an aspect of civic learning, teaching what it means to be a citizen of a country, especially teaching someone how to be an active citizen. Lance Bennett (2008) outlines the traditional view of a “dutiful citizen”, who learns from their family, school, and mainstream media to participate in civic actions, partaking in volunteer work, and voting in civic elections. However, Bennett notes an emerging type of citizen among the youth, the “actualizing citizen”

who practices personal politics less focused on influencing the state but preferring community service and social movements targeting smaller institutions. The actions of the “actualizing citizens” often manifest in boycotts, consumer preferences, and lifestyle choices to adhere to their political agitation originating from or spreading to online community discussion, even around games (Bennett 2008; Raphael et al. 2015). Game developers are confronted with the decision of which type of citizenship to teach younger populations, the ‘dutiful citizen’ that is trusting of social institutions and mainstream sources is appealing to governments seeking trust. However, the actualizing citizen approach is likely more receptive to the less engaged youth who spend time playing games and serves as a tool to change lifestyles to serve government interests.

The games thought to best teach citizenship are games of structure and ethics because they create moral decisions for peoples to decide what actions to undertake reflecting participation in public life (Raphael et al. 2015). Within this structure, people are limited to certain actions, helping inform what are their correct behaviors in the public sphere.

In creating a culture of citizenship, games with social elements help tie together other citizens to create the cloth of a citizenry. Through competition in high forms of social play in games (such as the potlatch ritual), culture and play are connected through the comradeship between players (Ruckenstein 1991). Civilizations have bonded over games and fought each other in war, which itself was given a game structure through chivalric rules of war actualizing into international law (Ruckenstein 1991). It is from the ‘game’ of war that cultural ideas of chivalry spread into other domains and become markers of a civilization, such as stickball transcending a peaceful resolution in the cultures of the eastern woodlands and became a social game (Ruckenstein 1991). Games help attach ideas to themselves through a “cultural connection”, when external ideas and concepts to the user are attached to a cultural product

(Bogost 2011, Ch.18). The cultural connection acclimatizes the player to contexts away from it where these ideas are used (Bogost 2011, Ch.18). Civic games can attach ideas of citizenship through the cultural connection, encouraging lifestyle changes away from the game. Vice versa, other cultural touchstones may remind the player of the civic elements or a duty towards a state, whether it is to canvass for a local politician, recycle or biking to work.

2.1.4 Banal Nationalism and Games

Banal nationalism is the concept of everyday representations of a nation, with key attention brought to the mundane manifestation of a nation by Michael Billig's book *Banal Nationalism* (1995) (Michael Billig 2023). Billig steered nationalism studies into a constructivist turn with a focus on how social ideas of national symbols are constructed and reproduced by a state and population (Antonsich 2016; Michael Billig 2023). This challenges the realist view of a methodological nationalism determining natural nations of the world by arguing nations are instead constructed by the state and population. Antonsich (2016) claims studies of banal nationalism can lean into the naturalist view of methodological nationalism by overlooking human agency for material representations of a nation; a claim Billig's rejects (Antonsich 2016). These material representations of nationalism are only considered banal if taken for granted, which does not invoke the same human agency as hot nationalism such as vandalism of English signage by Welsh nationalists (Adams 2017). Muñoz notes "Given the fact that the growing popularity of video games coincides with the surge of research into banal and everyday forms of nationalism, it is surprising that there are rather few works that look into the medium using these frameworks" (Muñoz 2022). Video games reproduce the banal aspects of the real world and even provide examples of hot nationalism emerging through multiple platforms of play. Video games

thusly serve as a way for nationalism to be repackaged into a banal form to create cultural education for its users.

2.1.5 Creating Culture and Control

Gamification as a rewards system is used to alter the behavior of people to create culture. Take for example Amsterdam's Schiphol airport using stationary bicycles to charge a user's electronic devices, providing an external motivation to share a device for exercise (Butgereit and Martinus 2017). These external motivators, as Butgereit and Martinus call them, create motivation to exercise through the reward systems of gamified programs, when implemented well creates a big enough drive to exercise beyond the health aspects. These external motivators vary from entertainment of the Stockholm's Odenplan metro stairway playing notes like a keyboard when walked on, to Moscow's subway system giving free rides for people who complete the "squat a 30, ride for free" program (Butgereit and Martinus 2017). External motivators in these examples are used to create a culture of physical activity to combat growing obesity rate in these countries. Gamification utilizes motivators such as these, to enhance the progression system to create more motivation to finish what a user may have started.

Logging and keeping data for gamification systems on a population has its critics for creating not only cultures for improvement but surveillance cultures. An example of this phenomenon, Tulloch and Randell-Moon (2018) use "the Swedish National Society for Road Safety implementation of a "speed camera lottery", where drivers who drive under the speed limit are entered into a lottery to win from the pool of speeding fines" as a marketable guise for further surveillance (Tulloch and Randell-Moon 2018). They use the term "control societies" to describe a norm of governance where subjects are continuously surveilled and quantified through technologies developed under late capitalism (Tulloch and Randell-Moon 2018). These

technologies are even marketed by late capitalism to individuals to monitor their own health in applications like *Fitbit* or what academics call “quantified selfers” because they quantify data about oneself (Cooke and Parker 2021). Other technologies furthering surveillance include almost all forms of gamification and video games because they monitor input from players as an interactive medium; with public logging of this information creating motivating competition through scoreboards or to improve their own performance (Tulloch and Randell-Moon 2018). These ideas of continual surveillance run counter to Foucault’s understanding of governance as disciplinary to instruct model behavior, they instead offer a reward at the price of surveillance (Tulloch and Randell-Moon 2018). Governance in the framework of gamification learns towards “control societies” to monitor the action of not only those bad actors but good actors to reward them due to its feedback nature.

2.1.6 Summary of Popular Geopolitics and State Use of Gamification

The embrace of popular culture as a legitimate focus for research has opened a space for the study of games and their role in reproducing aspects of citizenship, national identity and even the ability of the state to motivate changes in behaviors through gamification. The gamification of Chickasaw history and heritage in the *AYA* app clearly represents the state’s efforts to bring those who likely identify as tribal citizens into state efforts to embrace more deeply their Chickasaw heritage and at the same time help achieve the goal of Chickasaw government, that of increasing physical activity. Transforming heritage through gamification does not necessarily render the heritage banal. In fact, if a user would seek out an exercise app that is firmly rooted in the culture and heritage of the user it is a very active effort, and yet it is through the interaction that such identity could be considered banal through gamification.

The next section of the literature review shifts from the issues of geopolitics, civic processes, and national identity to understanding how the gamification process works through language and rhetorical processes.

2.2 Game Studies

2.2.1 Games and Procedural Rhetoric

The importance of games in most cultures cannot be understated. Games follow specific rules and linguistic formations that underscore specific logics, such as those governing rhetoric. Bogost argues video games are a new form of rhetoric because their procedures are actively coded by programmers, christening the form as “procedural rhetoric”. Breaking down the meaning of the term, Bogost uses Murray’s definition of procedure as, “defining ability to execute a series of rules” and his own definition of rhetoric as “effective expression”. Thus, in the creation of procedural rhetoric, Bogost gives the definition “the practice of using processes persuasively” (Bogost, 2007). Further, he asserts this new form of persuasion should be analyzed for its influence on education, culture, and politics (Bogost, 2007). With more than seventy percent of American households playing digital games, it becomes important to understand how this new form of rhetoric affects society (de Zamaróczy, 2017).

Procedural rhetoric’s interactivity with the user is synthesized by Bogost with the concept of the Aristotelian enthymeme. Bogost describes the enthymeme as, “a technique in which a proposition in a syllogism is omitted and the listener is expected to fill the missing proposition and complete the claim” in a similar manner to the choices of a player (Bogost, 2007 Ch. 1). As in procedural rhetoric the player’s interaction with the rules, such as seen here to fill the missing proposition, is a core component of the procedural rhetoric at play. The study of software then becomes important for two reasons for geographers. Firstly, Adams argues, “as the software

creates digital space, the code beckons into being socio-spatial relations dependent on the procedural rhetoric” and interaction of the user (Adams 2021). These interactions usher in spatial relations between people through the procedural rhetoric of digital media, creating new social connections between various geographies and new ways for geographies to represent themselves through digital media. Secondly, how the interactions between the coder and player influence each other’s culture and politics is a form of popular geopolitics (Pickering 2017). Thus, examinations of procedural rhetoric help understand the culture of a nation and how developers choose to represent space.

The analysis of the impact of popular culture artifacts on politics is pointed out by de Zamaróczy as “beginning with 4th century BCE Greek historian Xenophon’s ascribed rout of the Spartans at the battle of Leuctra at the hands of the numerically inferior Thebans to the corrupting aspects of lavishness creating decadence” (de Zamaróczy, N. 2017, p. 155). In the field of international relations and geopolitics a golden age of studies of the popular since the 1990s has been called the “cultural turn”. De Zamaróczy asserts this turn began because “scholars were disenchanted with the assumption of a single, universal human nature in prevailing theories and instead attempted to take seriously the effect that cultural ideas can have when they accrete over long periods of time” (de Zamaróczy, N. 2017, p.155-156). The shift to cultural studies shows a fundamental shift in the academic inquiry after the Cold War into studies of how diverse populations interact and change each other rather than being guided by universal aspects of human nature.

2.2.2 What is Game ‘Play’?

The interactive elements of video games evoke the sense of play we associate with them. Academic inquiry into ‘play’ according to Ruckenstein began with “theses ranging from the

surplus energy theory to the preparation for life, to the recapitulation, to instinct, to relaxation, recreation, and catharsis” (Ruckenstein 1991, p. 237). However, play’s origins as a concept are pointed out by Huizinga (1950) in *Homo Ludens* is, “older than culture because culture always presupposes human society, and animals have not waited for man to teach them their form of playing” (Huizinga 1950, as cited by Ruckenstein 1991, p.238). It is then understood play as being an antediluvian fundamental part of all cultures, as it is not birthed from a culture.

Therefore, the study of how each culture treats and adapts plays for its cultural goals is important as it addresses one of the fundamental needs of human activity. Furthermore, it is ‘play’ that is thought to create civilization itself as Huizinga posits, “In play, there is something ‘at play’ which transcends the immediate needs of life and imparts meaning to the action” (Huizinga 1950, as cited by Ruckenstein 1991, p.238). It is within the realm of putting ideas, concepts, and practices ‘at play’ that civilization unfolds. Depending on the stakes of what is ‘at play’ languages have developed different words to describe ‘play’ as to help organize society to know what is at stake with play, such as the Greeks having different words for childish play and contest (Ruckenstein 1991). Play is a prehistoric concept that helps communicate complex ideas not pertaining to immediate survival.

Once a situation is put ‘at play’ Ruckenstein asserts it is no longer “ordinary” life as, “It is stepping out of real life into a temporary sphere of activity with a disposition of its own” (Ruckenstein 1991, p.239). In this secluded space, play is thought to be limitless as its course and meaning become determined by the player (Ruckenstein 1991). The shifts between the playful domain and non-playful domain are observed by Wolf in *Encyclopedia of Video Games: The Culture, Technology, and Art of Gaming*, to mirror the gamification processes of renegotiating what is a game versus a task in game studies (Wolf 2021). A task is seen as productive but a

leisurely game, even when doing physically or mentally the same thing, may only be called so due to surrounding cultural elements known as ludic elements. It is from cultural differences in which shifts in the domain of play change what is called ludic enough to be considered gamification (Wolf 2021). However, Raphael in *Games for Civic Learning* notes, “rules are what differentiate games from other kinds of play” because they limit the actions to create a repeatable unambiguous set of outcomes (Raphael 2015, p.208). Games therefore create order in the uncivilized origins of play, setting domain over what is considered play and what is not.

2.3 Ludic Studies

Game studies’ academic endeavors in the modern age of digital games have crafted the emergence of the field of game studies known as ludic studies (de Zamaróczy 2017). ‘Ludological’ perspectives look to understand the role of games and play in human culture through the analysis of rules and other gameplay aspects (Ash and Gallacher 2011). Ludologists claim the narratological perspective is insufficient because their understanding of video games is configurative rather than an interpretive practice as seen by ludology (Ash and Gallacher 2011). A ludologist insists any narrative being should be emergent from the game design and its interpretation by the player rather than configured by the game itself (Wong 2013). Such as with the ludological concept by Sicart of *ludic phronesis*, player decisions in games are informed by moral arguments either through ludic elements or external motives (Lammes 2022: Sicart 2009). Therefore, ludic studies (ludology) according to Ambrosio and Ross are subdivided into this “debate between narratology (story or narratus) and ludology (gameplay or ludus)” elements of games (Ambrosio and Ross. 2021, p.847). Ash and Gallacher support this division as the attempts to create a typology for video games focus on either of these camps (Ash and Gallacher 2011). Ludic studies can mix the themes of narrative and ludic elements together when the

narrative becomes a ludic object of study for ludology. The ludic field through these offers two lenses of analysis for games, which can be dually used for analysis of a game.

2.3.1 Ludic Elements

The historical narrative is a ludic setting for many games as the ability to faithfully recreate the historical record is limited. Therefore, the complexities of history are simplified into unique items synonymous with a period, a process known as ludic ‘periodization’ (Ambrosio and Ross 2021). Items chosen for periodization are examples of a culture being picked from pieces of its heritage to represent the period because a mixture of the choice of game designers and people of the culture value it enough to iconize it. The ludic elements help inform the player about the choices made in history and affects gameplay through their decisions to repeat or change history. Whether these elements are able to be manipulated by the user or not they are crafted into a ludic period by the developer-historian’s own interpretation, ludic periodization itself can influence the player choices with the elements they can interact with.

Each element within a game that is interacting with the user is known as a ludic artifact because they affect the gameplay a user experiences. According to Ambrosio and Ross, “Every ludic artifact possesses a balance between predetermined, pre-interaction constraints on the player’s engagement with them (*ludus*) and the freedom of the player to manipulate them (*paidea*) (Ambrosio and Ross 2021, p.848). The constraints on the player through the *ludus* and *paidea* limit the scope of possible actions and outcomes of play. Therefore, these concepts become important in understanding the goals of the game either by the developers through the procedural rhetoric or the player’s own goal setting (Bogost, 2007; Landers et al. 2017). Games

provide a reward or goal for players to motivate them to strive towards a goal, in line with goal-setting theory which says goals motivate people alone. But it differs from goal-setting theory in that the psychological process of self-regulation is mediated by the ludus and paidea to limit the goals into the framework of a game (Landers et al. 2017).

2.3.2 Videogames as Geography

Studies of video games are justified by geographers, such as Ash and Gallacher, by arguing the images produced by games are an “existential and ecological form of space that results in an experience of “a world for their users”” (Ash and Gallacher 2011, p.18). It is these graphical representations of space being utilized to simulate landscapes that have made video games a topic of study (Ash et al. 2009). Different forms of spatiality and spatial experiences for users show the variety of uses for space in gaming that does not allow for universal application of geographic theories to persist (Ash and Gallacher 2011). This can be from real time strategy games using a bird’s eye view of the environment to have an armchair quality of looking at a map to first person shooters or horror games using first person perspectives to heighten the urgency immersion, and danger of enemies (Ash and Gallacher 2011). It is this manipulation of spatial experiences and rules by game designers that Ash and Gallacher argue makes videogaming a geographic practice (Ash and Gallacher 2011).

2.4 Gamification

Games are an appealing prospect for marketers because they evoke a sense of fun play that can make mundane activities rewarding by incorporating game elements into these activities. This is why gamification is a popular buzzword and tactic for health, wellness, marketing, education, business, and tourism (Wolf 2021). The term gamification enters the literature with Nick Pelling coining the term in 2002 (Marczewski 2013). It helped unify a growing body of

literature around the beginning of the millennium in what *The Encyclopedia of Video Games* describes as, “theories being presented and discussed to make a strong argument for play as the driving force of culture” (Wolf 2021, p.395). In the Anglosphere this argument was split between terms by Pelling “gamification” or what Raessens calls “ludification” (Marczewski 2013: Mora et al. 2015: Raessens 2006: Wolf 2021). Gamification became the term to describe the incorporation of game elements into other media.

In the late 2000s emerging strategies in interactive design to increase user engagement online found their way into marketing rooms as a design goal now used for today’s education, health, and civic engagement policies and practices (Deterding 2019: Tulloch and Randell-Moon 2018). Gamification is seen as a tool to help appeal to and retain customers by making the interaction more enjoyable by incorporating game features (Wolf 2021). Even with a new term to label the phenomenon being involved in marketing board meetings, disagreements persisted over its precise definition. Deterding claims “gamification is commonly defined as the use of game design elements in non-game contexts” (Deterding 2019). Tulloch and Randell-Moon provide a similar definition, “gamification, is a strategy whereby video game logics are applied to real-world tasks” (Tulloch and Randell-Moon 2018). A more detailed explanation of gamification is given by Wolf, letting “gamification’s umbrella encompass a range of methods, metaphors, and objects from the regime of games and playfulness to be used in nongaming contexts” (Wolf 2021, p.395). These definitions provide the general idea of gamification as the creation of a Frankenstein's monster of a program that is traditionally not a game but gets game elements incorporated into it. Another name for this gamification trend in work, health, and education is aestheticization, the efforts to make these processes of life be interpreted in a more positive light

through its artistic and fun aspects (Wolf 2021). Gamification blurs the line between activities that are not games and those that are, as elements are incorporated into the desired application.

The elements brought over from games that are commonly attributed to the gamification of products are mostly from the progression system of games. This is useful for the motivation of the user because they then feel the progress of whatever action they take. A study by Toda showed a general pattern in how applications incorporated game elements. The most common were leaderboards, followed by badges, points, level, and progression elements appearing the most in a sample of gamification studies by Armando Toda, Pedro Valle, and Seiji Isotani (Toda et al. 2018). Despite their use, these elements are criticized for instilling in the user a “false sense of progress because it does not track actual skill growth” (Deterding 2019). Critiques see a delineation of “real” games where “real” challenges overcome by the player with “real” skills is the basis for progress mechanics in contrast to other games whose progress system only meaningfully tracks the time accumulated on using in game “virtual” skills. Deterding then counters these critiques arguing the positive feeling of completing a game level is equal to that of reading a book, as it is a time sink with little change line by line of text in the code or game code for not “real” games does not correlate with competence in the matter. Secondly, Deterding notes the role of the audience in creating their own challenges through metagaming (players or communities creating new ways to play) or social elements outside of the game (Deterding 2019). Game elements are thoroughly debated in discussions of how best to create a progress system, whether they are a tool to keep people playing for the next virtual award or track a “meaningful” skill progression.

The term gamification itself comes under scrutiny as a term only used to appeal to marketing boards. Bogost, academic scholar and video game designer, calls gamification

'bullshit' as it is used to conceal the actual mundane product by consultants in favor of converting it into the vogue of video game for increased appeal. Bogost states the reason for gamification as a prevailing method to increase user retention on products not usually classified as fun is because, "Gamification is easy. It offers simple, repeatable approaches in which benefit, honor, and aesthetics are less important than facility" (Gamification is Bullshit, 2022). The gamification approach becomes a box to tick in the design of these elements, putting less emphasis on the initial purpose of the product, thereby reducing the quality of its initial function. Because of Bogost's various critiques, the term "exploitationware" was coined to more aptly name the nature of gamification which he describes as "a grifter's game, pursued to capitalize on a cultural moment" (Gamification is Bullshit, 2022). The critiques of gamification go beyond the false impression it gives, as the nature of the elements and usage of them are further criticized, as discussed below.

2.4.1 Gamification in Various Arenas

Gamification's structure is thoroughly criticized as a gilded design, but the effects of elements are often studied and criticized through the realm of education. From a study in 2018 by Toda, et al., a table was created organized by game elements categorized by their theorized negative effects. This study found the leaderboard system to be a main culprit behind indifference, loss of performance, undesired behavior, and declining effects in the educational setting. The influence of the leaderboard is followed by the badge and point system respectively (Toda et al. 2018). This may be a correlation because those elements appear the most in gamified settings, but it still raises alarm over the concept as far as its value in instilling knowledge, whether in an educational or civic setting. Part of the issue Toda, et al. claim is the lack of a personalized gamification design as individual profiles, instructional, and motivational design

theories are not considered (Toda et al. 2018). This results in similar issues from before, a lack of tailored approaches in apps that sought gamification to solve through greater interactivity.

Gamification applied to realms such as the workplace and the classroom has resulted in a variety of critiques from scholars linking gamification to neoliberal politics, new Fordism, Marxist analysis, or critique of ideology (Wolf 2021). The Marxist analysis critiques gamification's use in the workplace as a tool for the exploitation of labor by employers to extract more labor value from the worker (Kim 2018). With gamification's increasing popularity, large corporations made it a component of their practice, bringing concern to Marxist scholars (Tulloch and Randell-Moon 2018). Games themselves are seen by Marxist scholars such as Stephenson as turning the player into the worker through simulation games that match jobs in the neoliberal state such as *Car Mechanic Simulator 2021* (Chapman 2016). The practices are one of efficient labor in lieu of the more fundamental 'fun' aspect marketing departments use gamification for.

The growing use of gamification by governments and businesses has been seen by scholars as a reinforcement of a neoliberal order (Tulloch and Randell-Moon 2018; Baerg 2009; Roberts 2013). Andrew Baerg describes the cooperative rise of both as

“The digital game's emergence in the mid to late 1970s mirrored the workings of an emergent neoliberal market by offering one of the first media in which choice was paramount in the experience ... This ability for subjects to constantly choose as they engage the medium mirrors the workings of their activity in a neoliberal market” - (Baerg 2009, p.120).

The rise of gaming as an industry shifted thought about oneself towards an individual manner as the personal unique experience of a game could be enjoyed in isolation rather than more

collective or easy to reproduce results of traditional games. In doing so, gamification “reflects the neoliberal idea of self-interested, utility maximizing individual who is expected to make continuous consumer-style choices in a competitive world” (Roberts 2013, p.40). In these positions the neoliberal regime and gaming have a symbiotic relationship as they help forge each other, keeping a consenting population focused towards this regime.

Gamification is challenged by scholars who argue it is not a politically neutral practice. Those who see it as a component of neoliberalism argue it must be taken as a product, created from a specific set of cultural, political, and fiscal circumstances and values in the knowledge economy (Tulloch and Randell-Moon 2018). Gamification’s rapid growth in society is explained by scholars such as Wendy Brown as a tool not for fiscal policy but to instill market values and metrics into daily life to help governing policy over such an obedient quantifiable citizenry (Tulloch and Randell-Moon 2018). A key example being the civic instruction and education of skills to a workforce to be more loyal and have valued skills for a wealthier society in the neoliberal context. In educational settings “knowledge, thought, and training are valued and desired almost exclusively for their contribution to capital enhancement” (Tulloch and Randell-Moon 2018, 177). The methods for gamification have begun to be implemented by governments to promote their own goals, thereby subtly enforcing neoliberal ideals through their structure.

The innovations in learning through gamification fall into the category of student-centered learning. This type of learning empowers students through a focus on their cultural and educational needs (Tulloch and Randell-Moon 2018). Through the neoliberal lens the policy emphasizes creativity through the student’s individual autonomy. This focus helps students meet the job demands of a postindustrial neoliberal economic system, focused away from the factory line of previous iterations of schooling (Tulloch and Randell-Moon 2018). However, Noht sees

this format as the control of society by neoliberalism by inducting its governing rationale to users (Wolf 2021; Tulloch and Randell-Moon 2018). Gamification as a mode of learning adds choice and customization in what knowledge they value and receive through education (Tulloch and Randell-Moon 2018). In a neoliberal society students need to gain skills learnt through gamification for their future workplace, such as meeting progress goals. Thus, the educational structure has shifted but even in other places where gamification occurs it helps replicate the effect of gamification on the user's mind.

Further, critics of gamified learning see it as the progression of goals that are fictional instead of real, thereby exploiting the desire of people to get better by working under a false pretense (Bogost 2011; Robertson 2010; Chorney 2012). Taking a page from the work of Frank Luntz, these critics wish to call this phenomenon '*Exploitationware*' to expose the truth of the phenomenon (Bogost 2011; Tulloch and Randell-Moon 2018), a term Luntz would apply to any gamified system due to it not being fun in nature but exploiting a sense of enjoyment in the user to increase either test scores, worker productivity, spending, or health. They argue that gamified software is not video game related because the core of the concept is the content itself and not the mechanics (Chorney 2012). This stems from the idea of games as being founded on the play while gamified applications are seen as work given a mask of gaming. While games are meant to simulate fun play, they often simulate work, primarily when defined as "a physical or mental effort or activity directed towards the production or accomplishment of something" games contain an element of work to achieve a goal (Chapman 2016). Games also represent the creation of a form of entertainment from jobs as seen in soldiers in the various FPS (first person shooters) such as the *Battlefield* franchise or truck drivers in the *Euro Truck Simulator* franchise as pointed out by Marxist scholars (Chapman 2016). Games, therefore, are already numerous forms of

gamified work with the content goals being entirely virtual rather than achieving a certain skill or attribute in the gamified form of apps, which are the critiques of Bogost, Roberston, and Chorney. Gamification is a useful term to help describe the process of turning these activities into a game experience.

Critiques of gamification as exploitationware or highly individualistic have not stopped the expansion of gamification into various forms. Gamification continues to expand in new ways that fit prior narratological frameworks of games, such as story elements and historical reenactments supplemented by ludic artifacts. Story elements can create new narratives for the user to experience and want to complete, while reenactments do not necessarily need to have a fleshed-out story for the user, but can fit into historical settings the user is familiar with to inform them of the context of a greater story to add the necessary desire to play within that context. Whether this is to change or reenact the events they know happen, while the story framework explicitly has a set outcome for the user to choose from.

2.4.2 Narrative Frameworks for Gamification

2.4.2.1 Story Gamification. Within the restrictions of games, stories are created to motivate the player to use the tools to play, often featuring ludic elements. *Zombies, Run!* is a mobile application that has gamified running into a story-driven exergame by providing audio of a story putting the player as a survivor who must outrun the zombie horde chasing the player (Johnson et al., 2016; Exergaming Timeline; Nicholls 2016). This oral story driven game was groundbreaking as it is possibly the first of its kind mobile application to augment reality into a story game for an exergame (Exergaming Timeline). The stories work on the foundational tension of whether the characters will achieve their goals or not, and story games place the player as the central character. While in play tension also adds uncertainty, enhancing the experience as

seen in games of skill through a challenge as to whether you can beat the high score, get to the next level, or milestone (Ruckenstein 1991). The combination of both allows the creation of a powerful combination as the player struggles to complete their own and the characters' goals.

A study by Jones, Madden and Wengreen in 2014 investigated a way to promote healthy eating for k-12 students to improve children's diet and health through gamified narratives. This was an incentive-based intervention that increased the story progression of heroic characters in a fictional story when their fruit or vegetable consumption goals were met (Jones et al. 2014). This study showed students to be adventurous to try new healthy foods and provide a context for the motivation of story progression as a useful intervention method.

Storytelling is a technique used in multiple genres of gamified applications. In civic learning games the combination of play and content helps bring connections between gameplay and the story content to bring forward ethical reasoning (Raphael et al. 2015). In these games such as *Victoria II* the players situate themselves in the story of history to learn about how it unfolds (Raphael et al. 2015). Studies by Squire and Egenfeldt on *Civilization II* and *Europa Universalis II* respectively showed an increase in player motivation to learn history and other civic themes (Egenfeldt 2012; Squire et al. 2005; Raphael et al. 2015). This research suggests that the narrative itself does not matter but the engagement by the user through gameplay with it does. Making the narrative only a possible ludic element for the user to interactive with and not the key to a game's success as seen in the narratological perspective.

2.4.2.2 Reenactment. The players in these historical games immerse themselves in a simulation to reenact the past with a greater effect than music or television because of the physical action and choices of video games; with exergames requiring more activity (Bogost 2011, Ch.15). The book *Digital Games as History: How Videogames Represent the Past and*

Offer Access to Historical Practice, defines reenactment as “blending the experience of the historical artifact such as is experienced in museums with individual revelation” (Chapman 2016). In video games this is manifested in simulated reenactment through practice by doing in game actions, which also serve as educational goals (Tulloch and Randell-Moon 2018). These ideas appear in games like *GoldWalker*, a mobile game that simulates the 1849 gold rush, where progress is unlocked through physical walking (Bogost 2011, Ch.15). This form of play is discussed by Fuller and Jenkins in 1995 as a new form of world travel writing as video games allow digital travel reenactments through simulated geographies (Martin 2018). *GoldWalker* specifically allows players to reenact the prospecting era, showing how simulated history is a new form of reenacting.

In reenactments found within historical simulations, the games’ interactive environments create *exploratory challenges* for the player to overcome to unlock new historical knowledge (Chapman 2016). In traditional actualized reenactments, the reenactor will experience similar physical conditions and challenges, but the virtual reenactment may be minimal or be great depending on the gaming format. Virtual reenactment provides an opportunity for the player to explore and learn about the environment within the reenactment itself. This is in contrast to a traditional, actualized reenactment where the participant needs to be prepared with gear and historical knowledge beforehand and face *performatory challenges* to complete the reenactment faithfully, such as trudging through the mud in a uniform (Chapman 2016). This limits the ability of actualized reenactments to reach and educate more people about the historical era portrayed when compared to virtual reenactments which come prepackaged by the developer for the reenactor.

Reenactment in digital historical games serves a function of heritage, by sharing visual history and environments with its player (Chapman 2016). An important part of reenactment is the historical resonance is enhanced through reenactment as the player gains empathy for those who went through similar or worse situations historically. In this capacity it becomes heritage when the digital game represents a culture or geography but is also claimed to authenticate the experience with additional historical details (Chapman 2016). Sociologist Agnew claims reenactment's "broad appeal is its implicit charge to democratize historical knowledge and find new and innovative ways of historical representation" (Agnew 2004, p.335: Chapman 2016). Thusly with the innovations in historical digital games there is a greater democratization of historical knowledge because it is easier to engage with and replicate. Allowing more marginal communities is an easier way to develop a historical representation of their culture to preserve and experience its heritage.

2.4.3 Gamification of Health

2.4.3.1 History of Health Gaming. The link between exercise and better health has been well established for decades. Despite this knowledge, countries where service-based economies have dominated have seen the rise of sedentary lifestyles, a decline in overall physical activity associated with work, and other habits (eating, drinking) that contribute to an increase in negative health outcomes. Sporting activities were an early solution for more sedentary lifestyles and saw rapid growth throughout the industrial revolution. Sports is a form of entertainment serving a secondary goal of exercise, adding value to exercise through the incorporation of game elements to create play as a social event (Bogost 2011, Ch.15). Gamification offers a similar experience without the need for social gatherings to inspire movement. Bogost asserts sports and games adopt existing rituals and practices from other domains to create the want to move

(Bogost 2011, Ch.15). This is represented in the gamified reward systems added to health activities. Game developers, eager to create new markets, saw early on that there was potential for games that motivated people to exercise and that has resulted in the rise of gamification.

The combination of exercise and gaming has been christened *exergaming*, to help describe the growing business in the entertainment, health, and recreation sectors. Exergames have exploded in popularity recently through combining everyman GPS and motion sensor technologies because they promote the prevention of cardiovascular diseases to its consumers; a concern not held by populations a century ago (Laikari 2009). The first exergames were released in 1982 with the Amiga Joyboard and the Atari Puffer, with only the Joyboard (a simple balance board exergame) reaching the consumer market (Exergaming Timeline). In 1994 the Exertainment System debuted and was an improved version of the Atari Puffer, as it hooked up a video game system to an exercise bike. However, it would not be commercially successful due to its high cost (\$2000) and limited number of games (2) unlike its modern successor the Peloton (Exergaming Timeline). After this, walking pedometers like the Arukotch and the Digivice were released in 1999, both having the user take care of a virtual pet by unlocking rewards or progress through walking (Bogost 2011, Ch.15). These increased exergames' popularity, with the next generation of exergames incorporating improvements in motion sensors and eclipsing the prior generation with the revolutionary success of the 2006 Nintendo Wii video game console as a platform based in exergaming (Bogost 2011, Ch.15: Exergaming Timeline). With the surge of mid 2000s exergames such as iDANCE, iSTEP, NeoRacer, and Cyber Coach there was a peak of console based exergames, before the mobile market would incorporate these elements as well (Exergaming Timeline).

The emerging mobile market of the late 2000s provided new technologies to create exergames. In 2009, what is possibly the first mobile exergame, *Zombies, Run!* was released as a zombie survival game. It used augmented reality to convey its narrative premise, paving the way for greater successes like Pokémon Go in 2016 which in two years was downloaded 800 million times (Exergaming Timeline). During this period gyms started to equip themselves with gaming services and other forms of entertainment to expand their services into exergaming. Exergames provide a different form of entertainment for game companies that are accused of immobilizing the youth through their games. Exergames are critiqued for possibly being more tempting than video games due to the combination of a virtual world with the physical experience of an exergame could create a more addictive cocktail (Laikari 2009).

2.4.3.2 Game Health Studies – Physical and Mental Health. The field of health studies has seen increasing interest in gamification as a tool for health guidance outside of a clinical setting. In DeSmet et al.'s (2014) meta-analysis of health gamification studies between 1989 and 2013, the authors identified 53 studies during this development period of game studies, which since 2013 has been rapidly increasing (DeSmet et al. 2014; Johnson et al. 2016). The papers on health and well-being reported 59% positive results from gamification with the remaining 41% having mixed effects on the user (DeSmet et al. 2014; Johnson et al. 2016). However mixed outcomes were found for papers investigating cognitive outcomes and behavioral outcomes, with an outlier not having long-term effect outcomes (DeSmet et al. 2014; Johnson et al. 2016). Results were shown to be better for serious games tailored to socio-demographic information (DeSmet et al. 2014). The difference in effectiveness between delivery platforms (PC, mobile) was not shown to be significant. Current evidence is limited due to the small number of studies

in each area of health and methodological limitations. This is creating a sense of caution in drawing conclusions on the overall positive aspects of gamification (Daniel Johnson et al. 2016).

Shifting from physical to mental health, there have been similar positive effects of gamification on mental health aspects of well-being, anxiety, stress, and personal growth support. Limited research in gamification's use in mental healthcare has shown positive results so far (Johnson et al. 2016). Gamification is thought to by Fackre (1975) to help solve mental health issues because play as an aspect of culture is seen as helping make overly serious matters be taken lightly and keep secondary things secondary (Ruckenstein 1991). Play creates a mental break to relieve stress and supplement 'real' concerns with rule-based goals. The idea of play is countered in areas of geography like digital urban innovation, digitally mediated urban everyday life, interface design and practice, and mobility studies by the concept of 'friction' creating productive disruptions (Tseng 2022). 'Friction' according to Tseng, is "used by social and cultural geographers both as a concept and a metaphor for describing points of contestation and their effect" (Tseng 2022). An emotional form of friction is understood to create frustration, confusion, or disengagement in the user of a digital interface when the information is not properly processed or displayed for the user (Tseng 2022). These situations are found in gamified elements of play and create predicaments where the intentional relief is supplanted by the user's loss of control of their emotions creating behavioral issues (Tseng 2022).

2.5 Sports, the State and Identity

Geographers' interest in game studies emerges from the spatial and power practices created by games which generate a unifying effect of a nation-state (Tseng 2022). These games are studied for their nation-building potential by geographers, beginning with studies into sports role in society. For example, the Indonesian government has national programs for volleyball,

takro, and gerak jalan that at the surface level encourage fitness and national sport recognition. Below the surface, Indonesia hopes to unify its archipelago of nations through these cultural touchstones into a new social construct of a nation consisting of an archipelago. The voluntary aspect of these leisure activities helps mask the state's agenda and creates a sense of nationalism surging from within rather than enforced above (Moser 2010). These leisure activities are associated with places of practice, such as a pitch or field for a sport. David Matless's *Landscape and Englishness* (1988) points out that state actors link an identity to a place for leisure activities to promote the intended activities (Moser 2010). This becomes useful for Indonesia in the case of volleyball because beach volleyball is practiced along warm beaches helping it be quickly associated with the environment of the coast of the tropical island nation (Moser 2010). This creates spaces within the nation to associate with the nation and its' activities to increase feelings of nationalism in daily life.

The body of each individual is a target for the state to improve its ability to expand the capacity of the state. Thus, body improvement and health are keystones of state-initiated leisure activities in a postcolonial world. Scholars like David Spurr, according to Moser, emphasize how 'the body of the primitive' was a way indigenous people were portrayed to justify colonialism. Rather than social aspects, the body was an essential characteristic that when in poor shape was used to show a larger issue with society. Encountered whether starving or gluttonous these could be used for the 'mission to civilize' ethos of many European powers. Athleticism when promoted, was not only tied to physical betterment but also moral improvement as Victorian views linked the two coining terms like 'character building' and 'character formation' when a person was exerting tremendous physical activity. The result was claimed to be traits such as loyalty, self-discipline, leadership, and competitiveness in linkage to sporting that benefited the

state by putting these people's bodies in the shape that can best output service to the state (Moser 2010). These goals can be seen in non-state actors as well, sport companies' managers bolstering local customer engagement in physical activities helps foster loyalty to the company in programs like MLB baseball summer camps (Tu et al. 2019: MLB). Shared moral beliefs necessary for nation-building are believed to be reflected in the games played, such as the focus on athleticism seen above.

2.5.1 Social Context of Sports

Humans are social beings by nature according to Aristotle, as a species they form societies and communities in the physical and virtual worlds (Hassan 2017). Virtual communities come from the shared experiences of the virtual by those in the physical, such as those gathered around an arcade machine. Games lacking rewards or emergent complexity keep players involved through social context, whether this is competition for a high score, cooperative multiplayer teams, watching a gaming stream or even talking about the game away from the screen (Bogost 2011, Ch.18). Increasing game-based relationships motivates players to not be a master of a game but instead support the player bonding with other people over a shared gaming experience or identity (Bogost 2011, Ch.18). Mastery of a game could be seen as non-beneficial, it is beneficial within many of the player's social networks.

Social game elements have been tested for their usefulness to keep players engaged in achieving a physical goal. A study by Boendermaker in 2015 on training heavy drinkers in cognitive bias modification to avoid alcohol saw adding social game elements increased reported motivation to train and the frequency at which participants trained. However, once accounting for the baseline motivation to train each participant beforehand, this effect disappears. This suggests social game elements do not affect a user's sociability or desire to interact with the

game (Boendermaker 2015). The use of social elements in exercise apps such as *WeChat Sports* or *Strava* have, however, seen increased engagement from users over ‘fun’ apps, with apps focusing on social value having users perform better in walking (Tu et al. 2019). With conflicting data on whether social elements add to an increase in user engagement, it may be more useful to look at the specific cultural context of each situation.

Games’ exercise potential is criticized by scholars like Bogost, who thinks exergames are detached from the cultural context surrounding exercise. Exercise is obtained through the use of familiar space and its social context to conduct exercise. Within developed nations, sedentary lifestyles have necessitated the need to have exercise conducted which is divorced from ceremonial or cultural elements of laborious work and sporting. In lieu of cultural context Bogost notes like other aspects of industrial society, the efficiency of exercise performance is placed above other aspects. Unlike exercise, sports serve functions crafted by a culture to develop physical and social attributes to help make war or were tied to social values of sacrifice or individualism (Bogost 2011, Ch.15). The culture in this way manifests in exercise but has been divided by isolated exercise to maximize one’s time over a social ritual.

2.6 Gamified Education

In the realm of education, games are seen as a tool to attract students toward mastery of course content and information (Tulloch and Randell-Moon 2018). A key is also each student being able to have a customizable experience at their own pace that is hoped to give greater suitability for learning for each user (Tulloch and Randell-Moon 2018). An emphasis is placed on effective game-based learning outcomes and caution is regarded towards a replacement of learning and memorization with gamified reward systems approach to education content

(Egenfeldt 2012; Tulloch and Randell-Moon 2018). Educational games therefore need to still impart knowledge in an engaging way without being a lecture or an empty game.

The fiscal cost of incorporating educational games into learning has been prohibitive even with government and private support for the integration of gaming into learning. As popular video games contain budgets of 500 million USD, making a specific educational goal game with broad appeal has been nearly impossible (Tulloch and Randell-Moon 2018). Due to these fiscal and logistical constraints, game-based learning has lost the zeitgeist as a pedagogical paradigm. Gamification has proven to be a cheaper alternative pedagogical paradigm because it promises engagement from game-based learning with selective elements and mechanisms from games without their high cost. These elements are then integrated into learning to supplement traditional pedagogical practices rather than replace them (Tulloch and Randell-Moon 2018). Improving students through individual instruction is easily replicated on devices like smart phones that can reach broad audiences across space without the resources needed for a teacher or traditional classroom (Fisher 2020). This helps make the educational goals for educational organizations and governments able to reach more people consistently at a lower price than creating a full-fledged game.

Affinity spaces bridge the gap between physical and virtual informal learning. The physical classroom was the space for traditional instruction, while the virtual classroom may appear as an affinity space on a forum page or discord community surrounding a game. Affinity spaces are areas where people are drawn together to learn, conducted in an informal manner through sharing knowledge together in a participatory manner (Moy 2018). Therefore, affinity spaces for virtual education could be provided to help increase knowledge sharing but may be

determined to reward system motivation if based on educational information that has a known library in an affinity space.

2.6.1 Challenges to Gamification of Education

The idea that the future of education thenceforth to be gamified has skeptics of the effectiveness of a new approach. Gamification is touted as helping the screen-addicted generation be engaged in education when traditional pedagogy is not engaging younger generations (Tulloch and Randell-Moon 2018). This approach according to Raphael (2015) is known as ‘edutainment’ because of the desire by educators to entertain students through popular cultural artifacts with unrelated educational content. Edutainment is criticized for “a misguided and distracting attempt to make math or language acquisition seem more enjoyable” (Raphael 2015, p.206). Moreover, it is critiqued for their behaviorist approach to education (seen by player interactivity, rewards, and customizability) offering gameplay as a reward instead of integration into learning (Raphael 2015). Gamification has several stalls on its progress as a pedagogical regime due to criticism in its structural design.

Existing gamification studies (largely out of Germany and the US) show an extensive focus on educational uses to improve learning motivation and efficiency. The former is focused on positive motivational achievements and a lack of identification efforts on negative outcomes (Toda et al. 2018). According to Fisher (2020), a study found players bypassing the educational quiz portion of a game to play the core puzzle content. This study, therefore, had trouble linking playing the game to a behavioral or learning change but lacked an identification of negative outcomes (Fisher 2020). Gamification’s negative effects are rarely mentioned in studies, such as a study by Hanus & Fox (2015) which saw their non-gamified control group outperform the gamified group (Haus and Fox 2015). The declining motivation of the gamified group was found

in five other studies with the declining effects of gamification engagement being felt over time (Toda et al. 2018). Students were hindered by a demotivating factor to learn once gamification lost its luster, creating secondarily a loss of performance (Toda et al. 2018). It is thought that poorly designed extrinsic rewards decrease the intrinsic motivation to be continually engaged (Toda et al. 2018). There could be a difference in results between studies due to a difference in persisting quality of game design to engage the players to help reach educational goals.

In offering a choice to students between learning through games and traditional settings, there exists a buy-in factor to play and learn new games' controls. In Squire's (2005) study using the popular "historical game *Civilization III* in an education setting, a quarter of his students dropped the unit in favor of reading groups" (Squire 2005). Gamified students reported by Toda in one study had scored lower than classmates in a traditional setting (Toda et al. 2018). Squire noted "the real challenge is not bringing games into our schools [but]... our contemporary educational systems do not know how to sustain a curricular innovation built on properties that make the games compelling" (Squire 2005). Thus, the question arises if cultural change would increase educational performance or not, and how to make compelling educational games.

2.7 Engagement

In creating a game long-term, engagement is key to success, unlike a movie which people can watch once versus a game must provide different experiences to a user to be engaging. One game design proverb echoing how games ought to play is "easy to learn and hard to master" (Bogost 2011, Ch.18). This is known as "Bushnell's Law" or "Nolan's Law", it encapsulates the addictiveness of one's own progress in the game that rewards "the first quarter and the hundredth" (Bogost 2011, Ch.18). It began to be commonly used to describe causal games like Pac-Man but began to be used for games with emergent gameplay and complexity (Bogost 2011,

Ch.18). A powerful tool for engagement is showing a player their progress in metrics. This self-quantification of the user's actions creates a sense of achievement through the improvement of these metrics and motivates them to do more. The progress models of gamification systems are entirely metrics, helping influence the rewards for a user and the social aspects of competition. Through gamification efforts to change behavior, engagement and completion increases, such as DevHub having an increase from 10% to 80% of online task completion by users since the addition of gamification elements (Bista et al. 2014). However, Hassan cautions against praise of gamification as the savior of all scenarios of low engagement because adding gamification elements as trinkets may not change long-term behavior (Hassan 2017). Moreover, gamification may in some situations create adverse motivational effects (Hassan 2017). Engagement is thus a marker of a successful game and is now spreading to other industries through gamification to increase user motivation and engagement (Hassan 2017).

A disproportionate amount of any community has a small number of members contributing the majority of engagement. As Bista (2014) notes, "in most online communities 90% of users are lurkers who never contribute, 9% of users contribute a little, and 1% of users account for almost all content generation and engagement" (Bista et al. 2014). In creating a community with consistent engagement Bista lists three challenges: bootstrapping, monitoring, and sustainability. Bootstrapping is the issue of attracting members and engagement during the initial startup of a community. The second challenge is monitoring, what should be monitored? How should it be monitored? How many categories are looked after? Finally, is sustainability for long term engagement over the lifespan of the community by users (Bista et al. 2014). Like Bushnell's law, the importance of long-term engagement is crucial to the success of a

community or game to keep the public's interest on the subject and grow it (Bogost 2011, Ch.18).

Strategies to increase productivity or engagement in a user may not appeal to all users as a variety of behaviors and uses for the gamification system arise. Bogost asserts, mastering a game only appeals to a subsection of the user base, as others seek only enjoyment in the ludic aspects for engagement if this enjoyment can be repeated. The habituation of a return to a 'fun' game may not see a dedication to improve their own performance but only repetitive play (Bogost 2011, Ch.18). Henceforth one strategy for engagement is not guaranteed as players respond to stimuli differently.

2.7.1 Structure of Gamification and its Motivational Factors

Gamification is not a sudden turn in the motivation of a player but has three consecutive steps. These consecutive steps flow in the following order: motivational affordances, changes in the psychology of the user, and behavioral outcomes as intended by the program (Hassan 2017). Motivational affordance attributed to intrinsic (internal drive to behave in a certain way for internal rewards) and extrinsic (external factors effect behavior for external rewards) which is the method used by gamification for proper stimuli (Hassan 2017). Through these motivational aspects, gamification is seen as a motivational tool by companies, governments, organizations, and others to change the behavior of a user.

When looking at intrinsic and extrinsic motivations, organismic integration theory emphasizes a negative correlation because gamification of extrinsic rewards is seen as adversely affecting long-term intrinsic motivation (Hassan 2017). Users are no longer able to set a personal goal for themselves, trading autonomy for taking rewards (orders) from an external source.

Another theoretical approach, the self-determination (identification) theory of motivation proposes core psychological needs are the stimuli for intrinsic motivation. These needs are the mastery of new skills, free choice in behaving with personal values and autonomy, and relatedness to a community creating decisions (Hassan 2017). Of these the relatedness factor is useful for community or nation-level apps during the initial trial phase to get users to join.

Motivations for play impact the type of gameplay seen by players in games. Stemming from the players' personalities, there are four types of players. Hassan lists "Achievers who value accomplishments, purpose, and mastery, explorers who value freedom and autonomy, socializers interested in social interactions and relatedness, and killers who value competition and mastery at the expense of rule-breaking" (Hassan 2017). These help game designers note the type of personalities their game may attract, resulting in either the moderation of 'killers' to keep the game rules in place or promoting 'socializers' for a greater sense of relatedness for community-building applications.

2.8 Heritage

Heritage marks what aspects of a nation's past are held up as important and is reproduced by those associated with a nation. It is important to understand the ethos of a nation, what they value, and what is important to them. *Aya* is the manifestation of the Chickasaw Nation outlining its heritage through what it chooses to incorporate into the app. Through its implementation one can ascertain what is important to the Chickasaw Nation's heritage, whether made as a conscious or unconscious choice informed by their national experience. Heritage thus can inform the individual identity, in how to act and what to revere as part of a nation.

During the interwar period of the 20th century the term "memory" began to be reconceptualized. In 1925, French social constructivist philosopher Halbwach turned the concept

of “collective memory” into a social construct (Delgado-Algarra and Cuenca-López 2020). The utilization of collective memory and other forms of memory (historical memory, social memory, etc.) in studies began in the 1980s to examine past events in these new forms of remembrance. The rise in these studies was springboarded by the fall of totalitarian regimes allowing for new forms of remembrance of the past, and rising multiculturalism in former colonial powers receiving migrants from former colonies. Both faced past traumas the current generation’s collective memory grieved for, giving birth to the “politics of apology” as memorials, reparations to victims, and growth of condemnations (Delgado-Algarra and Cuenca-López 2020). Collective memory adds a new dimension to nation-building through the reevaluation of past events for geographers to examine. As the shared experiences may only be an impact or memory of a past history, for an evolving a nation to consider remembering. For gamification, this ties into efforts by governments to create civic or health apps for their citizens that create new shared experiences.

A place, event, or practice is constituted as part of the “heritage” of a nation after the “heritagization” process is completed. The heritagization process is endowing historical places, events, or practices with value by a particular group of people (Delgado-Algarra and Cuenca-López 2020). If one were to write it out like a formula, “heritage = history + special value (cultural artefact)”. In this way heritage is an action in the present referring to constructions of the past (Saintenoy 2019). In this active process, conflicts arise from the different perspectives of the past by stakeholders vying for their value to be most closely tied to the history in question (Saintenoy 2019). Humans construct heritage alongside “identity” to belong to these larger factions vying for heritage (Delgado-Algarra and Cuenca-López 2020). Making heritage a sensational phenomenon as what Graham and Howard (2008) described as:

“a sense of the self in the past where the subjective component of self is ascribed at increasingly broad scales of the individual, community, nation, and globe, and the temporal links between the subject and the past are based on perceived genealogical, biological, or community connections. (Graham and Howard 2008, p.268)”

Heritage is made into a bonding experience through how connections and histories are perceived and shared between individuals. It provides a useful outlet for geographers to examine how nation-states form, or governments legitimize their rule over a space through constructing a heritage to build a national identity.

Heritage itself is further subdivided into two categories by scholars, natural and cultural, to help distinguish studies of natural environments and manufactured objects and practices. Natural heritage is when elements in the natural environment are endowed with value by certain groups. Among possible elements are natural and national parks, nature reserves, glaciers, and even geological formations. Cultural heritage is a “focal point where building structures, monuments, artwork and intangible values are inferred, for citizens and their memory” (Mendoza et al. 2015). Experts agree these heritage values are being abandoned by a new generation of citizens. This is compounded by a general policy of no organizational program for heritage education by cultural institutions. The same experts point to augmented reality and other information and communication technologies as emerging methods for the development of heritage education (Mendoza et al. 2015).

2.8.1 Heritage Studies

At the end of the twentieth century, the analysis of heritage from an educational perspective emerged as a new field of study in Spain, with momentum for this development coinciding with movements internationally. These international developments came from a

nonformal or informal perspective to the systemizations of educational approaches to heritage in 1950s North America. The success of these movements Delgado-Algarra provides through research projects is the advocacy of heritage education as a “key element in the evolution of societies” as opposed to historical and artisanal education (Delgado-Algarra and Cuenca-López 2020). The informal approach of these studies is when learning is not the main goal of the process because something else takes primacy. The form of learning this rejects is traditional formal learning, which is the teaching/ learning process in spaces of legally formalized institutions; where students learn with curricula predetermined by the same educational institutions. The risks of informal learning approaches in heritage education processes are seen through the increasing usage of mobile applications because they are considered inappropriate (Mendoza et al. 2015). The rise of gamified applications could make mobile applications useful for informal heritage education. However, Mendoza et al., do express the key issues with the informal nature of mobile platforms. The application of heritage education apps can be a useful tool to reach a broader audience to nation-build effectively.

The nonformal learning process uses narrative story elements to engage a user often with its education to combine history with a memory of the event. The combination of history and memory is seen by Delgado-Algarra “to positively contribute to education for a democratic citizenship, promoting argumentative approaches that are more critical and far removed from stereotypes” (Delgado-Algarra and Cuenca-López 2020). These apps use narratives for heritage education, some find success in utilizing space to map out their story content to help the user and motivate them to their next information stop. Such as apps like HiroshimARchive, Fliehen vor dem Holocaust – Zeitzeugen App, and Mapping Memories Cambodia use space and storytelling to emotionally surround a user with history to create their own memory of heritage. (Delgado-

Algarra and Cuenca-López 2020). These apps use geographic space as a powerful tool to connect informal educational environments to connect with a user spatially. A critique by Delgado-Algarra (2020) analyzes how no study of heritage education apps deal with historical memory at an international scale, as these apps usually pertain to a specific location. Leveraging these apps as tools for critical citizenship instruction could make citizens more spatially aware of their community (Delgado-Algarra and Cuenca-López 2020). However, they remain as an element of local service economies.

2.8.2 Heritage Economy

Heritage is an emerging economic component of the tourism industry and forms its own market through the creation of travel surrogates through information and communication technologies or augment the historical space to be closer to heritage assets. The most common form of these technologies is touring guide mobile applications for museum or walking tour itineraries. These utilize often audio guides and interactive screens in their mobile applications which serve as great opportunities for heritage education because their connectivity, information resources, and portability creates activities for learning outside of the formal approach (Mendoza et al. 2015). A growing element of augmented reality is helping apps in museums or historical sites show what they may have looked like when a user walks through the space with their app open, such as learning in Cadiz on a mobile device about the Phoenician city buried below of Gadir (Rivero et al. 2021). These apps represent a growing market for heritage as the people who use them seek to learn about their heritage in innovative ways.

Heritage education helps the goal of nation-building through contributions to the awareness of a people's cultural legacy. Cultural legacy is a form of heritage as people associate themselves with a past group actively in the present, creating connections between both through

culture. The relational method given by Rivero (2021) states “these connections between cultural artifacts and people is one of the most valuable ways of achieving quality meaningful experiences based on understanding and appreciation of the cultural legacy” (Rivero et al. 2021). Applications such as the museum of King Charles V of Spain in Mojados creates a cultural legacy for users of the app to increase their sense of heritage (Rivero et al. 2021). However, the education of heritage depends on if the individuals value and associate with a heritage, hence there is a focus on cultural legacies because a population group already associates with it.

Graham and Howard (2008) point out the implicit problem of defining heritage tourism: producers and consumers are not easily segmented into discrete groups (Graham and Howard 2008). Different actors converge together to claim a spaces’ heritage for themselves or create conflict over whose space it is for their own nostalgia, heritage, nation-building, preservation, and monetary benefit (Graham and Howard 2008). An example of this can be seen in the case of the Social Heritage App, created to “facilitate the processes of heritage education in the city of Cartagena de Indias (Colombia)” (Mendoza et al. 2015). It was made for two users, the citizen and the visitor/tourist, which creates problems about the rights to a space for certain groups and how to value a location within a culture and outside of it. This platform carries out informal heritage education for the citizen class by conducting collaborative content management (Mendoza et al. 2015). The creation of digital space opens this conflict of a space’s value to a new realm of who should be serviced by these heritage applications and how educational they are for any user.

2.8.3 Heritage of a Nation

In the process of the state creating a nation unto itself is the transparent process of unfiltered history and tradition is fashioned into a heritage of the state. These locations,

landscapes, relics, and practices authenticate narrative claims of a national identity in a collective heritagization process (Graham and Howard 2008). In this process different sites have been valued by past and present cultures, making the appropriation of these sites a deliberate act necessary for them to be a vestige of an inalienable nation (Graham and Howard 2008). It shows heritagization as more than an authentication of the present group but a participatory process of crafting a national saga (Saintenoy 2019). Heritagization is needed for invoking the past as a symbol of a current nation and is studied as authentication methods for national rule.

Heritagization for nation-building was instigated by Peru's Minister of Culture to create a large investment pool to realize potential social development. Looking southbound Chile's government has had minimal investment in this department, but in the regions of Arica and Parinacota (bordering Peru) a social development program seeks to have ancient roads undergo the heritagization process. These roads and pathways are seen as "endogenous nostalgia" from the paths connecting abandoned rural settlements because they showcase a past of rural areas as thriving and well populated before urbanization to the contemporary urban and rural communities. Saintenoy (2019) further stipulates "layers of cultural meaning and ethical values are encapsulated in rural road networks as they constitute a resource for the formulation of heritage projects in various ways". One of the cultural layers can be the indigeneity of the project and region, as 36% of Arica and Parinacota's population is self-ascribed as indigenous (9% nationally) and in the rural highland portions where the project takes places to revitalize indigenous road networks, they make up 60% of the population. This project attempts to create heritage for the traditional highland roads for hiking and walking (Saintenoy 2019). It allows the creation of value for these forgotten roads to create local tourism and for the urban and indigenous populations to walk the roads again.

In a study by Saintenoy (2019) on the topic highland roads in Arica and Parinacota, the project of heritagization and promotion of hiking trails was considered a failure for several reasons. One was a belief “policies promoting indigenous heritagization are often misinterpreted by local actors because of their misunderstandings regarding the concept of heritage and ownership” (Saintenoy 2019). Saintenoy points to the neoliberal state of Chile as a factor influencing the recognition of indigenous heritage. However, Saintenoy also points to theoretical debates about the impossibility of the concept of heritage outside of the capitalist sphere because it requires the sense of ownership history a group values. It is the ownership of a heritage fermenting competition as seen in this Chilean project as its purpose of being a common good for hiking and local tourism ended in failure to favor a side, instead commodifying the non-mercantile phenomenon of heritagization for a touristic project (Saintenoy 2019). This results in no culture using the landscape for recreational hiking “despite appearing as a locally rooted project” as it sits forgotten. There are several reasons why the local indigenous population did not utilize the heritage hiking highways. Firstly because it was an exogenous proposal from the urban city (Saintenoy 2019). Secondly Western concepts of using mountain spaces for recreational use was cited as conflicting with the purposeful use of these indigenous trails for transportation of people and goods. As this study shows several issues with heritagization projects, it outlines the “risk of confusion between cultural revitalization and cultural tourism and difficulty of applying concepts of cultural routes because of the heterogenous nature of this heritage construct” (Saintenoy 2019). Learning from these mistakes can help future cultural revitalization programs achieve their social purpose of creating a collective cultural memory about a heritage to strengthen the social cohesion of a community (Saintenoy 2019).

2.9 Communication Geography

Great interest in mediated communications by geographers emerged in the late 1990s after Ken Hillis's article about the 'invisibility of communications in geography' in 1998. The surge of these articles in communication geography has spurred a specialty group dedicated to this subject within the Association of American Geographers which took inspiration and research interest from the International Geographical Union's (IGU) 'Geography of the Global Information Society' (Adams 2011). The IGU is an older association studying 'communications' in all its forms, rather than just innovative digital means of communication. Similarly, to the term 'communication', 'media' has been narrowed to new forms of material arrangements for communications instead of old and new materials or social arrangements of communications (Adams 2011). As media is understood by scholars like Adams, as referring to exchange arrangements connecting "one to one, one to many, many to one, and many to many", not limited to information of human interaction (Adams 2011). Mediated geographies are thence the interplay of movement between these exchanges of communication.

In communication geographies, there is a concept of tension creating exchanges that facilitate communication media. One tension given by Adams (2011) is "the pull between space and place" to attach content to space to transform it into a place. The second tension is described as "arising from contrasting assumptions regarding the containment of mediated experiences within real, physical contexts of interaction, or the real world as that which is captured, packaged, and transmitted by mediated contexts of interaction" (Adams 2011). Given both tensions, communication is either the contents or context of a place and space respectfully (Adams 2011).

A segment of communication geography is understood as looking at how places and objects ‘speak’ in a communicative form. Beginning with the idea of maps ‘speaking’ a cartographic language to its audience, studies looked towards place images like maps to study. According to Adams (2011), place images (including maps), contain a social hierarchy, that potentially resists, evades, or supports manifestations of power (Adams 2011). A primary focus of communication geographers is the legitimization and exertion of power by place images through communicating to an audience (Adams and Jansson 2012). In computer games places are a manifestation of the procedural rhetoric of the game designer’s worldview (Adams 2011: Bogost 2011, Ch.15). Thus, a context beyond the content seen in the place image is studied to understand it’s meaning, such as studies of film look at actors on and offscreen to capture the multi-sensory engagement with such a media arrangement (Adams 2017). The study of place images through media is a growing field of geographic discourse as new developments in information and communication technologies have shined a light on all forms of communication.

For political geographers, communication studies mean the exploration of media at a macro scale of geopolitical symbols of power and dominance (Adams and Jansson 2012). Media serves the role in helping the state’s image of their space through new context seen in nation-building. Communication geographers however, “conceive of power as inherent in global and national scales” but communication theorist believe “conceive power in a localized and representational way” (Adams and Jansson 2012). Geographers find power in these local scales as an effect of glocalization, still serving the national interests of their study because of how they are affected by the context of greater scales.

Geographical theories, such as phenomenological and nonrepresentational theories interpret communications as not understood except in “place as part of place’s rich mixture of

subjectivity, power, emotion, and affect” (Adams 2011). This creates the challenge of a place being an object of material and symbolic dimensions not able to be reduced to references and stereotypes in the media. New trends in media hope to solve these issues through increasing interactivity, portability, and translatability to increase representations of space (Adams and Jansson 2012). Furthermore, place as a geographic reality is challenged by the digital turn, shifting studies from positivistic models towards digital representations of who overcomes digital divides (access to the digital) (Adams 2017). The shift here in study models is an adaptation of the discipline, staving off claims of the ‘end of geography’ or ‘death of distance’ that emerge from time-space compression because of a focus on communication spaces having specializations and differences of power and control creating more heterogeneity over homogeneity (Adams 2011). Geographers henceforth see every innovation as a new challenge of representation or power because they create new avenues for tension to emerge.

Research Questions

When looking at ludic elements of *Aya*, the selection of specific historical elements to simulate a reenactment of Chickasaw history is important to analyze to notate the sections of the national history emphasized by the nation in the heritagization process. These heritage items are then expressed through *Aya* in the form of ludic elements that help the user reenact historically authentic stories and encounter historical paths and items in the app. Moreover, *Aya* is testing if the commodification of history and heritage into a reward system can motivate a citizenry successfully in pursuits such as walking. Heritage is therefore leveraged as a motivator for walking, as the ludic elements are meant mainly for the citizens of the Chickasaw Nation. However, the role of heritage as a motivator is not valid for the non-citizens who use the app, and thus test the app on the merits of its ability to wrap those people into *Aya* with less outside

context and attachment about the Chickasaw Nation. Will people exert themselves for walking for the greater purpose of their national identity. What identity is being constructed and taught in *Aya* through the stories it tells? *Aya* commits to nation-building through the construction of a shared heritage found what the app teaches to its users. The *Aya* app leverages heritage in innovative ways to achieve a multitude of possible outcomes through its proliferation and use.

Chapter 3: Methods

To study the *Aya* app, a multimethod approach was implemented to cover the various aspects of the research questions. Qualitative coding was conducted to surmise the key elements of heritage and nation-building found in *Aya*. Meanwhile the user base was surveyed to gather results evaluating the effectiveness of *Aya*'s heritage and nation-building elements as motivators for walking. Additionally, analysis of content through the critical geopolitical lenses added additional commentary upon the results to craft further analysis upon the action of the Chickasaw Nation in creating *Aya*. These will help provide results for the research questions proposed by this study.

3.1 Data

In 2015 developments towards the *AYA* application began as “the Chickasaw Nation had begun working on a first-of-its kind interactive walking application” (Cooke & Parker 2021). This project was created through the Chickasaw Department of Culture and Humanities and Department of Communications in Ada (Cooke & Parker 2021). The app was developed by Sovereign Technology Solutions, LLC and eventually made known to the wider public when Chickasaw Governor Bill Anoatubby announced the app during his “October 2018 Chickasaw Nation State of the Nation Address” (Fyre 2019, p.1). The *AYA* app was officially launched the same day as his address and promoted through official Chickasaw channels, such as the January 2019 edition of the *Chickasaw Times*, and physical advertisements seen at Chickasaw owned locations as part of the roll out (Fyre 2019, p.1). The *AYA* app continues to receive updates adding new content to the app and support by the Nation to increase its userbase on all Apple and android devices for free download (Fyre 2019, p.1).

The *AYA* application was developed by the Chickasaw Nation to increase the level of physical activity of its citizens through walking. The app does this through narrative motivation, by placing the user along a virtual path. As the user walks in the real world, they journey through this path unlocking parts of a narrative story along the way in addition to other rewards. This journey represented in the ‘*AYA*’, which means “to journey” in the Chickasaw language, is based on Chickasaw history, incorporating it into the possible unlockable rewards earned by the user as motivators. This promotes the heritage of the Chickasaw people by creating the experience in the app that citizens of the tribe can partake in and come to value. This is a part of what the Chickasaw Nation terms as a “cultural narrative” that helps construct a national myth or story for the people to latch onto to create their identity as a citizen of the Chickasaw Nation (Cooke and Parker 2021). These narratives then serve a dual purpose of creating a motivation to exercise and develop their national identity.

The *AYA* app was originally outlined with a cultural narrative of removal, replicating the trail taken by the Chickasaw during the 1830s when they were removed from their homelands in Mississippi to their current location in Oklahoma. Along this journey users “learn about geography, origin stories, oral histories, dances, language, dress, family hierarchy, war traditions, food traditions, Oklahoma history, and Chickasaw history” (Cooke & Parker 2021). This information is also available by audio to replicate the oral tradition of the Chickasaws storytelling. Along these trails there are additional points of interest highlighting information related to the larger story or geography of the trail. Each trail is accompanied by a walking partner, who represents the trail and recites the information to the user.

The *AYA* app released with five walking partners who all had the removal trail as their path but with different information that complements each character. This first set included

Akanowa, a grandmother from the 1500s, Hikatubby a Chickasaw warrior during their encounters with the conquistador de Soto, Eliza a twelve-year-old girl during the lead up to the statehood of Oklahoma, Solomon a farmer and his wife Mah Wah Ta. Their return trails match the 444 miles taken between Tishomingo, Oklahoma to Tupelo, Mississippi revealing their own story while the user's progress is tracked on the map as they make their way back to the Chickasaw homelands. Other walking partners have been added in updates such as the Cattlemen update which focused on the Indian territory period of Chickasaw history (Cooke and Parker 2021). Characters such as constable Silas, schoolboy and horseman William, and former educator turned rancher Ollie Belle are portrayed, each with their own trail and stories. The next update focused on the police force, or what is known as the Lighthouse of the Chickasaw Nation, along a family lineage. This family includes Ben, a Lighthouse during the late 1800s, his grandfather Emet, and his descendent Talowa serving in the contemporary Lighthouse force of the Chickasaw Nation. The most recent updates focus on historical figures and their personal stories rather than these anachronistic characters that help tie together information more easily. The first of these focused on astronaut John Herrington and his life and follows a trail of his biking adventure across the country (*AYA Walk* 2023). These characters represent the bulk of content from the *AYA* application and will be a main body of study for this project as information is tied to their story and your progression along their trails.

Rewards not tied to the story progression of the walking partners are found in the *AYA* app to keep users engaged through other methods. Badges are awarded to users as they walk to instill a sense of accomplishment. Items can be unlocked containing Chickasaw words to help preserve the endangered language. Chickasaw prayers and hymns are given to listen to and read to create a moral guidance for the Chickasaw identity and encouragement to continue to walk;

some songs may be in the Chickasaw or Choctaw language and help with the preservation effort. “Stumble-upon” items are another unlockable that contains either plants, animals or objects that contain historically relevant information or encouraging messages for the user to fuel the motivation for walking the trail (Cooke & Parker 2021). As the *AYA* app helps users rekindle their heritage with the Chickasaw nation as it promotes the traditions of the tribe through the messages and information conveyed through all aspects of the *AYA* app.

3.2 Digital Geography

The study of digital games by geographers takes on three dimensions when analyzing their geography. Ash and Gallacher (2011) argue the three geographies of study for digital games are “geographies in digital games (such as the within-game representations and politics), the geographies of digital games (relating to the “real world” ways in which digital games are produced, marketed, and consumed), and the geographies around video games (focusing on the specific ludic practices players develop, e.g., forming social guilds to play with like-minded peers)” (Ash and Gallacher 2011; de Zamaróczy 2017). The first geography provided by Ash and Gallacher will be studied in the *AYA* application through textual interpretation to gain the geographic sense of items represented in the *AYA* application for nation-building and aspects of heritage. The resources for this were gathered through playing the application and content transfers from the Chickasaw Nation. The second geography around video games gathers the ludic practices of players through a survey distributed to players to gain their perspective on the *AYA* app. Through these geographies the *AYA* application will be examined to gain an idea of the roles of the *AYA* application.

3.3 Textual Interpretation Data

Data for textual interpretation was gathered through the use of *Aya* and reading manuscripts of the unlockable content provided by the *Aya* developers. Through playing the *AYA* app, reading the rewards, and content given to the user. I will be able to examine the experiences the user has in *Aya* by experiencing it myself. This content will then be subject to qualitative coding to allow the larger themes of the *Aya* app to be emergent through the coding of the content.

3.3.1 Ludic Analysis

The elements of the *AYA* app will be examined with a large focus on popular geopolitics and international relations. Nexon and Neuman (2006) suggest popular culture and international relations intersect in four ways: “artifacts can impact the real world, popular culture as data for existing norms, identities, and beliefs in the world; popular culture as a mirror looking for similarities and differences to the real world, and finally can ‘naturalize’ ideas, phrases, and metaphors, from the cultural into the ‘real world’” (de Zamaróczy 2017). All these facets are useful from a geopolitical perspective, such as the fourth intersection of “popular culture as constitutive” can explain government initiatives into popular culture to propagate their own agenda (de Zamaróczy 2017). A fifth avenue discussed is “popular culture as pedagogy”, as popular culture is integrated in the classroom, to make educational concepts accessible for learners (de Zamaróczy 2017). This can be seen as a trend with the rising gamification of education and educational approaches in gamified applications like *AYA*. Surprisingly videogames in the realm of cultural studies have received little attention despite their popularity, with cultural geographies mainly focusing on film as a media (Ash Gallacher 2011). Nexon and Neuman’s thoughts on the methodology of games studies is to study an “entire class of games”

to have more generalizable and valid results and identify trends across games (de Zamaróczy 2017). However, in this study the unique position of *AYA* as a multifaceted application with a unique nation-building aspect for an autonomous government within a larger state justifies its own study to examine these factors on a game. Therefore, a specific approach to this topic is needed to understand the ability of other autonomous governments to incorporate popular culture and media strategies into their own agendas.

3.3.2 Textual Interpretation

A key method for analyzing how the state constitutes popular culture is the hypodermic needle model, a way of sublimely propagandizing to people. Through this method, state actors can help sway citizen activities, such as personal exercise to fit the agenda of the state. Once these thoughts are implanted into a piece of popular media, textual analysis is undertaken to determine what ideas are embedded in the media. Dittmer and Bos note “geographer David Livingstone has theorized the act of textual interpretation as occurring through two types of geography” (Dittmer and Bos, 2019. P.143). The first type is “the cartographies of textual reception”, referring to imagined communities for this text creating a collective unity through this and other aspects such as linguistics (Dittmer and Bos, 2019. P.143). " The second type of geography through which textual interpretation occurs has been termed by Livingstone as the cultural geographies of reading. This refers to the more complicated social network in which every textual consumer is embedded” (Dittmer and Bos, 2019. P.144). This helps note the complexity of external factors on the audience adding an important consideration of who uses the *AYA* app. This is why other demographic information is needed to ascertain some knowledge of what their most important aspects are when it comes to the Chickasaw Nation and national identity. The text of the *AYA* app will affect these participants differently and thus should be

analyzed for its textural interpretation of how they affect the viewer and why they were designed in that way.

Key elements for textual interpretation are understanding assemblages in the creation of the *AYA* app. An assemblage “is a collection of heterogeneous things, in relation to each other, that is more than the sum of its parts” (Dittmer and Bos, 2019. P.147). An assemblage of the various aspects of the nation, health goals, educational content, history, language, and stories, helps craft the Nation and the *AYA* app as a greater sum of its parts because it seeks to improve all these aspects of its user at once. Heritage is a core aspect of the assemblage of the *AYA* app because it demonstrates what the Chickasaw Nation values most in crafting its national identity. Dittmer and Bos define heritage as “an element of the past that has contemporary significance” (Dittmer and Bos, 2019. P.151). Heritage in this way represents a way for a specific group of people, in this case the Chickasaw Nation, to take hold of a past event, item, or practice and actively give it value, which in this case is demonstrated by the inclusion of these heritage items in the *AYA* app (Delgado-Algarra and Cuenca-López 2020). This notation and interpretation of text and elements helps understand what elements of the *AYA* app are actively being valued as part of the heritage for a national identity.

3.3.3 Nonrepresentational Theory

The nonrepresentational theory presents a means of going beyond the analysis of representation, discourse, and language. Instead, it offers new modes of thinking that attempt to explore the excessive nature of everyday experiences. In this sense, we can think about how popular culture is not just representation but as what it does to us. A component of this is the affect, or the sensation linking a person’s biological body and cultural world. This may appear in *AYA* from the sensation of being compelled to walk giving signs of physical exertion or mental

affects of reading content from *AYA* changing the thoughts and feelings of the user (Dittmer and Bos, 2019). These processes by *AYA* may be amplified by the individual experiences of the user, making another point as to why a demographic understanding of them is useful to denote key groups' response to the stimuli of the app. Another point is understanding the resonance of different aspects of assemblage in the app which may resonate with the audience with a larger affect (Dittmer and Bos, 2019). The goal of such an assemblage is to enhance the immersion of the virtual environment by providing more interactive environments. A key element of interactive immersion is the visuality of the virtual elements. As the visuality is understood as a "blending of biological vision with cultural processes that mediate it", as such a description an analysis of the non-textual elements is needed to understand the other immersive elements of the app and its affect on the user (Dittmer and Bos, 2019. P.137). These elements for further analysis help our understanding of the 'performance of state power' with the *AYA* app (Dittmer and Bos, 2019).

3.4 Operationalization of the Questions

When studying abstract concepts such as heritage in the *AYA* application, operationalizing is a concept used to "turn abstract concepts into measurable variables (O'Leary, 2017. P.231). This is done by defining each term and creating indicators for your surveys to determine if respondents are influenced by such concepts. Common ways to do this is through interval response scales or Likert scales, which "offer a range of responses generally ranging from something like 'strongly disagree' to 'strongly agree'" (O'Leary, 2017. P.236). Likert's are used because they allow respondents to display their level of interest along a continuum for the concept. For each scale, a statement is given for a respondent to agree or disagree with, corresponding to an associated concept verified by an expert on the relatedness of the statement.

Similarly in closed responses, each response is linked to a concept. When given open responses, researchers must code the response, but this becomes difficult for analyses due to a lack of clarity from an online format (O’Leary, 2017). Operationalizing in this study is used to generate data about respondents' feelings toward general concepts, such as heritage, health, and history.

3.5 Qualitative Coding

The stories told in the AYA application are many and comprehensive in length. A method used to help display the emergent theme of writing is qualitative coding, process by which lines of text are given a ‘code’ or ‘tag’ that

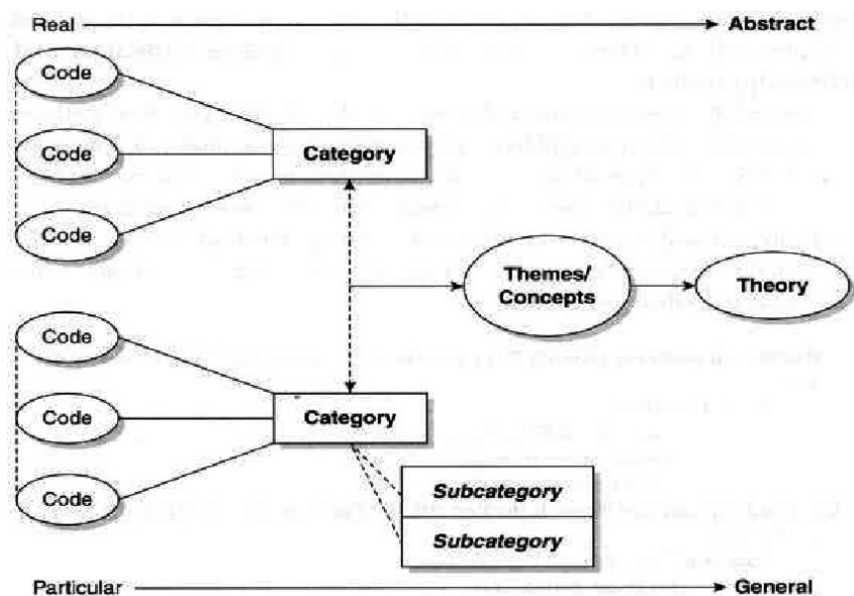


Table 1. Qualitative Coding into Themes. Saladana 2013, p. 13

summarizes a key aspect of the lines of text. These codes will help show the main aspects of the tribal history focused on by the AYA application through its stories with its characters (Saladana 2013, p. 13). The code will then be categorized into categories to help group together the code even further to help decipher what themes are portrayed to the AYA user by the Chickasaw Nation (Table 1). Once these themes are known it will help us in crafting a theory as to the purpose of the AYA application’s stories to connect with its users or change their behavior as a goal for the larger Chickasaw Nation. The process fits into the codes-to-theory model shown in the figure below, as it is a process helping extract our abstract understanding of the goals of the Chickasaw Nation from the minutia of details from the AYA application (Saldana 2013, P.13).

Because each person's interpretation of text will lead to different data results through qualitative coding, it must be stated here I was the one coding the text from the *AYA* application as I am a citizen of the Chickasaw Nation and I more closely fit the target demographic of the *AYA* application. However, within that demographic, we must knowledge a wide range of possible codes and conclusive theories that may emerge from this process.

3.6 Procedural Rhetoric used for Analysis

Developers of the *AYA* application must also be versed in the history of the Chickasaw Nation to determine items of heritage and incorporate them into the app. Thus, the developer is what is called a 'developer-historian' because the developer arranges the past by their own interpretation as a historian would. Then they proceed to their developer role by creating the historical simulation in the code of the application. This process is understood as procedural rhetoric, as the developer-historian conveys their message to the player, through the structure of the gameplay and content of the game. This understanding of a developer as a historian implicates the player as a historian through their own internalization of the procedural rhetoric through gameplay (Heinio 2019). The player informs themselves from the perspective of the developer-historian to criticize or preach its historical interpretation. For nation-building, this represents a way of creating a national understanding of history through a shared resource of a game and heritagization of specific content implemented into the game.

3.7 Survey Rationale

In Crilley (2021) it is understood the emotions are heavily affected by popular culture to a degree it affects international relations studies because a populace is herded emotionally by these experiences. Therefore, emotions shape the discourse of a subject and henceforth Crilley

believes should be studied to “understand how audiences interpret and feel emotions toward the popular culture texts they view and engage with” (Crilley 2021. P.172). This requires surveying to poll how an audience feels about a popular culture artifact and how it may change their views and understandings through the emotions it evokes. Based on these reasons a survey of the *AYA* application’s users is necessary to engage its population to understand the effects of app on the user and not just the creation of the app and its purpose alone.

There have been other efforts to study how historical games are seen by their users. Historical games provide a holistic learning cycle because it prompts the player to oscillate between play and historical research, which can take place away from the game as well to have greater appreciation of the historical affordances of the game. In a study by Loban (2022), a survey testing geographic and historical knowledge of participants before and after playing *Europa Universalis 4* was administered. Once playing as the Aztecs provided greater historical and geographic knowledge gathered from the map visuals of the game and showed greater knowledge of the Aztecs than the control group who did not play a game (Loban R, 2022). It is because of examples like this, play is seen as an important part of a person’s understanding of history because it may be the closest frame of reference for a historical experience. Therefore, a survey of the *AYA* users may show great interest in Chickasaw Nation and knowledge of its history.

3.7.1 Survey Format

The survey of the *AYA* applications player base was conducted with the express knowledge and permission of the *AYA* application team and the Chickasaw Nation. This was done to disseminate the survey through official channels (email, social media, etc) to gain a better and more representative sample of the *AYA* player base. The questionnaire was created

using the Qualtrics survey platform to host the survey and record data. The survey was crafted to capture the effects of the *AYA* application on the user, based on their own feelings towards their physical health, heritage, education, and the Chickasaw Nation.

The effects of the *AYA* application are theorized to be increased among citizens of the Chickasaw Nation because of their own in-group identification with the Chickasaw Nation. The “Self-categorization theory suggests that identification with an in-group makes the group a central aspect of the individual’s self-concept” (Leach et al. 2008. P.4). Using this theory, a citizen of the Chickasaw Nation will be more likely to play the *AYA* application and it will have a greater effect on them because aspects of its connection to their own self-conception, which is in tandem with mechanical solidarity (identity based on similarities e.g., language, physical features) (Leach et al. 2008). That feeds into this cycle as well by being a nation instead of a civic institution. Although, the organic solidarity (subjective sense of purposefulness with an in-group) they feel with the nation to participate in the *AYA* app could be derived from other social connections (employment, friends, in-laws, etc) (Leach et al. 2008). Hence this creates the need for further demographic inquiries into a user's relation to the tribal nation. If no relation is found this may be a case of self-definition at the group level, seeing if they report the same as the other categories. Furthermore, noting the reports from questions relating to national identity can help see the effects of the *AYA* application. According to the social identity tradition, self-investment with an in-group increases self-identification with such a group (Leach et al. 2008). Thus, the stories told in *AYA* to connect with users on an emotional level are a nation-building tool, as players are thought to increase their own identification with the nation. Therefore, this is another reason why demographic and national identity questions are important.

Using a study by Nicholas Hanson, Lindsey Madaras, Jessica Dicke, and Janet Buckworth on the motivations amongst half, full, and ultra-marathoners, *Aya* can be more thoroughly examined on the motivations it provides (Hanson et al. 2015). This study found “full marathoners scored higher than ultra-marathoners on personal goal achievement, but ultra-marathoners reported more intrinsic motivation for running” (Hanson et al. 2015, p.180). Therefore, if physical health is a goal for the Chickasaw Nation, appealing to intrinsic motivators such as national identity, and empathy through storytelling could yield better results based on this study. The testing of the physical variables is important to gauge how well motivators like heritage can be for physical health. Using similar methods to this survey, a Likert scale was implemented for this questionnaire to assess the motivations for *AYA* users (Hanson et al. 2015). Assessments of reports will be done using mean, median, standard deviation, and bivariate correlation to calculate aspects of the survey results (Hanson et al. 2015). The test of these aspects in such a manner will help quantify and illustrate the differences between previously stated demographic variables.

The questions in the survey follow the format that Driver (1983) lists of items for Recreation Experience Preference (REP) scales and domains. This outlines a series of scales from which our research team selected a few such as learning and physical fitness, that adhere to the *AYA* applications functions and our areas of inquiry. These scales provide questions that can be duplicate questions to test response to the survey, helping us identify if a person is confident in their choices in for example joining *AYA* to be in shape, versus, joining *AYA* to exercise" (Driver 1983). These provide a way for our survey to gain consistency in our results and know better how a player has responded to the *AYA* application. The survey will therefore have this

system of questions after the demographic section to gauge users' motivations, and feelings towards the *AYA* application and their progress with it.

3.7.2 Question Rationale

The format of many questions follows the Recreation Experience Preference (REP) scales in domains to ascertain the general feeling of users towards a topic using a range of three test questions to gauge their consistency (Driver 1983). The following questions utilized this method 9, 22, 23 and, 11 to 13. In the first three they were organized as matrix questions that encompass the main topic in different ways to gauge the consistency of responses on the topic.

Question 9 being the largest matrix had 9 questions within it for a subset of 3 topics. The first three questions of 9 are related to their Chickasaw national identity and should tell us how strong they feel about the Chickasaw Nation. The second trilogy of subset questions in question 9 matrix is gauging why they may have started *AYA* besides exercise with the final trilogy of the matrix being a test to see if exercise was the primary motivator for downloading *AYA*.

Questions 11 to 13 are all questions related to the leaderboard system, with the latter two being REP tests. The first question filters the users to those that use the leaderboard system, and the next two questions gauge whether users are affected by the leaderboard system to encourage the users exercise out of social competition.

To gauge the effect of the *AYA* app on those who are not citizens of the Chickasaw Nation, question 22 is a matrix of three questions to gauge the soft power of the *AYA* app on these populations. All three questions in the matrix are used to see the users current outlook of the Chickasaw Nation, reflecting the soft power of the app on the users. The next matrix (question 23) is for Chickasaw citizens, unlike question 9 this one specifically ask how the *AYA*

app has made them feel about the Chickasaw Nation. From this we are able to interpret what effect the *AYA* app had on the self-identification of users as Chickasaw and their national pride emerging from the app.

The first page of the survey entails a consent form, which users must agree to in order to fill out the survey. The first question is a demographic question asking the users relation to the Chickasaw Nation, this is necessary to be displayed early to have the proper questions displayed later depending on their answer to this question. Other demographic questions (24, 28-30) are at the end of the survey due to many users having immediately known responses to these questions, unlike other questions they may need to carefully consider. Thus, placing these questions at the end instead of the beginning allows users who are tired of questions to receive easy questions once they reach that point in the process to expediate them to the end of the survey. These demographic questions additionally help serve the analysis later, as the responses here will be compared to earlier questions to gauge what populations the *AYA* reaches effectively.

Location related questions are found toward the end in questions 25, 26 and, 27. These questions determine the effectiveness of *AYA* in reaching the disperse population of the Chickasaw Nation and the differences in responses based on relative location to the Chickasaw Nation. Distance to the Nation may affect the users' feelings towards the Nation or their distance from it could affect the desire to learn from *AYA*. Question 4 identifies where they may have heard about *AYA* from, furthermore identifying what marketing methods help the Chickasaw Nation reach its population effectively.

A key component in marking how engaged with the content is asking how long and how often the users of *AYA* read its text. Question 2 measures how long they have had *AYA* and Question 3 ask how often they engage with its content. This will help determine the effectiveness

of the app when questions test a multitude of variables we're looking for. Such as questions 5 and 6 asking how much they walk or questions 10, 14 and 18 identifying if and what content is motivating the user to walk; with 14 working with the themes as a type of content as well. Furthermore, questions 16 and 17 focus on the map system, with 16 focusing on the use of the system and 17 the effectiveness of the map system as a progress bar function in making the user feel accomplished in their goals.

Citizen related questions 7 and 8 ask about a citizen's national belonging to the Chickasaw Nation. Question 7 asks about their feeling of heritage towards the Nation after the experience of *AYA* and question 8 asks if their knowledge of the Nation from *AYA* has increased the sense of connection to the Nation. In tandem these questions test if using *AYA* for fitness goals is enough to feel more connected to the Nation or if engaging deeply into the content is needed for a stronger identification with the Nation.

Heritagization is tested with several questions in the survey, as they are meant to gauge how much users are identifying these heritage items with the Chickasaw Nation. Question 15 asks if a user when experiencing *AYA*'s content feels like they are interacting with an anachronistic citizen of the Nation. The heritagization of content is furthered if users find it is from an authentic source, such as these characters are trying to portray. Question 19 is gauging if *AYA* has successfully made recreational walking a core part of Chickasaw heritage. Question 20 finds if users have been motivated by their heritage to visit locations noted in *AYA*. Question 21 supports question 20 by asking about the user's mental image of the Nation and attachment to location.

3.7.3 Survey Distribution

The survey was conducted through a virtual link to Qualtrics through various channels of communication the *AYA* application uses to communicate with its users. A survey-related post, with the links to the survey, was posted twice on the *AYA* Facebook and Instagram pages. In addition to these routes, any user of the *AYA* application with the preference for news and update emails checked, was sent an email with the survey link. 12,584 emails were sent out in total with our sample population also being pulled from those who looked over the applications' social media accounts. The online method is justified in reaching our sample population because *AYA* users will be using the *AYA* application from a device with internet access. Therefore, the population should be duly represented in the sample.

3.7.4 Online Surveys

Online surveys are self-administered surveys, that either directly contact the sample population through email or passively through links on webpages associated with the population. The advantage of this method is the anonymity and time it gives for respondents to fill out their responses. Moreover, the wide geographic reach of online surveys is a boost to sampling populations that may be disperse (O'Leary, 2017. p. 226). This is an advantage to reach the users of *AYA* across the Chickasaw Nation and those who may be far away from the Nation which would be of interest for our questions related to national pride.

Online surveys are not always the best method as several critiques abound from their use. Online surveys, due to their more passive nature, have very low response rates and do not allow for clarification (O'Leary, 2017. p. 226). Online surveys may be passed over by respondents due to a lack of interest or the length of the survey overwhelms the respondents who simply click

away. Since the inception of online surveys people have become more annoyed by the barrage of questionnaires in their inbox, resulting in decline over time in responses due to users deleting, creating trash folders, or ignoring survey request due to the barrage of surveys (Nayak 2019, p. 33). Due to challenges in response rates, a *low response rate plan* is a tactic in surveying to create a backup plan in case of low response rates (O’Leary, 2017. p. 230). For the AYA survey we implemented our low response rate plan in sending out the survey a second time, which garnered a handful of new responses.

Responses to online surveys may not always be the most representative, as participants’ seriousness to the questions cannot be gauged. For example, a selection of a midpoint in a Likert scale may indicate a careful consideration of both sides of a topic or an apathy towards the subject altogether. Mobile responses suffer from challenges presented from having a smaller screen, resulting in lower responses to open-ended questions. Additional challenges for online surveys exist in the tools used for surveying, such as security and visualization. As depending on the web tool used, the data may have security issues or if shared between people may be at risk of leaks. The site itself could be prone to crash or the research lacks the proper internet connections to parse through the data, which itself presents a challenge if the web tool has limited text visualization options to prefixed models (Nayak, 2019. p. 36).

Chapter 4: Results

4.1 Interpretation of the Language Features

A core component of the *AYA* app is language revitalization, as seen in the numerous language features of the app. This is a part of a wider effort by the Chickasaw Nation to revitalize the endangered Chickasaw language by putting it into various programs. These programs range from immersion camps, language flashcards for toddlers, and *Uno* redone in the Chickasaw language as ‘*Chaffa*’



Figure 2. *Chaffa* (Chickasaw Uno) cards

(meaning one) (Figure 2). These programs spearheaded by the tribal government serve the purpose of nation building. Those that have succeeded in learning the language are met with admiration, as the *AYA* senior program manager Arielle Deer discussed Joshua Hinson’s role as director of the Chickasaw Nation language program (Johnson 2023, p.30). *AYA* itself incorporates the language into its name and as one of the functions of the app.

The *AYA* app teaches the Chickasaw language through various parts of the app. Daily emails may include words of the Chickasaw language. Stories from the walking partners contain mentions of the words in lieu of their English counterpart, for example *tanchi* is used instead of corn, and ‘stumble-upon’ items from these partner’s trails may include words as well. Chickasaw is used in the songs and prayers as rewards, with the hymns of the closely related Choctaw language used as well in this role. Furthermore, badges can be earned by playing a quiz ‘mini game’ within the app to test a users’ knowledge of the Chickasaw language. All these functions serve the ludic purpose of creating a Chickasaw theme around the app. This adds a higher level

of immersion into the core mechanics of the app around the virtual journey in Chickasaw history, the app is given a better appeal to authenticity by the language inclusion and therefore increase the amount of trust the user may feel towards the information in the app. This helps validate the national elements of the app and imprints a growing sense of national identity on its users.

Chickasaw language revitalization is a form of hierarchical diffusion at the surface to create a new national identity through a top-down form, as nation-building is mainly an elite driven process. However, nation-building must be received and negotiated with a people, which suggests a cooperative nature between the ‘nation’ of people and a government in creating a new identity (Polese, 2011). Language itself being the core of national identity, it plays the dominant role in identity development because of its foundational element to culture. In the nineteenth century, agitation for independence was “more often based on a ‘prepolitical’ existence of a common language” for a nation (Safran 2005, p.43). This phenomenon was formally arbitrated after the First World War in Wilson’s ‘Fourteen Points’ as a major criterion for national self-determination’s application in creating nation states (Safran 2005, p.43). Therefore, the *AYA* app is one of the many tools used by the Chickasaw Nation to further its revitalization goals to distinguish itself as a nation. Nation-building through the *AYA* app must be reciprocated by the users to learn, and as an effective motivator to continue using the *AYA* app. Thusly, the users of the *AYA* app can showcase the cooperative nature of nation-building as users want to learn and partake in aspects of a national culture.

4.2 Quantitative Results

The survey, after being sent out twice, received a total of 47 complete surveys after four were thrown out for not consenting to take the rest of the survey. Of the 47 respondents, 70% were Chickasaw citizens, 4% had family members who belonged to the tribe, 9% were Native

Americans of a different tribe, 4% claimed Chickasaw ancestry but are not citizens of the tribe, and 13% were not native nor had familial relationships to the tribe. Moreover, 51% of users reported using the AYA app for a few years, with an additional 21% using the app for over a year. Of those who have been using the app for several years, 82% were tribal citizens, showing that the early rollout of the app easily captured the citizens of the Chickasaw Nation due to its custom approach towards citizens but struggled in wider appeal. Only later in the AYA app's life was it downloaded by others because of word of mouth from the Chickasaw citizens. Recent growth in the past year contributes to a third of active users. Keeping the remaining two-thirds as a long-term audience is a marker of success for maintaining a health app's audience because a prior study found 75% of health app users stop using the app within two weeks (Tu et al. 2019).

The users of the AYA application indicate the app is helping them walk more, as no user selected the "I hardly walk at all" option and the largest portion of 38% selected the "I walk a lot every day" option (Table 2). While the app may increase the general feeling of being a better walker the self-reported steps found the median to be between 4,500-6,000 steps (see Table 3), which is much in line with

Table 2. How would you describe your walking habits?

#	Field	Choice Count
1	I walk a lot every day	37.78% 17
2	I walk a lot occasionally	26.67% 12
3	I walk a normal amount	20.00% 9
4	I walk less than normal	15.56% 7
5	I hardly walk at all	0.00% 0
		45

the average of 4,000-5,000 daily steps taken by most Americans (Hicklin, 2019). This shows not a significant boost to walking from the app but only a feeling of walking more often. When the sample is broken down, it shows the order in which people walk the most on average to least

Table 3. Daily steps by AYA users.

#	Field	Choice Count
1	less than 1500	8.89% 4
2	1500 - 3000	24.44% 11
3	3000 - 4500	11.11% 5
4	4500 - 6000	13.33% 6
5	6000 - 7500	8.89% 4
6	7500 - 9000	22.22% 10
7	9000 - 11500	6.67% 3
8	11500 - 13000	2.22% 1
9	over 13000	2.22% 1
		45

from broadly Native American, Chickasaw citizen, Chickasaw family member, not Native American, and not a citizen but identifies as Chickasaw. Past studies have shown tribes to have lower levels of physical activity and exercise than the general U.S. population (Sawchuk et al., 2008), however, there is a slight increase in physical activity among Native American populations in the survey results. The difference can be attributed to motivations the app provides through nationalistic feelings around its theming, as both Native American subpopulations in our sample were the two where the most popular response is “I walk a lot every day”. This is significant as those who are inclined to walk from other population groups are not

outcompeting the target demographics of AYA, indicating the success of AYA in survey results (Sawchuk 2008). Providing a different motivation to these groups specifically, as others may not be as motivated, as seen in studies on pedometers not creating an enhanced physical activity without motivators positively linked to extrinsic linkages to a nation by the user.

The Chickasaws who use the app find motivation in the application’s reward systems.

When asked “Has the AYA app made you feel more connected to the Chickasaw Nation? In what ways has it affected your heritage?” only two of the twenty-three Chickasaw respondents disagreed with it, increasing their sense of connection to the Chickasaw Nation. Many of the respondents cited the history lessons and

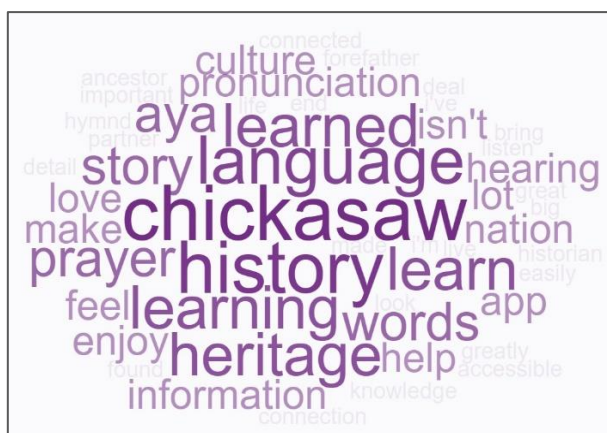


Figure 3. Word cloud of responses to “Has the AYA app made you feel more connected to the Chickasaw Nation? In what ways has it affected your heritage?”

language rewards as factors increasing their sense of heritage with the Chickasaw Nation (Figure 3). This may be a contributing factor to higher walking reports by this demographic due to the tailored nature of the reward system.

Similar heritage-based apps may help increase fitness within the bounds of national governments. However, they must already have a user base with an identity tied to the nation for increased fitness rewards. This is reflected when asked on a Likert scale if respondents "Have a duty to learn about the Chickasaw Nation". The mean was 3.95 on a range from 1 (strongly disagree) to 5 (strongly agree). This was higher than the 3.86 reported on "I have a strong sense of belonging to the Chickasaw Nation", but lower than the 4.45 reported with "I am proud to be Chickasaw". These indicate not everyone with a strong sense of heritage to the nation may feel a duty to the tribal government to learn about this heritage in the form presented by the *AYA* app. As all three questions are testing the sense of national alignment to the Chickasaw Nation within the framework of the (REP) scales, there is a high level of alignment towards the Chickasaw Nation with the testing of a personal pride gaining a larger response than those implying duty (Driver 1983). The results from non-Chickasaw native users of the *AYA* app may show a broader appeal may exist with applications for a national consumer base beyond the bounds of what it means to be of that nation. Suggesting the success of *Aya* in its ludic elements to immerse users in the stories provided and reenacting them in a similar manner as other historical titles of which users play for a variety of other reasons.

Broadly among all users the rewards most interested in by users were Chickasaw history, followed by language, geography, and health tips in descending order. This is surprising considering one of the reasons users may have started *AYA* was for its health benefits. Perhaps this is why a reported increase in steps has not resulted in high daily step counts. When asked

their level of agreement with statements about why they started the *AYA* app respondents on a Likert scale reported a 3.79 mean with “I started *AYA* to improve my physical fitness”. When asked if, “I started the *AYA* app to develop my knowledge of the Chickasaw Nation” respondents reported a mean of 3.60. This may suggest slightly more people use *AYA* for its health benefits to begin with, but it becomes a passive tool to learn more about their nation through the reward system rather than actively increasing their daily steps for the rewards. Lower scores were returned when respondents were to indicate their level of agreement with the statement “The *AYA* app helps me exercise” (3.58 mean) and “The *AYA* app is helping me reach my personal fitness wellness goals” (3.47 mean). This may indicate the 3.79 mean for motivation being based on physical fitness demonstrates that many respondents may view the app as helping them reach their fitness goals but it does not create a significant improvement over the general population of the United States and the difference in values shows a few respondents not having reached their goal (Hicklin, 2019). The *AYA* application therefore must overcome the passive rewards given to its users to encourage greater fitness within its userbase. Rewards can currently be gained through relatively passive use of the app, with users not changing their daily habits and being content with unlocking rewards that should be done in a day over the course of a week. The only motivation to walk quickly is badges gained for walking a certain distance in a day. As it currently stands fitness is not seen as a duty to the nation as much as learning about the nation because respondents look forward to the heritage-related rewards and lack thriving fitness results.

4.2.1 Social Walking

Concerning the social aspect of the *AYA* app found within the walking groups of the app, 53% of respondents were not a part of a walking group at the time of the survey. Of the

respondents in a walking group, 26% of the respondents did not use the leaderboard function to compare their walking with their peers within the group. Of those that look at the leaderboard, 57% report being on the higher portions of the leaderboards while the remainder self-reported as being in the middle portion of the leaderboard. The respondents using walking groups in 47% of cases said the leaderboards' function improved their walking, 16% indicated it may have improved their walking, while the remaining respondents indicated that it did not improve their walking.

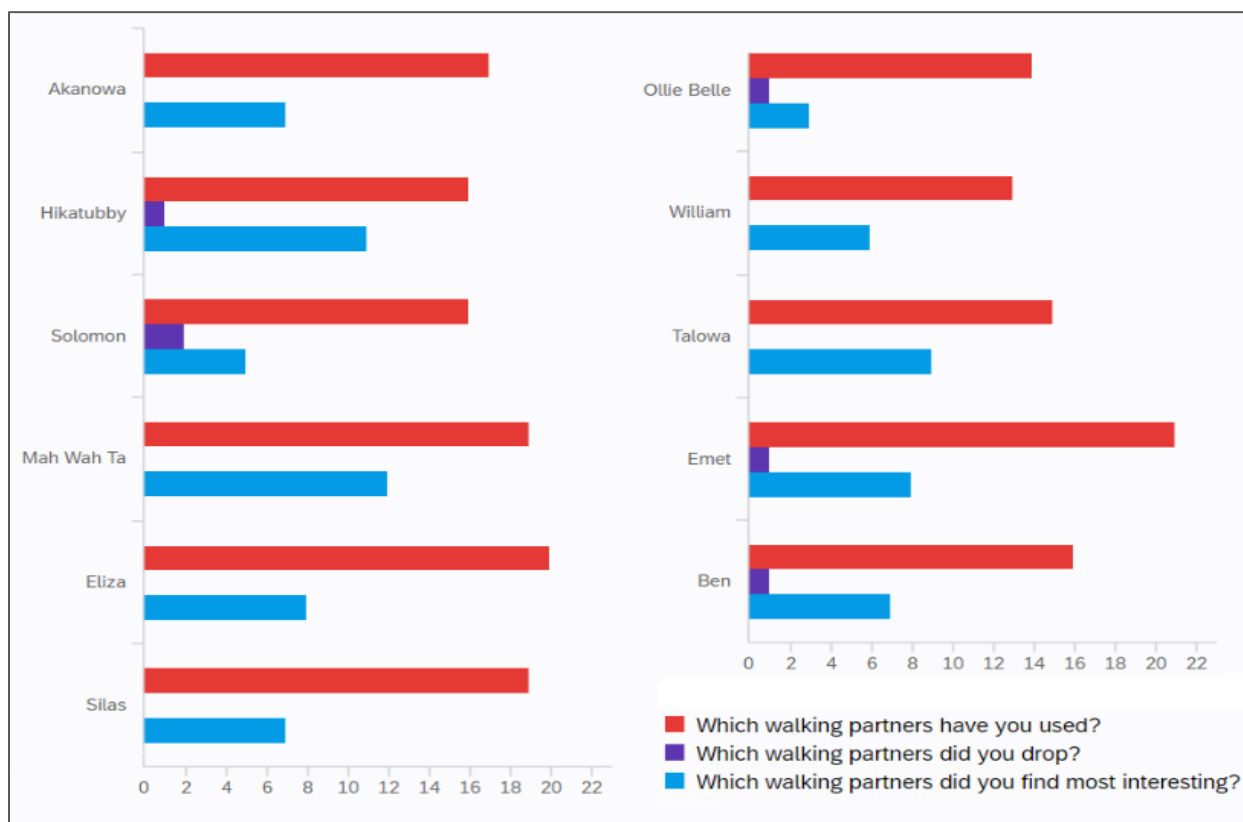


Figure 4. Aya walking partners and their associated popularity.

The most common walking partners used by Aya users, the most used were Eliza and Emet. Ollie Bellie and William were the least common walking partners used by respondents (Figure 4). This suggests the cattlemen category of walking partners is less appealing than those belonging to the homeland journey or lawmen journeys that Eliza and Emet belong to. When

asked which walking companion was the most interesting, Ollie Bellie fell into last place, while William was only saved from third from last by Solomon. Solomon was the outlier of the Homeland group of walking companions as the rest had a higher rate of favoritism displayed in the selection of ‘which walking partners did you find most interesting’, with Emet being the most used partner by users in this regard (Figure 4). There was not a difference of results in companions that interested users and the final appreciation of each companion once they completed their journey. In terms of utility, 77% of respondents agreed or strongly agreed that walking companions help immerse themselves and make them feel like they are talking to a member of the tribe. The authenticity of this experience may increase the general feeling of each experience and bolster a sense of heritage through the connections to the tribe forged here.

The map system implemented in *AYA* is one of its core features, helping display the progress visually to the user via historical trails they mimic virtually. The map proves itself as a tool to store information, showing when users unlocked a reward, as well as where sites of interest may be. When asked, “Do you interact and learn from the map system?” Two-thirds of users found the system helpful as an information tool, while the remainder did not engage thoroughly with the system’s provided information. The lack of information consumed from the map overlaps with respondents who stated they do not consume their *AYA* content, in all except one case. Those that do read the content in the majority of cases read it as it is unlocked, rather than delay their reward further to binge read all their rewards at once. Furthermore, when asked, “Does the visualization of progress on the map make you feel accomplished?” the map was found to be helpful by 79% of users in making them feel accomplished, even if their journey may not have been as arduous as those shown in the app.

The information unlocked on these digital trails provided by the *AYA* app includes real locations the users can visit if they want or the trails themselves as demarcated on the in-app map. Sixty-nine percent of respondents said they had visited locations marked in the *AYA* app along these trails. However, it remains unclear if the app itself improves heritage tourism to these sites or if the user's proximity to or being within the boundaries of the Chickasaw Nation for many of the respondents' made visits to these sites impossible to avoid. When asked whether they agree with the statement "The information provided by the app makes me feel more connected to the region the trails cover?", a third of respondents said they strongly agreed with the statement, while another third somewhat agreed. A quarter felt neither agree nor disagree, and the remaining an 8% strongly disagreed with the statement. Unsurprisingly, those who do live within the Chickasaw Nation had a higher rate of visiting these sites at an 83% rate. This creates an even greater feeling of connection to the land within the Chickasaw Nation and their surroundings as they learn about it through the app. Meanwhile, if they lived outside of the borders of the Chickasaw Nation there was almost an even split between those that have visited sites and those that have not. Dissemination of historical site information may foster feelings of heritage the user has towards the geography of the Chickasaw Nation. When a user of the app looks at their surroundings, they may be able to recall such information and be able to claim it for their nation.

When asked if, "Walking recreationally is something you now associate with a Chickasaw identity" 54 % of respondents said they did, while the rest said no. One respondent noted a sense of "obligation" to the Chickasaw Nation, as the *AYA* app creates a duty to exercise for its citizens. The only demographic this was higher among was Chickasaw citizens themselves, increasing to 61% while among all other groups the idea of decoupling walking from

a Chickasaw identity is more prevalent. This indicates the effective mobilization of the app to create a sense of heritage among walking. Thus, the developers succeeded in creating a new artifact bounded to national heritage that can be leveraged for better fitness overall.

4.2.2 Demographics of Respondents

When respondents were asked to mark all races that apply, the largest group was Native American at 50%, followed by White at 40%. Subsequent categories consume the remaining ten percent, African (3.33%), Pacific Islander (1.67%), and other (5%). When broken down by citizenship status in relation to the Chickasaw Nation we noted a mix of Native American and White being citizens of the Chickasaw Nation, thereby showing a large mixed-race population among the Chickasaw Nation. This may increase the need for the Chickasaws to practice top-down nationalism through tools like the *AYA* app to increase a sense of belonging to the Chickasaw nation (Tilly 1996, p. 303). Meanwhile, the black demographic claims mixed Chickasaw ancestry but lack citizenship. Oddly a quarter of those who initially said they were not Native American when presented with multiple options they could select from choose Native American.

Half of the respondents reside within the Chickasaw Nation's tribal boundaries, while the plurality of the remainder was from Oklahoma or Texas. Of those situated elsewhere, another location in Oklahoma was the most common answer, and then Texas. This may be influenced by the ability of the tribe to promote the *AYA* application better within its jurisdiction, such as at events it hosts and tribal facilities. Some respondents were from across the United States, demonstrating the national reach of the *AYA* application to connect various people associated with the Chickasaw Nation and allowing for greater ease of tribal governments to reach geographically dispersed populations through digital means.

The gender of the respondents was skewed heavily female, as 69% of respondents reported being female and the remaining 31% male. This could indicate a greater female desire for wellness or an attraction to a heritage platform such as AYA. It may also be influenced by the

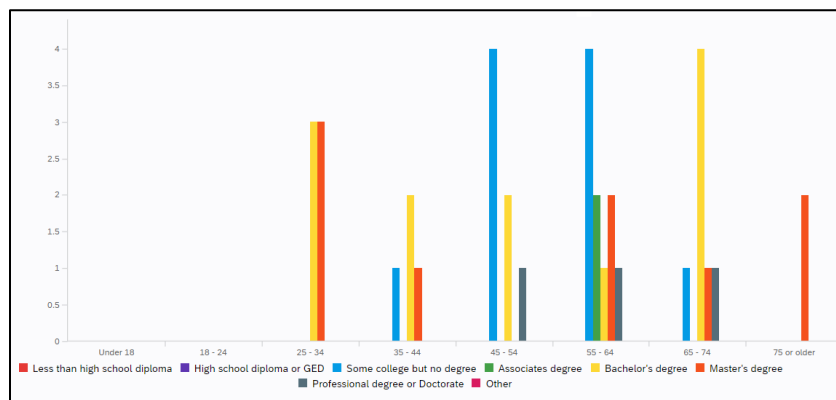


Figure 5. Highest Level of Educational Attainment

general age of respondents, as those 45-54 years old, and older populations are more likely to be female. This is an older population than the median age of 37 found

within Oklahoma but cannot reasonably explain the large female skew alone. Other factors must be considered such as the appeal of the app and how it is marketed. Additionally, no respondent fell within the age range of 18-24, which may grow concerning if the application hopes to appeal to the youth and instill a national fervor early on for the Chickasaw Nation, to increase wellness among young adults.

Concerning the educational attainment level of respondents, the lowest level attained was some college with no degree earned. This is likely due to the lack of 18–24-year-old respondents in the data. Furthermore, the most common level of educational attainment was a bachelor's degree, followed by some college, master's degree, professional or doctoral degree, and associate degree (see Figure 5). I found that higher educational attainment correlated with agreeability towards statements, such as “The AYA app has made me prouder to be Chickasaw” and “The AYA app has made me feel closer to my Chickasaw heritage”. This is perhaps a result of comprehending the subject matter more or misinterpreting the question and stating how close

they are to their Chickasaw identity no matter *Aya*'s influence. Neither explanation can be determined at this time as true for the correlation.

4.2.3 *Aya and the Nation*

The *AYA* application has been used as a form of communication for the Chickasaw Nation, helping it improve its image not only to its citizens but also to anyone who uses the application. Respondents to the survey when asked “The *AYA* app has helped me appreciate the Chickasaw Nation” 64% respondents responded with strongly agree, and only 12.82% of respondents either disagreed or strongly disagreed. Thus, the app has helped bolster the image of the nation which can increase the national attachment one may have towards the Chickasaw Nation.

#	Field	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
1	The <i>AYA</i> app has spurred my interest in learning the Chickasaw language	12% 5	5% 2	23% 9	20% 8	38% 15
2	The <i>AYA</i> app has helped grow my cultural affinity for the Chickasaw Nation	12% 5	5% 2	17% 7	15% 6	48% 19
3	The <i>AYA</i> app has helped me appreciate the Chickasaw Nation	12% 5	0% 0	10% 4	12% 5	64% 25

Table 4. Set of questions to test feelings towards the Chickasaw Nation.

One element of *AYA* is language, as it is connected to the Chickasaw Nation's language revitalization efforts. This is a conscious effort by the Nation to preserve one of the most core aspects of any culture, its language, and what can justify nationhood separate from another nation. Therefore, when asked if “The *AYA* app has spurred my interest in learning the Chickasaw language”, (See Table 4) the largest response being strongly agree (38.46%), is a

good indicator of the app helping create interest in revitalization efforts. However, this number may not reflect the actual number of those who are interested in the Chickasaw language due to such interest manifesting before downloading the *AYA* app and being one of the reasons for downloading it in the first place. Moreover, somewhat agree (21%), neither agree or disagree (23%), somewhat disagree (5%), and strongly disagree (13%) are the remaining values and see an atypical distribution as strongly disagree is larger than the somewhat disagree value. This is perhaps explained by eight respondents who selected strongly disagree previously stating they started the *AYA* app to learn Chickasaw history or language and therefore the app may not have changed this desire.

Cultural affinity is a key component in creating a sense of national identity in a person as it bonds a community through shared cultural memories and a collective destiny (Hearn 2020, p.40). Therefore, the *AYA* app conceptually would increase the cultural affinity users have for the Chickasaw Nation through the collective goal of their own wellness and the learning of shared cultural memories in the form of history and stories told in the *AYA* app. Thus 49% of users strongly agreeing with the statement “The *AYA* app has helped grow my cultural affinity for the Chickasaw Nation” would mark a success in instilling a greater sense of national identity within the citizens of the Chickasaw nation. An additional 15% of respondents somewhat agreed with the statement, and 18% neither agreed or disagreed, showing some minor success with this element of the population, while 5% somewhat disagreed and 13% strongly disagreed is concerning when 80% of the strongly disagreed population are citizens of the tribe. For these respondents who strongly disagreed the *AYA* app helped grow their cultural affinity of the Chickasaw and were citizens of the Nation it shows a sign of concern that the app failed to connect with these members of the tribe.

#	Field	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
1	The AYA app has made me prouder to be Chickasaw	11.11% 3	0.00% 0	18.52% 5	18.52% 5	51.85% 14
2	The AYA app has made me feel closer to my Chickasaw heritage	14.81% 4	0.00% 0	14.81% 4	22.22% 6	48.15% 13
3	The AYA app has made me more likely identify as Chickasaw first	25.93% 7	0.00% 0	14.81% 4	18.52% 5	40.74% 11
4	The AYA app has made me understand what my Chickasaw Ancestors went through	18.52% 5	0.00% 0	7.41% 2	22.22% 6	51.85% 14

Table 5. Questions for Chickasaw citizens regarding issues of national identity

When directed at how the AYA app makes users feel about their Chickasaw identity, results varied by question. Numerous responses displayed an increase in pride of one's Chickasaw identity, however, the strongly disagree, and neither agree nor disagree categories being populated by responses show the limitations of the AYA app to connect with these populations as part of the Chickasaw Nation's nation-building exercise (Table 5). The distribution was abnormal as a large portion strongly agreed with the sentiment, with near similar rates for somewhat agree, neither agree nor disagree, and strongly disagree, and no responses for somewhat disagree. The marked difference shows the app is highly effective with those it does connect to; however, there are a few that it may not affect for similar reasons seen with the cultural affinity statement. Similar response rates were seen with the statement "The AYA app has made me feel closer to my Chickasaw heritage" likely due to similarities between the phenomenon of national pride and heritage, showing up consistently among our respondents.

The heritage-related statement respondents felt the least inclined to strongly agree with was, "The AYA app has made me more likely to identify as Chickasaw first". This provides a challenge to the Chickasaw Nation to create a citizenry which views themselves as Chickasaw first, creating barriers for its ability to mobilize its citizens for the efforts of the state if they feel they have a duty to another identity. It is possible that appeals to a Chickasaw identity are considered less effective if it is not a primary cultural identity. However, responses to this

statement by respondents could choose to already identify as Chickasaw and thus strongly disagreed as a rebuke to the idea they were not before.

One aspect of heritage was tested through the statement “The *AYA* app has made me understand what my Chickasaw ancestors went through” to test if connection for those who went through a historical trauma, such as the removal after the Indian Removal Act, would be a motivator for health. When compared with the reported daily steps taken by each user, there was a small increase to having higher daily steps. This was not due to a skew in the respondents that agreed with the earlier statement on ancestors but those who disagreed were only found below 7500 daily steps, and more heavily skewed to the bottom. This may indicate that as a motivator historical trauma could affect a small portion of the population to exercise more, however, the small sample size may be to blame for the lack of respondents who did not agree with the statement and took higher numbers of daily steps. As when looking at non-Chickasaw citizens, they also reported several higher daily step counts. In these cases, other motivators related to the *AYA* app or not could be explained in absence of a heritage-based motivation.

The results demonstrate the Chickasaw Nation’s nation-building goals in through the *AYA* app has seen some mild success. Furthermore, the survey results suggest that the main motivation has been interest in the Nation, helping increase feelings of belonging and identity as building blocks of the nation. However, it is unclear if these are successful motivators of physical activity as only small increases are reported by the population at large. As a motivator it could be suggested that it’s successful with citizens who share the identity because their scores were consistently marginally better than other demographics, excluding other Native Americans. Creating heritage through the implementation of *AYA* has helped tether more places, activities, and events to the Chickasaw Nation, helping increase the reach and appeal of the Nation by

having *AYA* build its identity through this heritagization process. The heritagization process will not only help increase the national identity of the Chickasaws but incorporate more places within the geographic boundaries of the nation as core elements of the nation, justifying the continued independence of the Chickasaw Nation as a separate nation. This is all achieved through the *AYA* app creating positive images of the Chickasaw Nation to create a lasting desire to be and identify as Chickasaw.

4.3 Qualitative Results

4.3.1 Coding Results

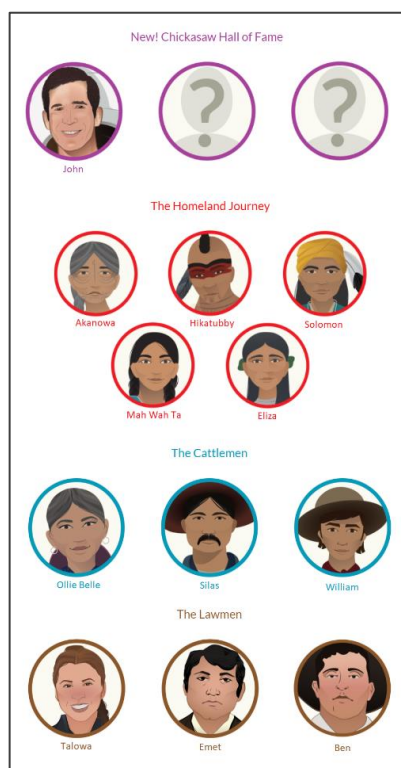


Figure 6. *Aya Character Categories*

When qualitatively coding the terms and themes from the *AYA* content a codes-to-theory model was employed. The process was conducted as codes were created from the themes and terms used in the stories of the *AYA* companions. These codes were themselves put into larger categories from which most of my data is modeled (Saldana 2013, p. 13). From these graphs I interpret the larger themes and concepts at play with each character. The data is associated with each character to track the development of when certain ideas were more prevalent for early content of the app and which ones were not as prominent until later. Additionally, it may help in discussing the main themes each walking character may tackle in their stories and analyze the concepts married with as, these trends may also be shared between characters based on which grouping they are in (see Figure 6). Later characters would have an associated set of points of interest analyzed as well and will be discussed at a later stage as their own subject.

When coding the text from the *AYA* app, 870 instances of coding took place to summarize either an entire passage or sections of a passage, corresponding to an idea. These were coded by first reading a passage from the *AYA* app saved to Microsoft Word and then typed into Microsoft Excel under their associated walking character. The codes were subsequently reduced to 14 categories by a process of first highlighting similar ideas each code has and then creating columns in Excel and checking the ideas to the associated columns for each term. The categorical themes that ended up representing these ideas are: food, exercise, health, learning, tradition, nature, arts, morals, toil, civics, national identity, warfare, miscellaneous, and external pressures. Each code could have one or more of these categories associated with it and helps populate the categories. For example, when discussing agricultural labor this may fall into the category of food as well as the toil displayed by farmers.

4.3.2 Codes into Categories

The terms identified come to mean separate ideas as each is an aspect of Chickasaw society distilled in the app. Food was a term that was applied to various codes relating to the preparation, cooking, and serving of food, as food's role in the stories told by *AYA* emphasizes the culinary heritage and economic importance of various foods in Chickasaw history. Exercise is the goal of the *AYA* app and thus was categorized when seen in the character stories, often seen in displays of chase given in the story but also games such as chunkey and stickball that highlight Chickasaw culture. Health was commonly seen in the form of medicines as a solution to sickness.

Tradition was a category that fit anything being under the heavy influence of heritagization by it being emphasized as a legacy, or duty that must continue. This was also seen in the emphasis of lineage in several stories, particularly in the lawmen category, towards not

only the Chickasaw people but one's own family as well. Tradition also highlights historical objects and creates a strong link to the people of the nation who practice it. The civic category classified matters of the state, civic duties such as service to a community, and matters of statecraft such as diplomacy and legal geographies.

Nature is the opposite of these human bounded categories as it is when the natural world is appreciated often for its beauty. This may be interpreted as the natural heritage of the Chickasaws, creating an admiration for nature itself and the land of the Chickasaw Nation. Arts is categorizing the beauty created by Chickasaws themselves, often seen in the craftworks Chickasaws toil over. Toil is an enigmatic category used to highlight when stories focus on the labor and hard work of Chickasaws. In coding toil, it often overlaps with other categories as the process of toil often serves a greater purpose.

Morals is a category used to group codes that summarize lessons learned from the themes of stories presented in *AYA*, moral lessons, or religious and ceremonial activities. This is separated from the category of learning which is typically seen in formal education settings of schools or seen in apprenticeships in the text. National identity is a category corresponding to when walking characters would discuss their identity, Chickasaw symbology, and national interest such as borders or language. External pressure often incites forays into national identity as it typically finds codes associated with the erasure of Chickasaw identity, often in the form of settler colonial enterprises. The tension between these two categories often erupts into war, which is the final category covered. The Chickasaws characters discuss warfare to show their past defiance of these external pressures for the preservation of their national identity of which independence has become a core feature.

4.3.3 Character Trends

The themes from the stories of *AYA* when coded are not employed to an equal degree with one another and each individual term is not uniform across all stories; some stories have a points of

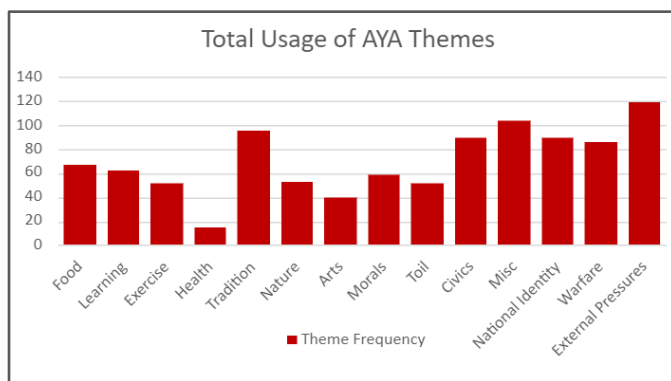


Figure 7. *AYA* Themes

interest (POI) sections combined here for analysis. This imbalance helps analyze at what times in development *AYA* may have shifted focus to different themes and what stories emphasize these themes. Ironically for the health and wellness app *AYA* is branded as, health is the theme with the lowest frequency of any theme (Figure 7). This could be because most stories focus on historical events, and the ‘stumble upon items’ do not provide health tips as those exist in another menu in *AYA*. Therefore, with a focus on the historical elements of the Chickasaw Nation, most stories find themselves engaging in external pressures faced by the Chickasaw Nation in the common form of settler colonialism. This is followed by the tradition and national identity themes, because of a heavy focus on the culture of the Chickasaw Nation and the nature of nation-building in the *AYA* app being justified by a longstanding cultural tradition (Figure 7). This practice is also known as heritagization and is actively used in all other themes, as *AYA* places value on all these objects as being related to the nation at some point in time and is carried on by the knowledge transmitted here.

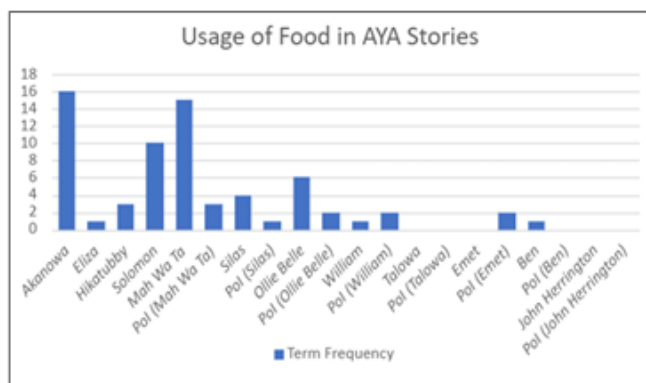


Figure 8. Food in AYA

Food is a core component of culture because it is a daily ritual vital to the life of every member of a nation. Therefore, it is at the heart of how nations reproduce their cultural traditions. In *AYA* this is shown by the earlier stories heavily using food as elements

of their stories (see Figure 8). These stories deal with the oldest elements of Chickasaw history, as Akanowa and Mah Wah Ta both take up the traditional feminine role of food preparation and thus we find more references to food in their stories. Ranching and hunting is found in the male character stories (such as Solomon and Silas) because these are acting as traditional male roles that embody warfare against other species in the killing and wrangling of animals. These stories idealize the ranching culture that many Chickasaws still partake in and bring awareness of important cultural foods, such as those of the three sisters (corn, bean, squash). The early emphasis on food can be attributed to the importance of it among all cultures and showcasing traditional farming lifestyles which are valued here.

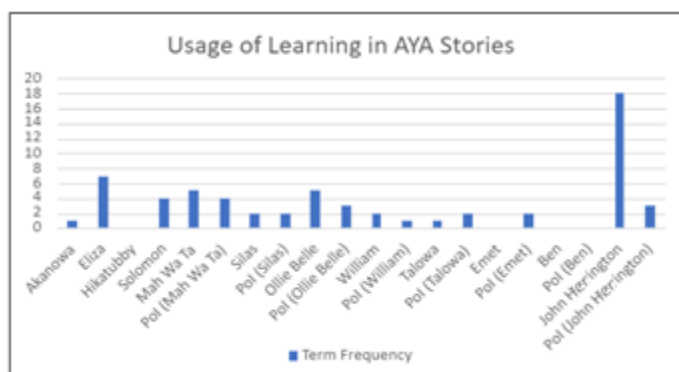


Figure 9. Learning in AYA

Learning in *AYA* is most dominant with the most recent character addition John Herrington (Figure 9). This character is based on the real Chickasaw astronaut of the same name and casts a heavy emphasis on science with the information about his

journey to space and his story of cycling across Oklahoma to teach children. The second element of teaching is what is represented throughout the other stories, whether is as the role of teacher or

mentor and in the stories focused on children, their life in school. Solomon embracing new innovations is being notable as being in a similar realm of scientific trailblazing as Herrington. The important elements from learning in the other character stories is to learn from an elder, passing another tradition through the app of respecting the elders to gain wisdom. In the case of Herrington's story, the themes focus more upon the journey for knowledge and help promote scientific learning to users of the *AYA* app. Herrington's story although recent, is something being actively heritagized by the *AYA* app, as the first Native American in space is an object of praise for the Nation and they have promoted his position to be in the cannon of Chickasaw cultural figures. This can be used by the Nation to promote science to compete in the skilled labor market by pushing citizens to learn advanced skills like their national heroes.

Exercise is the core purpose of the *AYA* app, as walking is how content within the app is unlocked. In the character stories, most instances of exercise relate to sports activities, with traditional sports of stickball, horse racing



Figure 10. Exercise in AYA

and chunky (a game played by rolling disc and throwing spears as close to where the stone stops). With horsemanship in the lighthorse stories being highlighted as well, equestrian heritage is highlighted, which relates to the ranching discussed earlier. Dance is an activity described in several parts, seen in the crafting of turtle shell shakers for stomp dances in Mah Wa Ta (Figure 10). The character with the largest usage of terms relating to this theme was John Herrington, as a plethora of physical activities like rock climbing are used but the center of the story itself is his

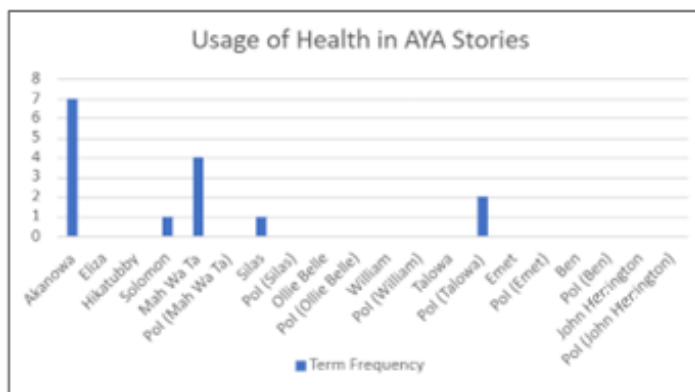


Figure 11. Health in AYA

create a more fit citizenry that harkens back to traditional needs of a state to have a fit population ready for war. Current goals focus on productivity due to better physical and mental health or improving general health to reduce state healthcare costs. Exercise is thus a core area of the health promotion in *AYA*, but when looking at health as a theme in the character stories, it is only prevalent in the form of traditional medicine and Akanowa's story mentioning *alikchi* (doctor) in the story (see Figure 11). Health as a theme should have incorporated exercise because of the low usage of terms relating to general healthcare.

Whilst covering the traditions of the Chickasaw people in the *AYA* app, there appears to be a regression overtime of the representation of noted traditions (see Figure 12). This may highlight an early priority to emphasize traditions

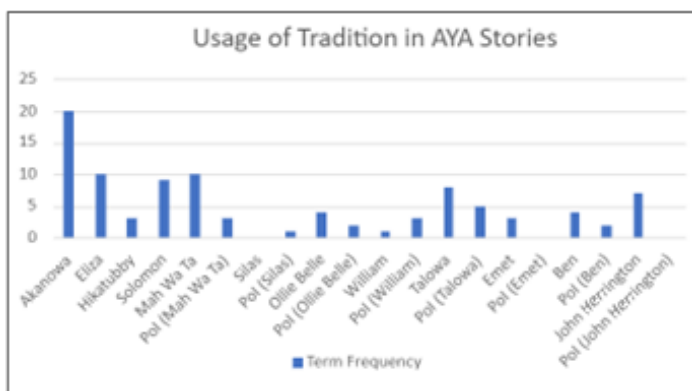


Figure 12. Tradition in AYA

with the original stories published with the initial release of the *AYA* app or correlates with characters being in older time periods containing traditions due to a belief that those eras may be the bedrock of traditions for the Chickasaw Nation. This is seen in the example of Akanowa being perhaps the oldest story in the *AYA* app, the corresponding time period of the story being

cycling trip across Oklahoma. All these activities cast a wide net, with only the traditional sports being highlighted immensely as being a core component of the Chickasaw identity. The promotion of exercise helps the Chickasaw Nation

the oldest makes sense. However, in the case of Hikattubby, another story that may be the oldest, the relation of tradition to the older settings do not appear to be a consistent trend. A possible explanation may note Hikattubby's story is heavily focused on warfare and thus does not dwell in the domestic setting of other earlier stories, an overall trend seen over time as new characters put less focus on traditions. This is not to say they are not important to the nation-building goals of the Chickasaw Nation. The traditions mentioned in the *AYA* app are placed with heavy emphasis as a Chickasaw practice, being instilled as a component of the larger culture that defines the Nation. Along with the traditional practices are oral stories, which are reproduced by the *AYA* app's voice passages which tell traditional stories, such as the migration story. These stories add to the national myth of the Chickasaw Nation, as people can connect and base references on the stories they all know. Furthermore, traditions take this to the extreme as cultural practices create a greater social cohesion within a group as members learn from their peers and continue the practices discovered by the past groups belonging to a nation.

Part of a nation's composition is its physical geography, which nations will take great pride in as symbols of their state, such as the White Cliffs of Dover, to the elegant Mount Fuji. Each nation turns what they claim as their

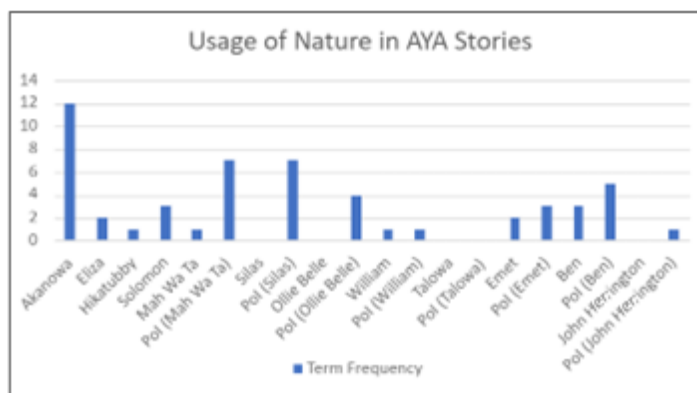


Figure 13. Nature in AYA

space, in particular their natural landscape, into an element of their cultural landscape by denoting sites of natural heritage to be appreciated. We see this in the *AYA* app. Nature is described in detail and made into a site of heritage for a nation. This is best exemplified in the point of interest segments (POI) (see Figure 13), as these highlight natural landscapes within the

Chickasaw Nation, and describe them in a manner as if to boost them for recreational camping. *AYA* accomplishes the goal of defending the aesthetic beauty of the Nation's natural landscape and defining the borders of nation by noting which of these natural beauties are Chickasaw sites. For Chickasaws this comes with the challenge of the current governmental boundaries not containing the homelands of the Chickasaw Nation. However, both natural realms are treated with reverence, as the homelands in Mississippi are the origins of a nation while the current lands in Oklahoma are praised, possibly to create a national contentment with the lands or creating new natural heritage sites.

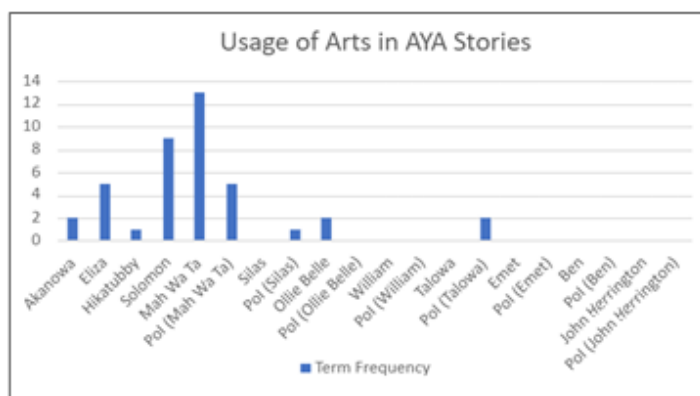


Figure 14. Arts in *AYA*

The arts represent the highest level of cultural attainment for nations and represent the values and origins of a nation. For the *AYA* app arts are most seen in craftworks, fashion, and regalia of the Chickasaw Nation. These appear most frequently in Mah Wa Ta and Solomon's stories which focus on the introduction of European culture and its fusion with Chickasaw culture in creating new designs for items such as hair combs, gorgets, and other fashions (Figure 14). These items became associated with higher status individuals but are representative of the whole culture at the time and chosen among various periods to be highly valued and chosen for heritagization. This may explain their early focus in *AYA* content because they're so prestigious. Other characters note pottery, honorifics, and artforms like dance in their own stories that highlight other areas of cultural development in the arts. Each form becomes tied to the cultural heritage of the Nation and influences modern artists to replicate traditional arts as a natural extension of their belonging to a nation.

The arts represent the highest level of cultural attainment for nations and represent the values and origins of a nation. For the *AYA* app arts are most seen in craftworks, fashion, and regalia of the Chickasaw Nation. These appear

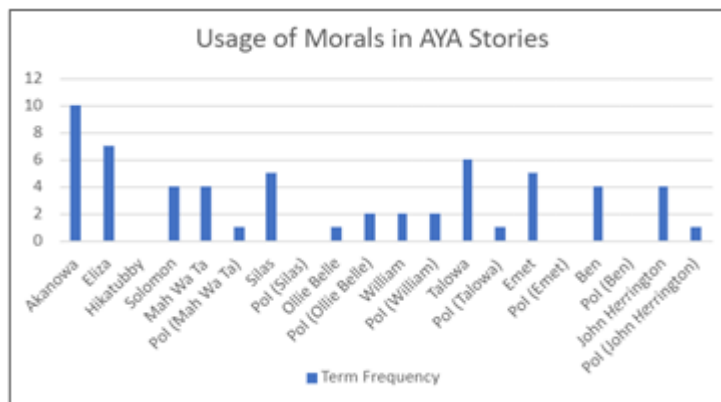


Figure 15. Morals in AYA

spread out as most characters had moral decisions guiding their story, with Eliza and Akanowa both leading in this category due to their stories making common references to religious elements (Figure 15). In Eliza's story this took the form of the missionary school she attends, and the ethics taught at that institution, while Akanowa is continuing stories from traditional Chickasaw belief systems such as the migration story. These not only represent the history of Chickasaw conversion to evangelical faiths but is a melding of two, as the traditional stories form components of the national myth, with the migration story establishing the origin of the nation, while the evangelical elements could be considered for its dominance in contemporary Chickasaw society and ethics practiced by it.

Toil is a theme regarding hard work or labor being present and valued by those in the stories presented in the AYA app. This may motivate users to work hard at their wellness goal, much like these Chickasaws do in other activities. Specifically, Eliza's story of being instilled with a protestant work ethic could also be meant for AYA users, if the app has a goal to improve the productivity of Chickasaw's work (see Figure 16). Other instances of toil are common when craftworking of goods is brought up, highlighting the skill and dedication of artisans. In addition, these craftworks display Chickasaw items, placing value into the labor in skills to make these cultural artifacts. AYA adds to the speed of heritagization of each item, from arrowheads to

The morals theme in the AYA app covers instances of religious references, oral stories with lessons, other moral instructions, and character choices within the stories. The distribution of this theme was mostly

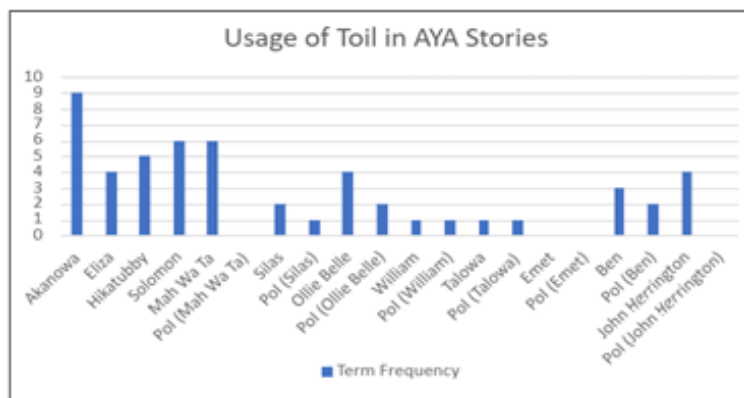


Figure 16. Toils in AYA

shown in the squirrel and acorn story of Ben, which culminates in Ben using the forethought and preparations to succeed in his goal by hiding treasure from outlaws like an acorn by a squirrel. This toil and preparations become an important part of AYA stories, as characters must work to overcome their challenges, but their work is only revealed through rewards for the work a user does wanting to see their character's goals fulfilled. In a way the user literally manifesting toil in themselves to progress the story just like the character.

Civics as a theme categorizes instances of government and functions of it, such as patrol of areas or a duty to that government. It is also applied to diplomatic engagements and the naming of towns found in the points

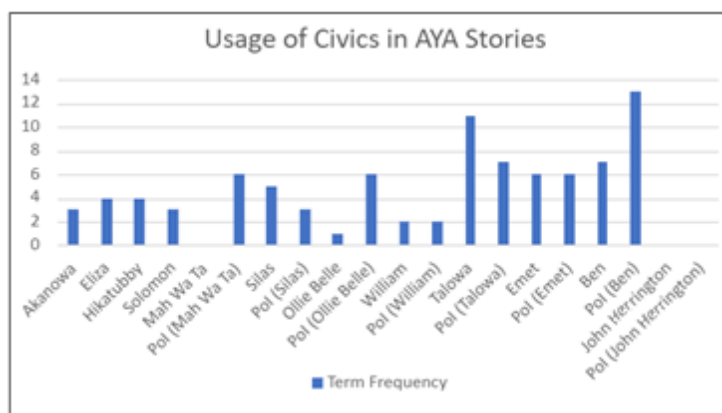


Figure 17. Civics in AYA

of interest (POI) sections (Figure 17). It is because of the later section we often find the POI sections as having more of a civic theme than the main walking stories due to their nature of describing a place and its history which often bleeds into other themes of external pressures and national identity, as later settlement by Americans would often see toponyms changed. The character with the largest association with the civics theme is Talowa, as a Lighthouse officer,

textiles by making them the focus of rewards. Toil is furthermore displayed in the preparations each character does to overcome their challenges. Fitting forethought into a lesson for users to learn is best

this character's story emphasizes their service to the Chickasaw Nation. It describes the equipment and missions the Lighthorse does to emphasize the professionalism found within the Chickasaw Nation. This may help instill pride in the *AYA* users for the ability of their tribal government to act and supports nation-building as these offices are looked to for help first as national alignment to them grows. This alignment is a goal of the *AYA* app, as users are given a wide variety of knowledge about the Chickasaw Nation to further their affinity of the nation.

Usage of warfare as a theme encompasses not only war but other physical actions meant to protect the Nation often seen in the Lighthorse stories, such as pursuit of a suspect or arrest. These highlight the violence

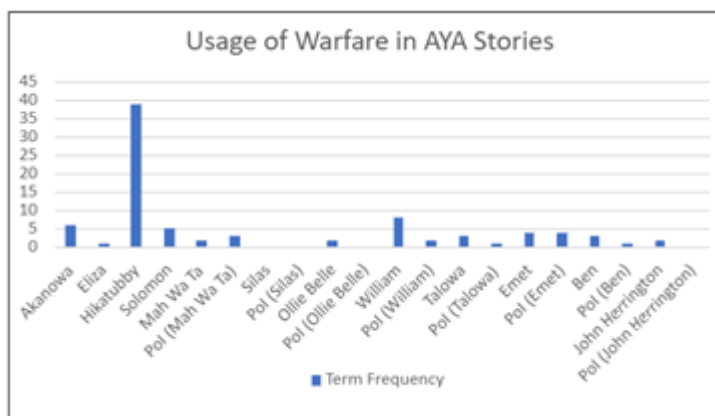


Figure 18. Warfare in AYA

needed to maintain a state, in keeping it safe internally and from external threats. The character with the greatest amount of warfare in their story is Hikatabby (see Figure 18) who is a Chickasaw warrior at the point of contact with the Spanish conquistador Hernando de Soto in the 1540s. This serves as a foundation of the Chickasaw phrases “unconquered and unconquerable” commonly repeated by the tribal government itself because since this point of time the nation maintains it was never conquered in any conflict. However, the *AYA* app has only focused on the conflict with the Spanish so far in the development of their content. This could be to avoid antagonizing modern allies in other tribes the Chickasaws previously fought or the United States government seen in conflicts with Virginia over Fort Jefferson (KY) or the American Civil War. This shows a deliberate choice by the developers of *AYA* to avoid the sourer parts of Chickasaw history to keep a good public appearance, such as being convinced by Albert Pike to join the

Confederates of the American Civil War (Westmoreland n.d.). The deliberate choice is given to highlight the conflict with de Soto as a national origin of the Chickasaw warrior's defiance of invading forces, supporting the 'unconquered and unconquerable' element of the Chickasaw's national heritage. Outside of *AYA* the Chickasaw warrior is made a symbol by the nation, with such a figure being emblazoned on the seal, flag, and erected as a statue outside of numerous Chickasaw locations. This militaristic honor serves more as a point of independence for the nation rather than a recruiting opportunity as the nation has no armed forces, as seen in the phrase "unconquered and unconquerable". This independence defines the nation as a part of its national identity and is utilized to create independence in the individuals of the nation in their lives.

The theme of national identity is host to numerous instances of the *AYA* stories, as it describes instances of reference to great Chickasaw leaders, independence, character's own identity, national borders, toponyms, and language. With the

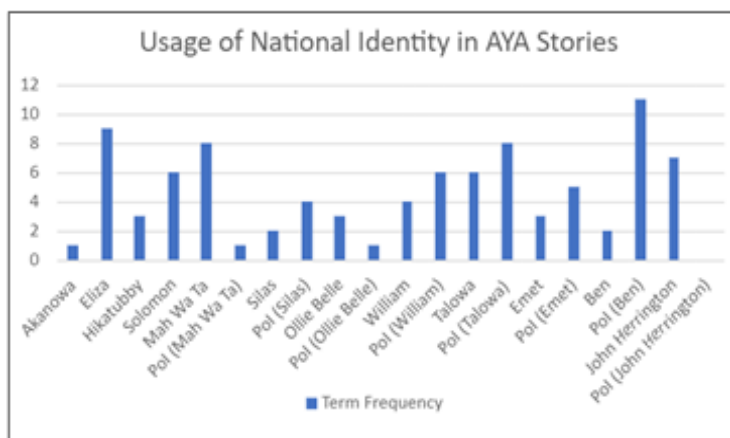


Figure 19. National Identity in AYA

points of interest areas being more represented here than other categories because of their notation of Chickasaw toponyms, and the challenges maintaining them and the national boundaries of the nation. The character of Eliza's story heavily touches upon the theme of national identity as her story is about Indian territory being faced with the incorporation into the state of Oklahoma (Figure 19). The story is portrayed as tragic, leading users to feel sorry for the loss of autonomy for the Chickasaw Nation, as will also be seen in the theme of external

pressures. But it is balanced with language about the Chickasaw Nation and its government during the late 19th century. As this event is heavily focused on as a heritage event, it transformed the lives of Chickasaws. Another event with the same order of magnitude is Indian removal, which is referenced with Mah Wa Ta's story, and like Eliza in the face of external pressures the character points out markers of Chickasaw Identity such as ceremonial items, regalia, and cultural interchange. These define what the Chickasaw identity means and adds these items to its cultural cannon through its inclusion in the *AYA* app.

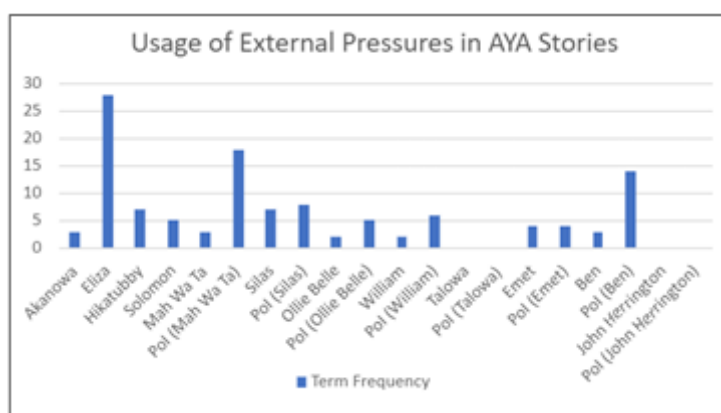


Figure 20. External Pressure

warfare noted in Hikatabby's story and federal interference in Eliza's story as well (Figure 20).

Additionally many of the points of interest highlighted toponyms which originally had Chickasaw names, such as towns but had them changed when taken over by Sooners in the era after the statehood of Oklahoma. The inclusion of these names adds legitimacy to the land belonging to the Chickasaw Nation, as many towns were founded and built by them. But the cultural landscape changed with the changing demographics of the area, however it's the origin that can be leveraged for validation and honor in developing south-central Oklahoma as a way to fight back against these external pressures by sharing the history of the land. These pressures serve as a forge to create a national identity against the threat from another nation, to justify the claims of what belongs to one's nation and makes it different from another, whether it be culture,

National identity is forged through the external pressures it faces and the *AYA* app highlights the pressures faced by the Chickasaw Nation. These pressures most commonly manifest as settler colonialism, with instances of

history, or government. The external pressures in *AYA* help contextualize the need for nation-building for the Chickasaw Nation throughout its history and with its current citizenry.

Of all the characters, the most popular appear to be Hikatubby and Mah Wa Ta, due to them being two characters with the highest rate of favoritism. This may indicate that their stories or themes were particularly of interest to the *AYA* users. For Hikatubby this is the heritagization of warfare and the militarism of the Chickasaw Nation, resulting in the successful expelment of external forces found in the Spanish conquistadors. Further examples of similar actions could be met with similar success as this story appears to successfully engage the users and found itself a part of the Chickasaw cultural cannon. Mah Wa Ta had a similar level of favoritism, displaying interest in the traditional medicines, arts, and craftworks of the Chickasaws as users learn about these elements from her story. There may also be a bias for older characters as these two are a part of the initial roll out, and thus every user has had more time to walk with them as their companion more than the newer characters.

The walking partners in *AYA* help contextualize thematic messaging of the Chickasaw Nation into a consumable package for the user. *AYA* is thus an exercise app that uses Chickasaw history as ludic objects to tackle national issues ranging from external pressures, tradition, and national identity. These themes primarily focus on aspects of nation-building, in creating a Chickasaw identity from the assemblage of the themes present in *AYA*. Other themes are used to note important aspects to the Chickasaw Nation, such as hard work (toil), good morals, and civic duties, that are blended into this identity through the narratives told in the *AYA* app. Themes more related to health and exercise are left out from the stories but are blended into them through the structure of the app making items unlockable through the ludic element of walking that is interactable with the user. Walking gameplay in *AYA*, links walking with the rest of the themes

through the action needed to unlock them. Themes in *AYA* content thusly are connected by the heritagization process they all are subjected to through their connection together and through their implementation in *AYA*.

The prevalence of different themes among different characters may indicate a link in the popularity of certain *Aya* characters, found in the quantitative questionnaire section. The dynamic shown has characters that are strongly of a certain theme, such as Hikatubby and warfare being more popular. This may indicate the themes are best conveyed when interwoven into the story and character, making the resulting story have a greater impact on the user. Other explanations could explain these topics are more popular, but as we see characters vary in themes, their popularity is not dependent on the theme but the ability of the story to convey it. Which leads to the effectiveness of the *Aya* app in its nation-building goals, to affect the audience because of the receptiveness towards strong theming.

Chapter 5: Conclusions

5.1 Geopolitical Analysis of *Aya*

Aya can be classified as a civic game because of the ludic artifacts connected with the civic education of the user in the Chickasaw identity. It lacks the social element within the app to facilitate public discussion of the topics learned but does further a ‘digital democracy’ through the education of the user through information and communication technologies. This is a crucial element of *Aya* in educating people about the Chickasaw Nation as the tribal government lacks any formal education and is seeking solutions beyond formal education to teach its history, heritage, and heuristics to its citizens. *Aya* is one of these innovative approaches the Chickasaw Nation has taken to fulfill the civic education of its citizens.

The social element of competition of the apps’ clan system ranking helps create a culture of citizenship through social play in games. Culture and play present in *Aya* help create a bond of comradery between citizens/players. *Aya* can then hope to actualize the bonds through greater citizen participation in the Chickasaw Nation or for non-citizen users, exert its soft power to help the Nation receive favorable political stances and economic attraction.

Games use “cultural connection” to connect an external idea and concept to a cultural product. The themes present in the *Aya* stories are a form of this as they can provide a cultural context to these themes that connects them together. These themes are seen in ideas that may benefit a service to the state, such as civic duty themes present in the lawmen related stories to join the Lighthouse police force.

Aya contributes to banal nationalism through creating a walking app that could have been a sterile screen but instead populates it with forms of national symbols. *AYA* creates a form of

banal nationalism to be viewed by every user when they access the app, and its ideas and icons can be filtered to the users and reproduced by them. Nationalism in *Aya* is not an example of 'hot nationalism' due to the nationalistic elements being the subdued theming and rewards given to the user in the form of character stories and not as the main agent of player agency. All national elements contextualize the player's actions, such as walking down a removal trail, but are not affected by any player. *AYA* thereby places national elements as a banal phenomenon to create icons of the nation recognizable to the user.

The *Aya* app developed by the Chickasaw Nation derives its goals from the apparatus of the state. One such goal is seen in the application of national stories and symbols in the app, creating banal nationalism to be reproduced by users. This will help nation-building due to users consuming and reproducing a national identity. An identity is constructed through the heritagization of a multitude of items and values implemented into an app heavily surrounded by Chickasaw related ludic elements for the purpose of creating a national identity. The Chickasaw Nation therefore constructs a national identity for users to identify as to nation-build.

Aya is a health app to quantify the number of steps taken by the user. This is the primary purpose and function of the app as it is the realm of the app with the most agency. The app therefore is likely a goal of the Chickasaw Nation to create a healthier citizenry either because of a genuine care to improve the lives of their citizens, lower medical costs incurred by the government's coverage, or increase productivity for members working in or around the economic sector of the Nation. *Aya* is a tool to promote the health of Chickasaw people, using heritage as an external motivator to accomplish this as these are the rewards of completing the primary goal. Making new constructions of a national-identity a secondary pursuit, as the main

goal of the procedural rhetoric is identified by the main interactive component of walking and other goals received as passive rewards by the user.

5.2 Ludic Analysis of *Aya*

Aya is a form of exergaming branching out into the space of civic games, through its unique combination of walking and heritage related rewards. *Aya*'s procedural rhetoric leads to exergaming being the main form of user agency is seen by the main interactive element being the user's step count. A secondary form of agency given to the player is the choice of which walking partner and associated trail to have as ludic objects enhancing their experience. This choice displays the cultural choice by the Chickasaw Nation to program the software to make health the primary goal of *Aya*. This is not to say the nation-building aspect is unimportant, as it serves a secondary role in being the motivator through rewards offered for achieving the Chickasaw Nation's primary goal of walking.

The spatial dimensions within the software of the *Aya* app are found in the maps provided with each character's journey. Each map is presented in a traditional manner most digital maps are presented, either recreating the same look of a GPS users would be familiar with in following a route similar to the character paths in *Aya* or to help educate users about the geography of what is in *Aya* through conventional means to best relate it to what the user knows. The latter being more appropriate due to the map not actually representing the path of the user, but is a ludic artefact shaping their experience.

The maps associated with *Aya* characters have the user on a set path based on the historical precedent of a trail, railroad, biking route or political boundary, limiting the socio-spatial interactions possible for the user to have in *AYA*. The map's functionality is closer to a

progress bar, only given greater meaning and context through the historical reenactment by the user of following these paths. Additional items unlocked along each path fall into their own ‘periodization’ to fit the period of time the narrative of the path has. It is these selections of period appropriate items that places enough value on them to incorporate them into the heritage of culture of the Chickasaw Nation. Their placement along the path in the map helps add context to their reenactment but does not inform any gameplay choices, only to enhance the map and rewards for the user. The map and items unlocked along it, therefore serves its spatial purpose as a ludic element to contextualize the users’ experience in reenacting the paths given through their experiences in the physical world. Furthermore, it transforms mundane experiences of exercise into a form of play for the user through the context provided by *Aya*.

Aya leans heavily into its narrative elements, making for a more compelling narratological study of its content rather than a ludological study (Ambrosio and Ross. 2021, p.847). The story of the *AYA* characters creates a strong narrative for the user, not able to be altered by a user, through ludus or gameplay (Ambrosio and Ross. 2021, p.847). Displayed by the lack of a *ludic phronesis* for the player to engage with to make the narrative emerge from the gameplay of the app, rather it is created through the game’s predetermined rewards (Sicart 2009). The strong narratological framework of *Aya* firmly places it into the study of narratology, using its ludic elements to enhance the user enjoyment of the experience of going through a narrative.

5.3 Final Thoughts and Suggestions

In the future conduct of this survey there are several recommendations I would make. Firstly, a larger sample size will be required to establish more confidence in our results and create viable statistical analysis. This should include incentives for people to take the survey, such as creating a prize lottery or another incentive to help boost responses because the reach of

the survey is large enough but had a low response rate. Secondly, any conclusions about the effect of the *AYA* app need to be tested against a control population or a before and after survey created and distributed to a group of people to test their responses before and after using the app for several months. This will avoid problems I encountered where citizens of the Chickasaw Nation could disagree about the app increasing any sense of national identity with the Chickasaw Nation because they were already incredibly nationalistic. Additional resources would be required for a larger study of this magnitude to accommodate new methods to create a sample population to account for these improvements. Future endeavors into this topic can take advantage of increased resources of the *AYA* application found in the release of new walking partners but also the deeper analysis of email blast, songs, and artwork.

The *AYA* app is a success in how it has made most of its users want to use it for their own education about the Chickasaw Nation. The ability to form new aspects of the Nation becomes easier as the *AYA* app acts as a conduit for the heritagization of items from the past of the Chickasaw Nation and values it ties to itself through the narratives formed around these objects. Therefore, the Nation-building aspect of the application was seen as successful, as it has convinced users the rewards they want are these items instructing them about the Nation they will as a result feel closer tied to. The revitalization of a Chickasaw identity has been a key issue for the Nation, to justify its continual existence as an autonomous government within the United States and to push back on the cultural pressures against the Nation by revitalizing cultural elements from the past through heritagization. This revitalized identity is not the same as past identities due to numerous external factors, such as a new geography in Oklahoma and demographic and technological changes that fundamentally shift the lifestyles of Chickasaw citizens from the periods of pre-statehood that are heavily used in the *AYA* app.

Part of the shift in lifestyles from the pre-statehood era of the Chickasaw Nation has been a rise in sedentary lifestyles, resulting in a growing health crisis in the Nation that has been combated through the promotion of physical wellness. One of these efforts being the *AYA* app has mixed results, as numerous users report walking more due to the app, however their overall steps do not represent a rigid routine present that is elevating daily step above the average US count. Among Chickasaw and other indigenous groups, steps were shown to be higher, showing the app works best on its targeted population but may see little success elsewhere. *AYA* also faces the problem of passive rewards gained; content the users may want needs a time limit to reach certain goals to meaningfully increase the desire to walk. Therefore, the physical improvements wrought by the *AYA* app are mixed and would need a more controlled experiment to judge their outcome. Overall users liked the app and its gamified rewards system, but it leading to an increase in physical activity is not conclusive.

AYA is a nation-building app with a unique mix of walking features embedded with artifacts from national mythos to construct an idea of what makes up that nation. For the Chickasaw Nation the commissioning of this app is a part of their cultural revitalization and physical wellness plans. The app succeeds in creating a national mythos from which to nation build from. While physical wellness has inconclusive results, as some elements show successful gamification in creating an incentive for walking among targeted demographics, the overall walking reported is not exceptionally high. The mediatization strategy employed by the Chickasaw Nation uses new media technologies of mobile games to create the *AYA* app, being an innovative strategy for similar nations to employ in their endeavors successfully.

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Appendix A. Questionnaire

AYA: Heritage Walking

Start of Block: consent

Q50 Would you like to be involved in research at the University of Oklahoma?

I am Matthew Armor from the Department of Geography and Environmental Sustainability and I invite you to participate in my research project entitled AYA Heritage Walking. This research is being conducted at OU. You were selected as a possible participant because of your use of the AYA app. You must be at least 18 years of age to participate in this study. Please read this document and contact me to ask any questions that you may have BEFORE agreeing to take part in my research.

What is the purpose of this research?

the purpose of this research is to understand the effectiveness of the AYA in promoting physical well-being and Education about the Chickasaw Nation.

What will I be asked to do?

If you agree to be in this research, you will be asked to complete a survey about the AYA app truthfully about your experience with the app.

How long will this take?

Your participation will take an estimated 30 minutes.

What are the risks and/or benefits if I participate? There are no benefits from being in this research.

You will be asked to provide demographic information that describes you. We may also gather information about your geographic location in this research. Different combinations of personal and geographic information may make it possible for your identity to be guessed by someone who was given, or gained access, to our research records. To minimize the risk of deductive re-identification, we will not combine identifying variables nor analyze and report results for small groups of people with specific demographic characteristics.

There is also a risk of accidental data release. You will be asked to complete an online survey as part of this research. The organization hosting the data collection platform has its own privacy and security policies for keeping your information confidential. This external organization, which is not part of the research team, may gain access to or retain your data or your IP address which could be used to re-identify you. No assurance can be made about their use of the data you provide for purposes other than this research.

Will I be compensated for participating? You will not be reimbursed for your time and participation in this research.

Who will see my information? In research reports, there will be no information that will make

it possible to identify you. Research records will be stored securely, and only approved researchers and the OU Institutional Review Board will have access to the records. You have the right to access the research data that has been collected about you as a part of this research. However, you may not have access to this information until the entire research has completely finished and you consent to this temporary restriction.

Do I have to participate?

No. If you do not participate, you will not be penalized or lose benefits or services unrelated to the research. If you decide to participate, you don't have to answer any question and can stop participating at any time.

Will my identity be anonymous or confidential?

Your name will not be retained or linked with your responses.

What will happen to my data in the future? We will not share your data or use it in future research projects.

Who do I contact with questions, concerns or complaints?

If you have questions, concerns or complaints about the research or have experienced a research-related injury, you can contact Matthew at 405-637-8310 or mattwaller@ou.edu, Darren Purcell at 407-453-1831, or Bobby Saunkeah, CNDH Research Protections Administrator, at 580-421-4562 or Bobby.Saunkeah@Chickasaw.net. You can also contact the University of Oklahoma – Norman Campus Institutional Review Board (OU-NC IRB) at 405-325-8110 or irb@ou.edu if you have questions about your rights as a research participant, concerns, or complaints about the research and wish to talk to someone other than the researcher(s) or if you cannot reach the researcher(s). You will be given a copy of this document for your records. By providing information to the researcher(s), I am agreeing to participate in this research.

Yes (1)

No (2)

Skip To: End of Survey If Would you like to be involved in research at the University of Oklahoma? I am Matthew Armor from... = No

End of Block: consent

Start of Block: walking and usage questions

Q1 Which of the following statements best describes you?

- I am a Chickasaw citizen (1)
- I am not Chickasaw, but someone in my family is (2)
- I am First (Native) American, but from another tribe (3)
- I am of Chickasaw descent but am not a Chickasaw citizen (4)
- I am not Native American (5)

Page Break

Q2 How long have you used AYA?

- a few weeks (1)
 - 12 months or less (2)
 - more than 12 months (3)
 - a few years (4)
-

Q3 How regularly do you read/ listen to AYA walking rewards?

- 0 (0)
 - 1 (1)
 - 2 (2)
 - 3 (3)
 - 4 (4)
 - 5 (5)
 - 6 (6)
 - 7 (7)
 - 8 (8)
 - 9 (9)
 - 10 (10)
-

Q4 How did you hear about the AYA app?

- From a friend or family member (1)
 - Official Chickasaw communications i.e., mail, promotions in Chickasaw facilities (2)
 - Advertising (3)
 - Looking for a similar app (4)
 - Other (5)
-

Q5 How would you describe your daily walking habits?

- I walk a lot every day (1)
 - I walk a lot occasionally (2)
 - I walk a normal amount (3)
 - I walk less than normal (4)
 - I hardly walk at all (5)
-

Q6 How many steps do you take a day from your AYA reports before you end your day? You can check this by going to the home screen of the maps page.

- less than 1500 (1)
- 1500 - 3000 (2)
- 3000 - 4500 (3)
- 4500 - 6000 (4)
- 6000 - 7500 (5)
- 7500 - 9000 (6)
- 9000 - 11500 (7)
- 11500 - 13000 (8)
- over 13000 (9)

End of Block: walking and usage questions

Start of Block: Heritage Questions

Display This Question:

If Which of the following statements best describes you? = I am a Chickasaw citizen

Q7 Has the AYA app made you feel more connected to the Chickasaw Nation? In what ways has it affected your heritage?

Display This Question:

If Which of the following statements best describes you? != I am a Chickasaw citizen

Q8 Has the AYA app made you feel more connected to the Chickasaw Nation, such as your knowledge of the tribe.

Q9 To what extent do you agree with the following statements

Display This Choice:

If Which of the following statements best describes you? = I am a Chickasaw citizen

	Strongly disagree (1)	Somewhat disagree (2)	Neither agree nor disagree (3)	Somewhat agree (4)	Strongly agree (5)
I have a strong sense of belonging to the Chickasaw Nation (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<i>Display This Choice:</i> <i>If Which of the following statements best describes you? = I am a Chickasaw citizen</i>					
I am proud to be Chickasaw (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have a duty to learn about the Chickasaw Nation (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I started AYA to increase my feelings of self-worth (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I started AYA to develop my knowledge of the Chickasaw Nation (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

I began AYA
to learn more
about the
Chickasaw
Nation (6)

I started
AYA to
improve my
physical
fitness (7)

The AYA
app is
helping me
reach my
fitness
wellness
goals (8)

The AYA
app helps me
exercise (9)

Q10 What type of knowledge from the AYA app were you most interested in developing

- History (1)
- Language (2)
- Geography (3)
- Health tips (4)
- Other (5)

End of Block: Heritage Questions

Start of Block: Block 2

Q11 Are you part of any walking groups on the AYA app?

- Yes (1)
- No (2)

Display This Question:

If Are you part of any walking groups on the AYA app? = Yes

Q12 Where do you generally rank on the leaderboards?

- High (1)
- Middle (2)
- Bottom (3)
- I have not used the leaderboards function (4)

Display This Question:

If Are you part of any walking groups on the AYA app? = Yes

Q13 Has the leaderboard competition affected your walking?

- Yes (4)
- Maybe (5)
- No (6)
- N/A (7)

Q14 Answer the following questions about the walking partners in the AYA app

	Akano wa (1)	Hikatub by (2)	Solom on (3)	Ma h Wa h Ta (4)	Eliz a (5)	Sil as (6)	Olli e Bell e (7)	Willia m (8)	Talo wa (9)	Em et (10)	Be n (11)
Which walking partners have you used? (1)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Which walking partners did you drop? (2)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Which walking partners did you find most interesting? (3)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Q15 Does the walking companion system make you feel like you are learning from a member of the Chickasaw Nation in history and why?

Q16 Do you interact and learn from the map system?

- Definitely not (1)
 - Probably not (2)
 - Might or might not (3)
 - Probably yes (4)
 - Definitely yes (5)
-

Q17 Does the visualization of progress on the map make you feel accomplished?

- yes (1)
 - no (2)
-

Q18 which of the following best describes how you consume AYA content?

- Read my AYA content as I unlock it (1)
 - Binge all AYA content at once (2)
 - I don't read my AYA content (3)
-

Q19 Is walking recreationally something you now associate with a Chickasaw identity because of AYA?

Q20 Have you visited any locations marked by the virtual trails?

- Yes (1)
 - No (2)
-

Display This Question:

If Which of the following statements best describes you? != I am a Chickasaw citizen

Q21 The information provided by the app makes me feel more connected to the region the trails cover

- Strongly disagree (1)
 - Somewhat disagree (2)
 - Neither agree nor disagree (3)
 - Somewhat agree (4)
 - Strongly agree (5)
-

Q22 To what extent do you agree with the following statements

	Strongly disagree (1)	Somewhat disagree (2)	Neither agree nor disagree (3)	Somewhat agree (4)	Strongly agree (5)
The AYA app has spurred my interest in learning the Chickasaw language (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The AYA app has helped grow my cultural affinity for the Chickasaw Nation (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The AYA app has helped me appreciate the Chickasaw Nation (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Display This Question:

If Which of the following statements best describes you? = I am a Chickasaw citizen

Q23 To what extent do you agree with the following statements

	Strongly disagree (1)	Somewhat disagree (2)	Neither agree nor disagree (3)	Somewhat agree (4)	Strongly agree (5)
The AYA app has made me prouder to be Chickasaw (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The AYA app has made me feel closer to my Chickasaw heritage (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The AYA app has made me more likely identify as Chickasaw first (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The AYA app has made me understand what my Chickasaw Ancestors went through (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

End of Block: Block 2

Start of Block: Demographic Questions

Q24 What races or ethnicities do you identify with? select all that apply

- White (1)
- Black or African American (2)
- American Indian or Alaska Native (3)
- Asian (4)
- Native Hawaiian or Pacific Islander (5)
- Other (6) _____
-

Q25 Which of the following best describes your situation

- I live within the Chickasaw Nation (1)
- I live close enough to the Chickasaw Nation to receive most services (2)
- I live away from the Chickasaw Nation (3)
-

Q26 What county do you reside in?

Q27 What state do you reside in?

Q28 What is your gender?

- Male (1)
 - Female (2)
 - Other (3)
 - Prefer not to say (4)
-

Q29 What is your age?

- Under 18 (1)
 - 18 - 24 (2)
 - 25 - 34 (3)
 - 35 - 44 (4)
 - 45 - 54 (5)
 - 55 - 64 (6)
 - 65 - 74 (7)
 - 75 or older (8)
-

Q30 What is your highest level of educational attainment?

- Less than high school diploma (1)
- High school diploma or GED (2)
- Some college but no degree (3)
- Associates degree (4)
- Bachelor's degree (5)
- Master's degree (6)
- Professional degree or Doctorate (7)
- Other (8)

End of Block: Demographic Questions
