

Perception of the Role of K-12 Schooling: Completing the Evaluative Loop for Sustainable
Human Capacity Building Infrastructure (HCBI)

by

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ABSTRACT

This study examined perception of K12 schooling systems as experienced by a random sample of adults in Phoenix, AZ. It explored whether the values purported as key factors in the American K12 schooling system - as presented in academic literature - were compatible with the lives, interests and goals of 'users', student-participants. In addition, it offered opportunity for post-K12 student-participants to share their views on the purposes, goals, and outcomes they held to be important. The sample consisted of 139 post-K12 students/individuals residing in Phoenix, AZ. Mean age of student-participants was 29. Results indicated a mismatch between purported K12 schooling goals and important outcomes embedded in the system and values held by the K12 student-participants. The participants in this research generally perceived K12 schooling as valuable, both to themselves and to society at large, but stressed that the deficiencies they perceived in the system were particular to delivery platforms as they relate to the learning styles of students and belonging. Future life skills and success - in and after K12 schooling - whether related to college or not were also of importance. Results revealed that the initial hypothesis of income, age, and ethnicity as key factors in satisfaction with K12 schooling was not borne-out. Rather it revealed that a sense of belonging and the suitability of learning platforms to the individual learning styles of students were of greatest significance.

DEDICATION

I dedicate this to my children Barrett, Ausette, and Ivan Anderies.

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I would like to thank Dr. Marco Janssen for his patience and intelligent guidance; Dr. David Garcia for his enthusiasm to listen, guide, and take on this reflection with me; and Dr. Punya Mishra for his discussion and insight.

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Chapter 1

HUMAN CAPACITY BUILDING INFRASTRUCTURE AND SUSTAINABILITY

1.1 Introduction

As it emerged as a discipline in the second half of the 20th century, a core idea present in sustainability scholarship was the notion of maintaining our collective capacity to provide human well-being now and into the future (Johansson 1994). For many researchers in sustainability science, the importance of the environment in producing well-being has been cast in terms of maintaining the function of natural infrastructure (or equivalently, ‘natural capital’) for future generations and other species (Daly and Griesinger 1994). However, it is increasingly recognized that sustainability requires more than maintaining natural infrastructure (Clark and Harley 2020). For example, *knowledge* and *social infrastructure*¹ are key contributing factors to creating and maintaining human social structures, technologies, and information systems which, in turn, when combined with natural infrastructure enable societies to provide opportunities for well-being. Understanding the fundamental function of knowledge infrastructure as part of the natural, economic, political, and social system in which it is embedded is an important sustainability consideration.

Many sustainability scholars have addressed a wide range of questions related to the governance of shared infrastructures be they natural such as forests (e.g., Nagendra and Ostrom 2012; Oberlack et al. 2015; Andersson, Benavides, and León 2014), fisheries (e.g., Schlüter,

¹The term ‘capital’ is commonly used to describe various valuable assets such as ‘human capital’, ‘knowledge capital’ and ‘social capital’. I use the term infrastructure as equivalent to capital in the sense that it is a productive asset but to minimize elements of private ownership associated with the term ‘capital’. I am interested mainly in public infrastructure and so choose to use this term for consistency to avoid the awkward phrase of ‘public capital’ and opt for the less awkward phrase ‘private infrastructure’

Lindkvist, and Basurto 2021; Sumaila and Tai 2020; Dulvy et al. 2021; Sumaila et al. 2021), the climate system (e.g., Biermann et al. 2012) human-made such as affordable housing, transportation, or coastal flood defenses (e.g., Whitlow 2019; Allen and Arkolakis 2019; Colgan 2017). A central question in certain sustainability scholarship is how these systems generate value for some and costs for others. All infrastructure systems involve trade-offs between private benefits and public costs or public benefits and private costs. A quintessential example is the trade-off between the private benefits from the *output* of our energy infrastructure systems that enables cheap food, transportation, and housing and the social costs to future generations of the carbon emissions generated by the energy infrastructure system itself. Future generations are not able to negotiate about these costs and they are thus ‘externalities’ to present-day energy production processes. While we have substantially assumed ‘knowledge’ as the primary output of our formal educational system and as an ‘input’ to production, the externalities generated by the knowledge production infrastructure system itself have received little attention in the sustainability literature. Specifically, like energy systems, modern K12 schools are shared infrastructures (either as a club or public good) that may provide private benefits (e.g. knowledge, valuable skills, socialization) and may generate social costs. Just as the structural characteristics of energy systems determine their social costs, so do the characteristics of a *human knowledge-and-skill capacity building infrastructure ‘HCBI’* - which modern K12 school systems are a particular example. K12 school systems (hereafter HCBI systems) do much more than transfer knowledge. They impact how individuals acquire knowledge, build identities, and find their places in their social and cultural contexts. That is, HCBI systems transfer *culture* and affect who individuals *are* and *become* in both positive and negative ways which, in turn, may generate public ‘goods’ and ‘bads’.

The linkage between the underlying structure of modern K12 HCBI systems (e.g. implicit colonialism, racism, cast-ism, power asymmetries) and sustainability concerns has not

been explored even though the outcomes of the K12 HCBI systems (experiences and deliverables like graduation certificates) generate unintended consequences, i.e. *externalities*. There are strong feedbacks in HCBI systems that entrench social, economic, and political structures over space and time that may prove to be deleterious to a relatively large portion of the American population - a point Daniel Markovits eloquently makes in his recent book *The Meritocracy Trap* (2019). For example, within the modern K-12 HCBI system there exist numerous systemic inequalities that may be related to differential access (illuminated in the recent COVID-19 pandemic), inappropriately targeted pedagogical design, and other identifiable deleterious outcomes that deserve careful examination (Zhao 2018). And in light of Markovits' observations, the accepted designs and applied metrics of the K-12 HCBI system itself may indeed be a large part of some aspects of societal problems, for example, the systemic creation of 'winners' who are able to obtain places in the economic system and 'losers' who are not (e.g. those who obtain jobs with higher-than-living wages and those who do not). Markovits' use of the term *trap* is apt: these types of feedback processes are quite general and can cause societies to be trapped in an undesirable equilibrium identical in principle to the tragedy of open access similarly central to sustainability.

These observations underpin the motivation of this research to view challenges facing modern HCBI systems as a sustainability problem for two key reasons: 1) HCBI systems are infrastructure *systems* with internal feedbacks that determine how they function and change over time and thus demand a systems perspective, and 2) involve considerations of intra- and inter-generational equity and elements of collective action to manage private and public costs and benefits to overall societal implications. These are core elements of sustainability as a field (Clark and Harley 2020) and thus suggest that HCBI systems are a key area of sustainability research interest and may benefit from analysis through a sustainability lens. Recognizing that education and sustainability are both enormous fields, this thesis focuses on a very spe-

cific problem of the role of the function of effective feedback structures to enable HCBI systems to adapt to change over time and better serve their users. In 2020, the role of K-12 HCBI came to the forefront as a key element of an operable society as a result of the COVID-19 pandemic (Mishra and Close 2020). More specifically, and with more long-term outcomes in focus, policy studies in sustainability is concerned with strengthening feedbacks that drive systems toward desirable outcomes and weakening others that tend to support undesirable outcomes. Basic systems thinking informs us that effective feedbacks requires information about how outcomes are perceived by various actors (e.g. learners) in the system and how these outcomes relate to the goals of the various stakeholders the HCBI systems are intended to serve. This thesis just takes a first small step using social survey methods to uncover one key information stream that may help characterize this gap: the perceptions of learners of the the ‘success’ of their K-12 learning and what factors may be relate to this perception.

In order to contextualize the research I clarify an understanding of what the ‘goals’ of HCBI systems are and how goals change over time as HCBI systems co-evolve with the social, economic, and political systems in which they are embedded. I then attempt to clarify how realized HCBI outcomes compare to aspirational goals. I do this in two parts in Section 1.2 : 1) provide a short history of HCBI to identify key social, economic, and political systems factors that determine goals, and 2) identify several negative externalities the recent research has linked to the structure of HCBI to illustrate the deviation between aspirations and realized outcomes. Finally, I attempt to identify potentially important information that is needed to close the feedback loop to move realized outcomes closer to aspirational goals.

1.2 K12 Human Capacity Building Infrastructure Systems: A System Overview

Although we take it for granted, the K-12 HCBI system is a relatively new concept in Western culture. Our current model predominantly grew out of the technologies and social practices that may be attributed to the industrial revolution (Collins and Halverson 2010; Moran 2009). In the nineteenth-century, U.S. state governments officially began to take responsibility for providing infrastructure for educating children. Before that time, education was mostly achieved by arrangements other than formal schools (Goodlad and McMannon 1997). Providing K12 HCBI was a private matter, either handled by parents, churches, or communities that came together and paid a teacher to educate their children. One generation taught the next about the important and necessary knowledge required for life and survival. K12 HCBI systems emerged slowly over time and their designs embodied the dominant American political elite's notions of the necessary need and task of housing and training its youth (Moran 2009). The American K12 HCBI took root with the predominant expectation that, at a minimum, it was to transfer *formal knowledge and skills* necessary to produce economic value: the acquisition of skills honed to fit the economic production needs of the day (Moran 2009).

Today, the original K12 HCBI model (the schoolhouse) is still in use, and at a minimum it is expected to produce workers while it is also tasked with assisting students with twelve capacity-building goals: mastery of basic skills or fundamental processes; career education; interpersonal relations; autonomy; citizenship; creativity; self-realization; intellectual development; enculturation; 'self-concept'; emotional and physical well-being; and moral and ethical character (Goodlad 1979, pp. 46–52). Beyond these stated goals, Zion and Blanchett 2017 note that core purposes of K12 HCBI systems attempt to address broad egalitarian, economic, civic, and humanistic concerns. Egalitarian concerns focus on creating opportunities

for individuals and see education as the great equalizer. Economic concerns focus on equipping citizens with needed workplace competencies and skills. Civic concerns focus on ensuring that citizens are prepared to participate in public life. Humanistic concerns focus on supporting the right of each individual to develop their highest potential. Add competitive global market preparation, reliable childcare and basic-needs (e.g. meals) provisioning, and equity and justice concerns to the list and the expectations of the system become colossal. Yet, there is no historical ideal to serve as a unifying model to critique or adapt the HCBI system to changing needs (Moran 2009).

1.2.1 K12 HCBI: Generation of Positive and Negative Outcomes

The colossal expectations that have been placed on our current K12 HCBI system are no different than those that have been placed on our modern economic and natural infrastructure systems. In all these systems variable outcomes for participants and inhabitants - both positive and negative - are produced. In the 21st century, K12 HCBI systems face no fewer challenges to their traditional designs and expected outcomes than other public or private organizations. The K12 HCBI systems may indeed be producing perceived positive outcomes like increased access to basic *schooling* and university-entrance realization, but it is also seeing increased dropout and burnout rates as well as negative physiological outcomes (Salmela-Aro 2017). Ultimately, K12 HCBI systems stand out in one crucial way from most other social and economic organizations: they are fundamentally and primarily “values undertaking[s]” (H. Gardner 2004, p. 235). Some values are expressed in the above list of aspirational goals; other values are implicit and become systemic features of the infrastructure system itself. As a result, attempting to provision K-12 HCBI systems capable of delivering the tasks listed above is wrought with unintended and negative consequences that are beginning to

dominate research. The ‘cracks’ emerging in the system range from individual health issues to systemic inequitable economic and academic outcomes. For example, at the individual level, anxiety is reaching unprecedented levels (Ghandour et al. 2019). The rate of diagnosis of attention deficit hyperactivity disorder among children in school has nearly doubled in the past two decades (Polanczyk et al. 2007; Polesel, Dulfer, and Turnbull 2012). Sleep deprivation is a growing concern (O’Malley and O’Malley 2008; Kovash 2013). School-related issues are major sources of stress for children and adolescents (Kruger, Wandle, and Struzziero 2007) and burnout from school contexts can also spill over to later depression, drop out, and internet addiction (Salmela-Aro 2017). High stakes testing has negative health impacts on students and families (Polesel, Dulfer, and Turnbull 2012). Taken together, the K12 HCBI processes generate multiple negative externalities and by extension promote a winner-take-all dynamic that presently offers a very small number of opportunities to advance from lower to upper classes, by “raking a few geniuses from the rubbish” (Race Forward, 2013). These resultant outcomes don’t magically disappear, they increasingly constitute the social fabric of our American society.

1.2.2 K12 HCBI Feedback: Virtue or Virus Inducing?

While negative individual health outcomes are just one manifestation of current K12 HCBI systems, they are not an intrinsic feature of *knowledge and skill acquisition* or the *content* of K12 HCBI itself. Rather, negative outcomes are often related to how the acquisition process is structured and how it relates to the economic, social, and political context in which the HCBI is embedded. In order to examine the system clearly we need to take a systems view so that we are forced to consider how economic, social and political factors influence the values that underlie the K12 HCBI system and what types of behaviors and val-

ues the HCBI system incentivizes. Some key considerations include *how success is measured, how access is determined, whether learning should be competitive or cooperative, whether K12 HCBI systems legitimize social class stratification by incentivizing learning platforms with resultant 'winners' and 'losers', and whether by incentivizing 'winners' and losers' we condition the prioritization of one's placement within an exogenous hierarchical position* (Sapolsky 2004). Daniel Markovits aptly points out that the *shared* American, merit-based, and competitive K12 HCBI is inherently reacting to and moving with other legal, economic, and social technologies, which is producing and compounding systemic '*wrongs*' - negative externalities; he warns Americans that we should be seriously concerned (Markovits 2019). In sum, the aspirations for K-12 HCBI in America do not seem to match the realities.

Scholars reflecting on the structural feedback and features of the education infrastructure system and its inherent ability to produce (or generate) negative externalities is not new to K12 HCBI system research (Freire 1996; H. Gardner 2004; Pope 2008). For example, H. Gardner (2004) notes that the entrenched belief in formal tests as means of selecting and comparing has proved an incredibly powerful twentieth-century virus. Bowles and Gintis note that the achievement gaps in K12 educational outcomes and opportunities inherently call into question the purported American values and ideals about the provisioning of equal opportunities and social mobility to its citizens. Indeed, scholars have noted that equity in access does not translate into equity in educational outcomes (Zion and Blanchett 2017; Markovits 2019). Slowly, access to consequential capacity building infrastructure is being divided into two camps: those who can obtain excellent HCBI system outcomes and those who cannot (Markovits 2019). The inherent advantages elite student-participants gain, and the disadvantages poor student-participants face is bound and determined by the system and compounded by inherent economic realities. Certainly, these outcomes may be due to several contextual variables, yet, even if they were removed, K12 HCBI systems are intrin-

sically unfair as they privilege one profile of intelligence's over others (Davis and Gardner 1999; J. Gardner 1993). Taken together, these processes frustrate efforts to satisfy the very standards that American K12 HCBI systems purport, and in the end ensure that most people will not measure up (Markovits 2019). A society that is disconnected is not a sustainable society. While our current predilection for fostering a competitive K12 HCBI mechanism may provide some opportunity for some people to gain some key knowledge and skill - *key technology* - for accessing positions within the system, the resultant runaway feedback is dangerous. (Figure 1).

The drivers that may stop this dangerous runaway system is most likely one of or some combination of: 1) individual exhaustion (depletion) or burnout(physiological limitations); 2) natural resource depletion fueled by competitive consumption and lack of capacity for collective action due to perceptions that the system is unfair (as a result of feedback generated by non-adaptive HCBI; or 3) the raising of pitchforks (revolution of the losers as they grow exhausted by poor living conditions and injustice). When there is real or perceived scarcity - of jobs, opportunities or sense of accomplishment and place in society - the only thing that matters is relative position (Sapolsky 2004). Even if our modern K12 HCBI system does a relatively good job of delivering some form of knowledge transfer, skill building, or child care provisioning, it still is creating 'winners' and 'losers' alongside many negative externalities because it employs imperfect and unsustainable measures. Therefore, we need improved measurements of the outcomes and more robust designs for shared HCBI systems. Figure 1 summarizes where critical measurements may occur in the system. In fact, it may as important what is measured about the system and when in determining outcomes as what the knowledge content of the system is. The survey research in this thesis focuses on assessing measurements at the point highlighted by the red oval.

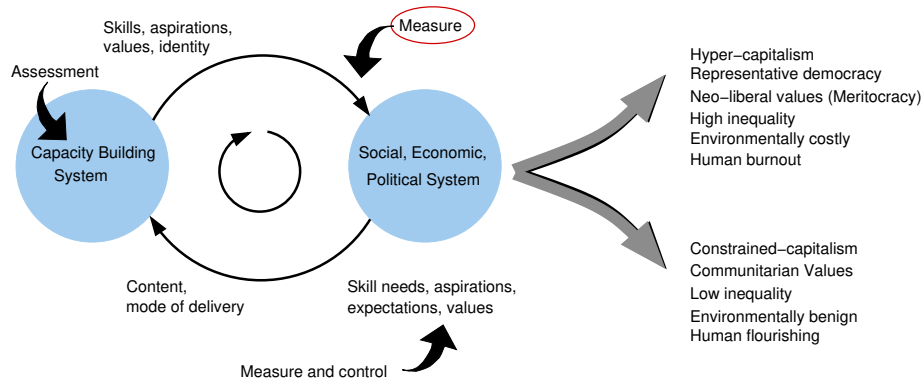


Figure 1. The feedback between society and K-12 HCBI. On the right is the feedback process showing the cyclic interaction between HCBI and social, economic, and political processes that repeats on annual or decadal time scales. On the right are examples of potential long run patterns that may emerge from this process on multi-decadal or century timescales.

1.2.3 Research Motivation: HCBI as Positive Agents of Change

I have attempted thus far to be careful to distinguish between HCBI as a general form of critical infrastructure that takes many different forms across time. The current American K-12 schooling system as a very specific instance of HCBI with clear historical roots in colonialism and industrialization. Despite the American K-12 HCBI system offering opportunity for individuals to mobilize their private infrastructure – their brain and body – to learn and develop, the magnitude of the tasks combined with the forms, values, and inequities inherent in the entire system is increasingly failing many in the system (Bowles and Gintis 2011). To move to a more sustainable future, we need to rethink the values and goals of HCBI systems not solely to support the existing political, economic, social power structures, but to drive transformative change (Westley et al. 2011). At the same time, we must use a systems view to analyze the ‘delivery system’ (i.e. how the values are operationalized), its feedback and the goals achieved.

To do this, and as I have stated previously in the introduction, we must appreciate that HCBI systems cannot be isolated from their cultural (social, economic and political) and bio-

physical contexts and studied as discrete objects that can be ‘repaired’. HCBI are always part of, indeed, embedded in, a larger systems that it iteratively helps shape and is, in turn, shaped by it. Such systems thinking characterizes the human, physical, and institutional interactions that shape behavior as time passes. Feedback loops reveal how human behavior changes our world and how these changes return to alter that behavior (Sterman 2002). While recognizing that the knowledge content (curriculum) and approach to facilitating learning within a particular HCBI system (pedagogy) are important, the systems view emphasizes the *social technology* creation, social costs, negative and positive externalities produced within and by the HCBI system itself. Too often, attempts to improve education focus too narrowly on one purpose of HCBI systems as the framework for their arguments and interventions and, in doing so, fail to critically examine the ways in which the system was constructed, and toward what end (Zion and Blanchett 2017). K-12 HCBI condition and impact the way individual users view themselves; have access to economic opportunities that give access to agency and personal flourishing; and may impact how they engage and participate in the overall system. K12 HCBI shape society in the present generation and are shaped by society in the next generation in an iterative process. The pattern that presents in the modern K12 HCBI system is primarily rooted in meritocratic competition which simultaneously excludes some people and this exclusion should not be dismissed; the conditioning of K-12 schooling which is predominantly embedded in the myth of meritocracy nourishes a systematic class conflict that deforms social and political life (Markovits 2019).

1.2.4 Beyond Meritocratic Competition

Therefore, this research proposes to focus on forming a better understanding of the role of K-12 education in our American democratic society and presumes that people should have

a fair degree of input into the broader construction of the K12 HCBI in which they participate. This builds on Hursh (2008): “[we] must engage in a dialogue with the public and policy makers over the purposes of schooling, and what and how we should teach and assess students” and aims to invite individual users to add to the discussion how they perceive the values, processes and outcomes of the American K-12 HCBI because their input is essential to creating equitable, robust, and efficient socio-technological infrastructures in the future. This research takes a tiny step by surveying individuals about how they view K-12 schooling which helps elucidate its present role in society and, in turn, help guide investments in appropriate future types of learning infrastructure delivery systems. How do individuals perceive the role of K-12 HCBI? What do individuals value in K-12 HCBI? What do they not value in the K-12 HCBI? Were they satisfied? Would they have preferred a different experience?

Measures of human well-being, such as satisfaction (Campbell et al, 1976; and Deiner, 2009) have not yet explored peoples’ direct sense of satisfaction with their K-12 schooling experience. Today, in the case of K12 HCBI, if persons do not succeed or meet the aspiration’s of the system, the consequences to their economic or social life is identifiable. Indeed, the success of a system or satisfaction with a service or good has the potential to influence future decisions that either shift or further reinforce the existing environment or infrastructure (Grimm et al. 2000; Andrade et al. 2019). Moreover, there has been little effort or opportunity to explore and collect feedback from student-participants in order understand how *they* experience the K12 HCBI system. This study attempts to explore how people perceived their K-12 schooling experience and gather insight about the role they see K12 HCBI plays in society at large. The implication here is that K12 HCBI feedback can be collected in order to examine designs and roles that student-participants view as important. I consider *users* (student-participants) -not merely parents - as important and potential contributors of valuable feedback. Specifically with regards to understanding views about less-than opti-

mal or negative outcomes. This study aims to investigate post K12 student contextual-level outcomes that can be named.

1.3 Theoretical Perspective

The research is theoretically grounded in institutional analysis (political science, political economy, rational choice theory) and in the Institutional Analysis and Development (IAD) Framework (Ostrom 2011) in particular. The IAD (Figure 2A) was developed to understand factors that impact the capacity of groups to solve collective action problems. The basic unit of analysis is the ‘action situation’, the social spaces in which diverse actors (participants) interact, exchange information and materials, negotiate, attempt to exert power, etc. Examples of action situations include board meetings, water users association meetings, parent-teacher association meetings, school board meetings, teacher and students interacting during a class in a classroom, a little league baseball game, neighbor garden clubs, or a world-cup soccer match. The action situation is condition by three broad categories of ‘external variables’: biophysical conditions, attributes of the community, and rules-in use (Ostrom, 2005; 2011). The biophysical conditions of K-12 HCBI include human beings (as biophysical entities) or the biophysical conditions of the physical space (windows and fresh air). The attributes of the community of K-12 HCBI include anyone in the U.S. who participated in them which includes students, teachers, parents, and administrators. They represent a stratum of individuals whose beliefs, education, wealth, and goals impact the action situation of K-12 HCBI. The rules-in-use for a K-12 HCBI may include legal arrangements (require parents to enroll the student), participation rules, standards for curriculum content, assessment standards, and standards for disciplinary actions. A collection of such variables then defines an action situation; for example, a particular biophysical ‘world’ occupied by a collection of

actors with a particular set of characteristics enabled and constrained by a particular set of rules-in-use. Ostrom studied action situations in small scale surface irrigation communities in Nepal, fishing communities in Turkey, agricultural communities relying on groundwater in India, and forest communities in Indonesia and attempted to determine what characteristics of these three sets of external variables would lead to successful collective action to govern shared common-pool resources. Ostrom's action situation has also been studied in human-made scenarios such as open source collaborations (Schweik & English, 2007; Schweik & Kitsing, 2010).

Ostrom's analysis in this body of work focused on static snapshots of the *action situations* in these socio-ecological case-studies. Ostrom recognized that these action situations (Figure 2) change over time (Ostrom 2005). This is indicated by the dashed arrows that feedback from outcomes from an action situation (a set of decisions are made and related actions are taken) back to the action situation (school board decides to try a new assessment method in an action situation in year now, evaluates it in an action situation a year later and decides to abandon it) and back to the 'external variables' (technology changes creating new demands on the curriculum). The interpretation of 'external variables' is thus one of time scale: external variables change very slowly (e.g. decades) relative to those in the action situation (minutes, hours, days).

The IAD framework helps makes clear that the outcomes of the K-12 HCBI system are determined by the characteristics of the resources, the nature of the community, and the rules-in-use. Depending on the flexibility of the rules, the physical conditions and the attributes of the community outcomes of the systems may or may not be responded to when negative externalities are produced. Further, the IAD emphasizes that the dynamic change over time is driven by evaluative criteria which determine how the outcomes influence future iterations of actions situations through feedback.

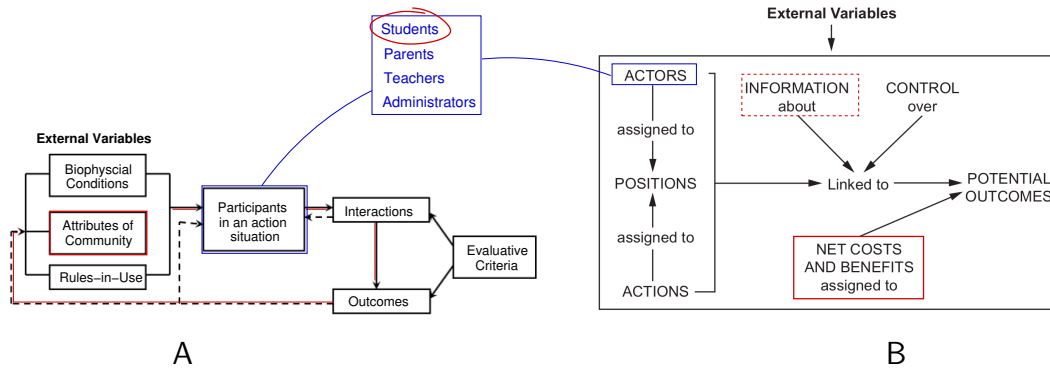


Figure 2. A: The IAD Framework. Red highlighting indicates elements of the IAD that are the focus of this research: the red lines trace out the feedback loop whereby perceptions of the purpose of education (an element of the attributes of the community) are translated, through decisions made in a number of action situations) into HCBI systems in the present generation and into perceptions of these purposes in the next generation through one iteration of the loop. Adapted from Ostrom (2011). B: The internal structure of the action situation. The solid red box and the red circle indicate the focus of this study. The dashed red box indicates a secondary focus of the study. See text for further detail. Adapted from Ostrom (2011).

Figure 2B shows the internal structure of the action situation and clarifies the mechanisms by which external variables are translated into outcomes. A comprehensive analysis of a socio-economic or ‘social-ecological system’ would require a careful analysis of all three factors, i.e. biophysical and institutional contexts impact potential outcomes through the linkages depicted in Figure 2. Such an analysis is beyond the scope of this study. Here, I focus primarily on one factor that determines potential outcomes: Net costs and benefits assigned to different outcomes (red rectangle, Figure 2). These costs and benefits depend fundamentally on what the goal of the decision maker is. That is, costs and benefits cannot be determined without a goal to compare to. This research focuses on gaining a better understanding of what these perceived goals are from a student-participant perspective as distinct from goals of teachers, parents or administrators. A secondary outcome of the study will be to shed light on what K-12 HCBI student-participants take into consideration such as how

they are measuring their outcomes, i.e. what ‘information about’ the K-12 HCBI system do they use to assign costs and benefits to potential outcomes.

This research applied the IAD internal structure of the action situation to K12 HCBI and selected the specific actor, the student-participant, as its primary focus. Research that considered the student-participants’ views of the goals and outcomes of K12 HCBI was not commonly found. Given that the student-participant ‘*passed through*’ the system, it takes the position that they are relevant and important actors and aimed to gain more insight about their level of satisfaction, feelings, and views as key evaluative criteria. Ultimately, this research shifts focus from the parents to the student-participant as the primary beneficiary or ‘*consumer*’.

1.4 Methods

1.4.1 Sampling Strategy

This study used a combination of convenience sampling and purposive sampling approaches. While convenience sampling may lead to increased sampling error, I believed it was appropriate for my study given the limited time and financial resources available for data collection. The target sample for this study was determined in a manner appropriate to elicit information from a wide range of individuals in the Phoenix, Arizona metropolitan area with different backgrounds and in different life stages. Toward this end, the study first sought to target residents of the Phoenix Area Social Survey, known as PASS, which is a long-term CAPLTR household survey of 12 neighborhoods in the Phoenix metropolitan area that has been periodically deployed since 2001 (Andrade et al. 2019; Andrade et al. 2021; Larson et al. 2019). Census block groups determined by by the PASS IV research study (2017)

were used to identify locations for the distribution of the *K-12 Schooling Survey2021* flyers. These neighborhoods represented a purposively determined range of socioeconomic zones. Second, this research attempted to reach a larger and potentially more diverse population outside of strictly homeowners or neighborhood residents. Therefore, in addition to neighborhoods, this survey targeted individuals at businesses within or near the neighborhoods and random individuals within the Phoenix metropolitan area. Lastly, this research incorporated two community colleges (South Mountain Community College and Scottsdale Community College), Arizona State University Downtown and Tempe campuses as part of the sampling target. These educational organizations were selected because they are situated in the Phoenix metropolitan area and their campuses offered access to a potentially under-represented citizenry group present in the PASS IV neighborhoods: college and university students. Figure 1.3 shows the locations where flyers were distributed.

1.4.2 Survey Administration

The *K12 Schooling Survey2021* was designed to allow for an integrated analysis of what ordinary individuals perceive to be the main purposes, goals and outcomes of the K12 HCBI system. The identification and phrasing of *goals and expected-outcomes* of the American K12 HCBI system were determined through an extensive reading of academic-writings resulting from the search title “purpose of school” (Moran 2009; Bowles and Gintis 2011; Dewey 1998; Collins and Halverson 2010; Freire 1996; H. Gardner 2004; Goodlad and McMannon 1997; Pope 2008; Zion and Blanchett 2017; Mishra and Close 2020). The survey questionnaire contained questions aimed at gaining access to the experiences, feelings, and social worlds of participants (Fossey et al. 2002). To ensure that these constructs were intuitive and well worded, the questionnaire was pretested with 15 adults. Based on the feedback received after

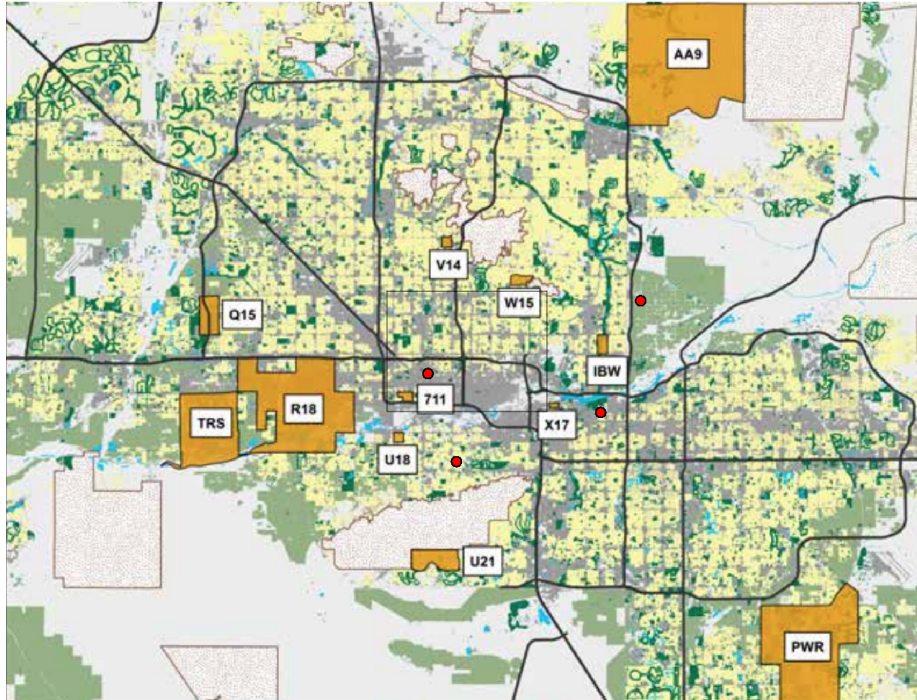


Figure 3. Map of 12 neighborhoods sampled in this study. In addition to these neighborhoods (solid orange), flyers were distributed at Arizona State University campuses (Tempe and Downtown), South Mountain and Scottsdale Community Colleges (red circles). Adapted from Andrade et al., 2021

the pretest, the survey instrument was amended by changing the sequence or wording of questions. The main questions I sought to answer through the surveys were:

1. What are Phoenix residents' beliefs about the role and purpose of K-12 education for themselves and society at large? Has the COVID-19 crisis altered these beliefs? If so, how?
2. What perceived role did K-12 schooling play in forming individual participants' identities and how did they measure their expectations/outcomes?
3. Do the answers to these questions change across different socio-economic classes, gender or age groups?

The survey questionnaire was in English and included an informed consent form that

insured anonymity. The questionnaire consisted of thirty-eight questions divided into four sections containing predominantly closed-ended questions. Section I contained question regarding the participants' personal and individual perception of their K12 HCBI experience. Section II contained questions regarding the respondents' view of various purported outcomes and goals of the K12 HCBI system for society at large. Section III was directed at eliciting participants' views about COVID-19 and HCBI. Section IV contained questions regarding respondents' socio-economic and personal demographic information. Finally, Section V invited participants to take part in a voluntary 45-minute interview. The survey questionnaire and interview questions were approved by Arizona State University IRB (see Appendix B for a summary of the survey questions and codes and the actual survey as administered.) Questions included yes/no, Likert scale questions, ranking questions, radio-button questions for specific data categories (e.g., age, income, etc.), and short answer text box entry questions. The full survey results are available at <https://osf.io/>.

Incentives. A \$50-drawing incentive was offered to participants for the survey. A random number was assigned to participants for the \$50 survey winner. Personal funds were used for this award.

1.4.3 Data Collection

K-12 Schooling Survey 2021 recruitment flyers were distributed to four survey groups delineated as *Neighborhood (N)*, *Education (E)*, *Business (B)*, and *Random (R)*. Separate QR codes were created for each survey group flyer so that data could be identified by survey instrument source. Neighborhood (N) flyers were delivered to front doors of homes within the PASS IV neighborhoods; Business(B) flyers were distributed to businesses within and around the neighborhoods and opportunistically around the Phoenix metro area; Ran-

dom (R) flyers were handed out to individuals encountered on sidewalks, in various Phoenix metropolitan areas (e.g. attendees of the First Friday Events and at various points around downtown Phoenix); Education (E) flyers were either distributed by hand to students on campuses or posted on campus bulletin boards. Recruitment flyer distribution was performed in two cycles and in multiple locations at each iteration in July and September 2021. I distributed 2,350 survey flyers. The survey was administered to 1,100 residences, 150 business spaces, 400 random students and 700 random individuals. The first wave of distribution included some PASS IV neighborhoods, individuals working at businesses around the neighborhoods, and at the community colleges. The second wave occurred in the remaining neighborhoods, on Arizona State University campuses, and with random individuals encountered in areas around the neighborhoods or in downtown Phoenix. The survey questionnaire was administered online via Qualtrics, a cloud-based survey-tool offered through Arizona State University.

1.4.4 Data Analysis

To analyze the data about what goals, purposes and outcomes were important to participant-students and to get a sense of the data, I ran simple descriptive statistical analysis to explore the responses, examined the resultant data to identify interesting factors to be analyzed in more in-depth regression analyses, and finally I analyzed text responses. Eleven people were interviewed; an analysis of the interview data was beyond the scope of this thesis research. This research will present only the results of the survey instrument.

1.5 Results

1.5.1 Summary Statistics and Analysis

Response Rates. Table 1 summarizes the sampling details and response rates by survey instrument groups. The largest number of flyers were distributed to Neighborhoods(N) (47%); the second largest number of flyers were distributed to Random (R) individuals (29.8%); the third number of flyers were distributed in Educational(E) settings (17.0%) and the smallest distribution was to Businesses(B) (14.7%). The initial response rate was 8%. The final combined response rate was 5.9%. The Education(E) group had the highest response rate (13.5%) while the Neighborhood(N) was the lowest (3.0%). The number of initial responses was 178 and of those, 139 fully/partly completed the survey. The distinction between those counted in the fully/partly completed group was that the respondent completed 36% of the survey instrument, which was the completion of Section I.

Sampling Details and Response Rates across the Four Survey Instruments (N, E, B, R)										
	Neighborhood(N)		Education(E)		Business(B)		Random(R)		Combined	
Flyer distribution	1,100	47.0%	400	17.0%	150	6.0%	700	29.8%	2350	
Initial reponse	39	3.5%	76	19.0%	22	14.7%	41	5.9%	178	8%
Fully/partly completed surveys(n)	33	3.0%	54	13.5%	17	11.3%	35	5.0%	139	5.9%
Overall participation by survey instrument		23.7%		38.8%		12.2%		25.2%		
Willingness of individuals who completed survey to interview	16	48.5%	29	53.7%	14	82.4%	16	45.7%	75	54.0%
Actual interviews(n)	3	9.1%	1	1.9%	2	11.8%	3	8.6%	9	6.5%

Table 1. K-12 Schooling Survey 2021 response rates.

Sample Characteristics. The data set consists of 139 observations and a total of 34 inde-

pendent variables. Many variables were re-scaled from the original Qualtrics data output for easier comparison. For example, where the Qualtrics data was labeled as 21= *yes* and 22 = *no*, I reconfigured the data to be 1 = *yes* and 2 = *no*. In instances where Qualtrics automatically created 16, 17, 18, and 19 codes, I re-coded results to be 1, 2, 3 and 4, respectively. In instances where Qualtrics skipped numbers, I re-coded results into unbroken sequences (e.g. 14, 15, 16, and 17 to 1, 2, 3, and 4).

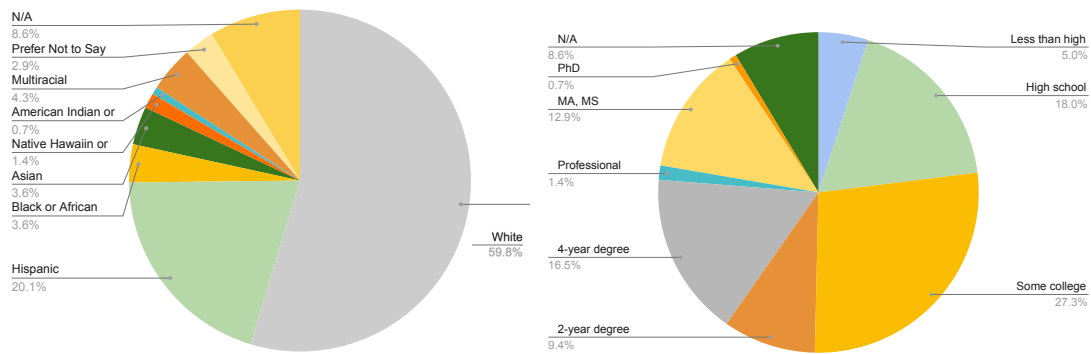


Figure 4. Self-identified ethnicity of K-12 Survey2021 respondents.

Figure 4 shows the ethnicity and educational attainment of the sample group. Based on the ethnic makeup of Maricopa county (U.S. Census Bureau, Maricopa County, USA - Population estimates, July 1, 2019, (V2019), the sample is reasonably representative. Multiracial were slightly over-sampled (U.S. Census 3.1%, K-12 Survey 2021, 4.3%), and American Indian or Alaska Native was slightly under-sampled (U.S. Census 2.8%, K-12 Survey 2021, 0.7%). Likewise, educational attainment was under-sampled (U.S. Census 32.7%, K-12 Survey, 16.5%).

Figure 1.4 summarizes the age and income distribution of the survey respondents. A larger portion of the respondents were from younger age groups with the average age being 29. The age distribution of the sample groups is summarized in the left panel of Figure

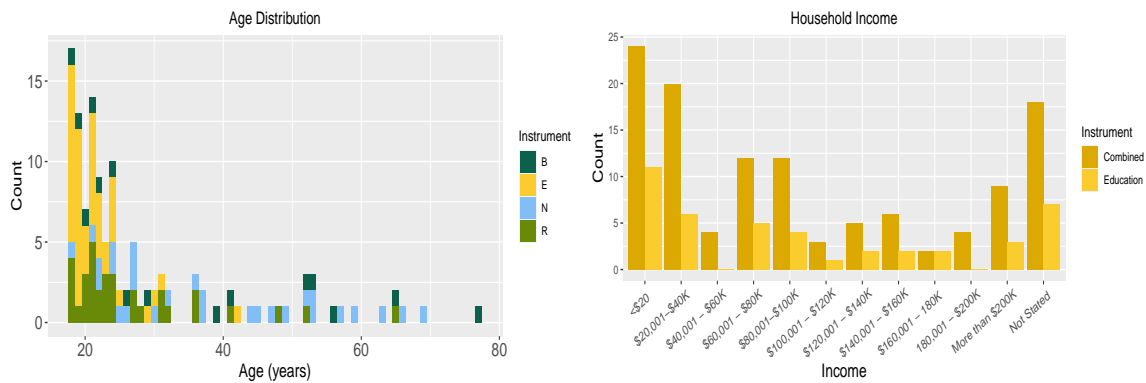


Figure 5. Age and income distribution of survey instrument respondents.

5. The colors reflect the survey instrument groups: dark green as Business(B), gold as Education(E), light blue as Neighborhood, and light green as Random(R). Individuals in the Random and Education groups tended to be younger than the neighborhood and business groups. The right panel of Figure 5 summarizes the income distribution of the respondents. The two colors represent the analysis of all four survey instruments(ochre) and without the inclusion of the Education(E) group (yellow). Age and income are correlated - i.e. young college students are not working full time and thus have lower income.

1.5.2 Satisfaction

In the first section of the survey, participants were asked about their level of satisfaction with their K12 HCBI experience. The questionnaire choices for level of satisfaction were *extremely satisfied*, *somewhat satisfied*, *somewhat dissatisfied*, and *extremely dissatisfied*. The majority of participants were *somewhat satisfied*(50%) with their K12 schooling experience. Individuals who reported being *extremely satisfied* (24%), *somewhat dissatisfied* (23%), and very few individuals' reported being *extremely dissatisfied* (3%). Satisfaction did not stand out as being highly significant for high, middle or low-income respondents. Age and level of education were not highly correlated with satisfaction. And there appeared to be slightly more dissatisfaction amongst men as compared to females.

Mean Table (Males/Females)					
	Males		Females		Wicoxon test p-value
	mean	s.d.	mean	s.d.	
Satisfied	2.1186	0.7447	1.9016	0.7682	0.1073
Belonged	2.1017	0.8649	2.1148	1.0016	0.8611
Learning style	2.5763	0.9685	2.3934	0.8618	0.2827
Influenced to today	2.1017	0.7118	1.9508	0.5895	0.2734
Wanted to change schools	0.4407	0.5007	0.5246	0.5035	0.3614

Mean Table (Satisfied/Dissatisfied)					
	Satisfied with K-12 Schooling		Dissatisfied with K-12 Schooling		Wicoxon test p-value
	mean	s.d.	mean	s.d.	
Belonged	1.9029	0.8690	2.8889	0.8204	5.221e -08
Learning style	2.2330	0.8069	3.1944	0.8218	7.337e -08
Influenced to today	1.8252	0.5131	2.6667	0.6325	7.405e -11
Wanted to change schools	0.3883	0.4898	0.8056	0.4014	1.775e -05

Table 2. Relationships between satisfaction and other survey questions.

Table 2 illustrates some aspects of how satisfaction varies amongst subgroups. In the top table, one can see that satisfaction is not statistically different across respondents who identified with male or female gender. The response that stands out as slightly different across genders is *learning style*². Females felt slightly more strongly that K-12 schooling was directed well at their own learning style than males. This difference, however, is not statistically significant according to a Wilcoxon Signed-Rank Test (0.1073). The example shown in this table is illuminative. Other subgroups that could be explored based on the attributes of the respondents such as age, income, and educational attainment are presented in the regression analysis in Section 1.5.5.

The bottom table illustrates differences in responses when the sample population was grouped according their response to question 3: “How satisfied were you with your K-12 schooling?” (1=*extremely satisfied*, 4=*extremely dissatisfied*). Here there are several statisti-

² *Learning style* is assumed to mean that each of us has a specific learning style (sometimes called a ‘preference’), and that we learn best when information is presented to us in this style (Pashler et al. 2008).

cally significant correlations ($p < 0.001$): those who were dissatisfied ($N=36$) were less likely to feel that they belonged, that their learning style was suitable to K-12 delivery style, that they felt K-12 influenced who they are today³, and how they felt about K-12 needing to be compulsory. They were more likely to have wanted to change schools. These results direct attention to factors that give a better understanding of drivers for students to feel satisfaction. In turn, it may reveal that successful completion of schooling may be much more related to students' experiencing teaching techniques or learning platforms that are more suited to their learning styles and not strictly academic content.

To appreciate these as student-participants' self-identified key factors tied to realized or expected outcomes, yet less commonly addressed - in comparison to tests or directly academic concerns - seems important. In addition, they may draw our attention to predictors not often candidly addressed by parents, teachers and administrators. Recognizing the goal of educating a population and the reality that expected outcomes may or may not be realized to their full potential because structural factors are mismatched with the individual learner seems noteworthy. The student perspectives revealed here illustrate that there may be some unfulfilled capacity-building functions that although less concretely academic, remain important none the less. These difference across *satisfied* and *dissatisfied* groups suggest interesting differences that are explored in more detail using regression analysis in Section 1.5.5.

1.5.3 K12 HCBI Values: Purposes and Outcomes

A key motivation of the study was to gain some insight into the whether student-participants' views were in line with general *purposes and outcome* factors stated as important

³Question 5: In what way do you think K-12 schooling influenced the person you are today? (1=*extremely positively*, 4=*extremely negatively*)

in academic education literature. Specific survey questions allowed participants to rank the importance of 7 acknowledged purposes of education (Mishra and Close 2020; Dewey 1998; Goodlad and McMannon 1997; Good 1999).

The responses are summarized in Figure 6. The low rank items reflect what participants did not appear to value and was consistent with factors valued in other parts of the survey. The seven labelled panels show the frequency distributions of the rankings of the seven purposes ($i = \text{most important}$). The panel in the upper right is a violin diagram showing responses ranked by mean (horizontal black lines) from lowest to highest, left to right. The most interesting feature of these distributions is that *safety*, *creating friends and community*, *participating in sports and other activities* and *preparing to get jobs after graduation* are most important (highest means), and respondents appear to be more confident about this - distributions are strongly skewed to the left (the violin diagrams are wide at the top, very narrow at the bottom). It is interesting to note that these categories may be classified as predominantly *private goods*. The other purposes of teaching American values, universal learning, and learning to follow rules were deemed less important (lower means) and respondents were more varied in their opinions (violin diagrams tend to be wider from top to bottom). Interestingly, these three purposes relate more to *public goods* and the variation may reflect differences in communitarian versus individualist values while most respondents recognize K12 HCBI as something from which to extract *private benefits*. In addition, the low ranking is a mismatch between what the academic literature purports to be most important.

Figure 7 is the analogue to Figure 6 as are items defined as *outcomes* from K12 HCBI systems. The six panels on the left show the distributions of rankings for each outcome. The “UR” label refers to the frequency with which the outcome *did not* make the top 3 in the participant’s ranking. The only case in which the number of top rankings stood out above second or third was *preparing for college*. In other cases, the relative importance of outcomes

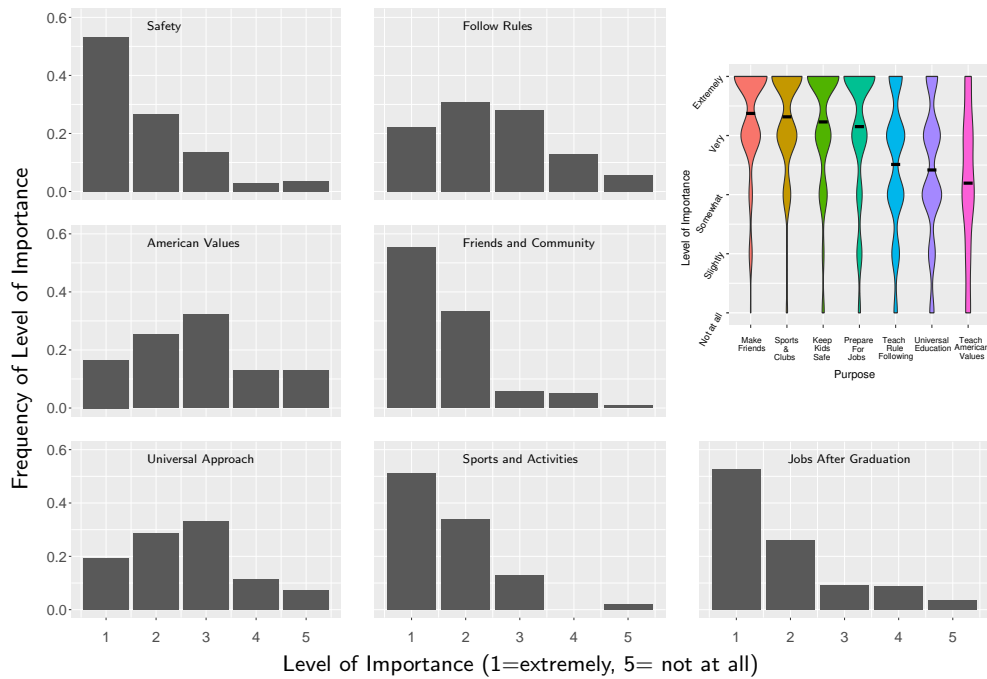


Figure 6. Ranking of the importance of the purpose of K12 HCBI

in the top three was more mixed. The panel on the right shows the sum of all top 3 rankings for each of the 6 panels on the left and ranks them from most to least. Clearly, and maybe not surprising, student-participants' felt preparing to meet state-mandated benchmarks was the least important outcome.

Participants' responses to Q11 were individually analyzed on an item-by-item basis. The qualitative data compiled above are from the free responses or comments and were categorized by themes and counted. Table 3 represents the seven dominant themes that emerged from the comment data. The purpose of the Question 11 was to identify what the student-participants' perceived would have made their K12 experience more beneficial. Of the 130 participants who fully completed the survey the response rate to Question 11 was 89%, which itself is informative - the people had something they wished to say. The general responses

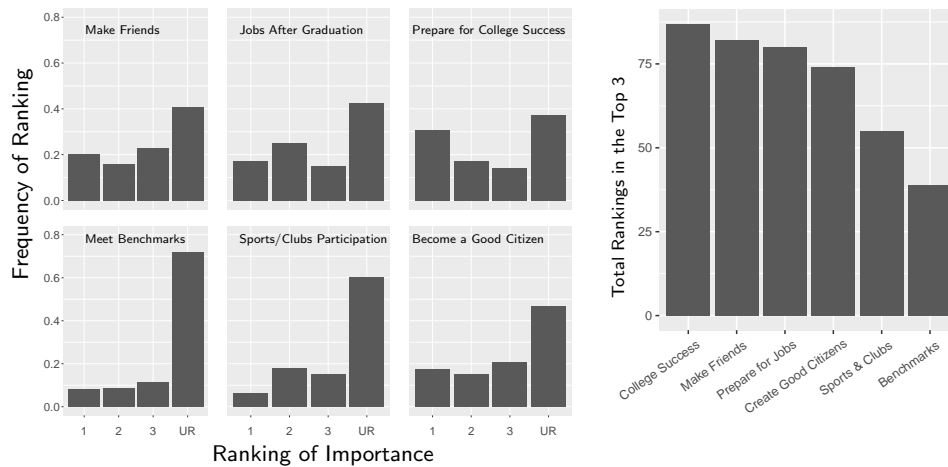


Figure 7. Ranking of the relative importance of outcomes from K12 HCBI.

Statement Themes	Count
Learning environments: more individualized learning platforms, diverse teaching techniques, and smaller classes	36
Life skills development: social and practical life skills (e.g., how to do taxes, creating a resume, cooking and nutrition, applying for jobs, college success, and future careers)	25
Activities: creative thinking, problem-solving, and experiential learning (e.g., rote-learning activities and many materials are outdated)	23
Whole learner: students' individual talents and contexts need to be emphasized and therapy support more prevalent	21
State standardized testing: end teaching to state mandated standards and remove the focus on grades	19
Teachers role and attitudes: care more and foster "Give respect, get respect."	13

Table 3. Statement Themes and Counts to Q11: If you could change one thing about your K12 schooling, what would it be?

point to a desire that their learning environments be directed at strengthen individual capacity and confirms what values they presented in the overall survey. As stated before, participants who felt their capacities were 'extremely satisfied' made up only 24% of the total and the data in Table 3 may help make more clear the reasons for the 'somewhat satisfied'

and ‘somewhat dissatisfied’ as more decipherable. Recognizing that the goal of educating a population may not be realized to its full potential because of structural factors being mismatched with the individual learner seems noteworthy.

1.5.4 COVID-19

Participants were asked to indicate whether they felt the COVID-19 pandemic changed their perspective about the purpose of K-12 schooling. The majority of the responses were ‘yes’(n=75). When asked about ‘how’ their perspectives changed, few respondents completed a response. For the participants that completed a response, the dominant theme was that the COVID-19 pandemic illuminated the important custodial role of K-12 schooling.

1.5.5 Regression Analysis

Four groups of multivariate linear models with different dependent variables were estimated. A total of twenty models were estimated, 5 each with different explanatory variables for the 4 dependent variables: *Satisfaction With K-12 Schooling(SK12)*, *K-12 Influence On You Today (IT)*, *Learning Style Was Suitable (LS)*, and *Felt One Belonged In School (B)*. Using a multivariate statistical model allowed me to compare the relative impacts of different explanatory variables across these *outcomes* as presented in this data set. To better understand the influence of these factors, Five multivariate linear models were run with different independent variables as discussed below. Preliminary simple statistical analysis did not reveal that the hypothesized independent variables such as income, gender and educational level seemed to significantly influence self-reported satisfaction with the K-12 schooling experience; therefore, more investigation was performed.

Table 4 summarizes the regression analysis of Model Group I, SK12 with respondents' satisfaction with their K-12 schooling experience as the dependent variable. Model I is the base model; Model II includes purported *purposes* of K-12 schooling as presented in survey question 4; Model III includes which factors respondents' ranked as most important to their evaluation of *outcomes* in survey question 6; Model IV includes factors purported as meeting general goals of *K-12 schooling for society at large* in survey question 18; and, Model V includes the basic Model I and question 19 which inquired whether respondents' felt K-12 schooling should be *compulsory*.

- Model I has fifteen variables that include: four survey instruments (R.i, N.i, E.i, B.i), four school types (kindergarten, elementary, middle school, and high school), birth year, gender, education level, household income, learning style, influence on who they are today, and a sense of belonging
- Model II includes the fifteen independent variables used in Model I and increases the independent variables to include those presented to respondents as general main purposes of K-12 schooling participate in a universal approach to educating youth, teach American values, keeping children safe while parents work, offer opportunity for sports & extracurricular activities, make friends in their community, teach children to follow rules and do as they're told, and prepare kids for jobs after graduation). These purported purposes (independent variables) were added to this model in order to examine whether or not they influenced participants' self-reported satisfaction.
- Model III includes the independent variable of Model I and Model II and increases the independent variables to include those presented to participants as expected outcomes of K-12 schooling (meet state prescribed benchmarks/grade-level standards, participate in clubs and/or sports, learn how to be a good citizen, make friends and create a social life, preparation for getting a job after graduation, and preparation for success in

college or university). The model would extend our results by allowing us to examine whether or not the participant's ranking of these goals influenced their self-reported satisfaction.

- Model IV includes all the independent variables already introduced in Model I, II and III and increases the independent variables within the survey that allowed participants to state with a Likert scale the level of importance K-12 schooling plays a role to society at large by offering a place for safety, emotional & social development, social welfare, community building, and knowledge transfer. In addition, this model includes the independent variable of participant's view on the need for K-12 schooling to be compulsory.
- Model V includes Model I independent variables and the independent variable 'compulsory'.

The regression analysis suggests that satisfaction was significantly correlated with individuals who reported that they had attended *high school* in the U.S. as opposed to *kindergarten*, *elementary* or *middle school*. Satisfaction was highly correlated ($p < 0.05$) with whether or not one reported that they felt the environment of K-12 schooling was suitable to their *learning style*, and, to whether or not individuals positively reported that K-12 schooling *influenced* who they are today ($p < 0.01$). Less significant was one's perception that they '*belonged*' in the K-12 schooling environment ($p < 0.1$). This lower significance is reflected in the fact that most individual's reported that they '*probably*' belonged (43%) versus those who reported that they felt they '*definitely*' belonged (27%). The different clusters of variables added in Models II-V do not change this result. No new statistically significant explanatory variables emerge and *high school*, *learning style*, *influence today*, and *belong* remain the strongest predictors of satisfaction.

Table 5 shows the regression results for Model Group II, IT with *influence today* as the

dependent variable. Models I-V are as in group SK12 but without *influence* as an independent variable, of course. The regression analysis shows that *kindergarten*, *birth year*, and *household income* were negatively correlated with influence today. *Learning style* and *sense of belonging* were once again more statistically significant to a sense of K-12's influence on who one is today. It is interesting to note that *kindergarten* only becomes significant in Models II-IV where other clusters of variables are added. Specifically, in Model II, *providing a universal approach* ($p < 0.01$) and *teaching children to follow rules* ($p < 0.1$) were significant predictors and in Model IV, *knowledge transfer* is a significant predictor ($p < 0.01$). This may suggest some co-linearity between *kindergarten* and these variables.

Table 6 shows the regression results for Model Group III, LS with *learning style* as the dependent variable. Models I-V are as in group SK12 but without *learning style* as an independent variable. Learning Style was significantly correlated with a sense of *belonging* and a positive reporting of *influence on who one is today* ($p < 0.01$ & $p < 0.05$, respectively) and *household income* ($p < 0.05$) significantly correlated with a sense that their *learning style* was suitable in the K-12 context.

Table 7 shows the regression results for Model Group IV, B with *belonged in school* as the dependent variable. Models I-V are as in group SK12 but without *belonged in school*. The regression suggest that belonging was significantly correlated with one's sense of K12 schooling being suitable to one's *learning style* ($p < 0.05$). When individual's felt they 'belonged' it was not in significance to 'main purposes' variables which seems to indicate that the purported purposes of K12 were not necessarily important to individuals as much as whether or not learning environments were suitable. When 'belonged' was used as the dependent variable in B regression summaries, two subgroups Neighborhood(N) and Education(E) presented as more positively correlated to belonging ($p < 0.1$ & $p < 0.05$, respectively). This could reflect that individuals felt that they belonged more in K-12 if the learning expectations and environ-

ments suited their own style of learning. When individuals' were asked whether or not they thought K-12 schooling should be compulsory in this model, *compulsory* was significant. In many of these regression results gender was more statistically significant to whether or not one felt they 'belonged'. Females (42%), Males(44%) Other(5%) , N/A (9%).

This regression analysis assessed the relationships between K12 HCBI participant satisfaction and multiple independent variables. The analysis provides considerable evidence that factors like goals and purposes purported in academic literature about K12 HCBI are not explicitly valued by student-participants (none were significant predictors of satisfaction). Rather, respondents indicated that having a sense of belonging and a sense that the learning environment is suitable to their learning style are important determinants of their level of satisfaction with their K12 HCBI experience.

1.6 Discussion and Conclusion

The premise of this study is that K-12 education is a specific example of a much broader element of human societies I have termed HCBI that is, in turn, part of a larger social, cultural, and economic system. HCBI cannot be viewed in isolation from these systems in which it is embedded. More precisely, HCBI arguably should be viewed as a system which, from basic systems theory, requires effective feedback to function and adapt to change. Effective feedback, in turn, requires good information. Given this motivation, this study attempts to understand the role of information from participants in the feedback loop that attempts to align HCBI purposes and goals with societal needs and goals. The study leverages the Ostrom IAD framework and the notion of the *action situation* which allows us to identify the various roles of students, parents, teachers, administrators, and any other 'actor' in the K12 HCBI system. Given that most traditional measures of satisfaction with K12 HCBI sys-

Table 4. Regression results for survey variable “satisfied” with K-12 experience.

	<i>Dependent variable: Satisfaction</i>				
	satisfied_rc				
	(1)	(2)	(3)	(4)	(5)
R.i	0.13 (0.18)	0.13 (0.19)	0.17 (0.19)	0.14 (0.20)	0.12 (0.18)
N.i	-0.05 (0.18)	0.02 (0.19)	-0.02 (0.19)	-0.01 (0.20)	-0.05 (0.18)
E.i	0.17 (0.19)	0.15 (0.19)	0.21 (0.20)	0.20 (0.21)	0.14 (0.19)
kinder_rc	-0.06 (0.25)	-0.06 (0.27)	-0.09 (0.26)	-0.09 (0.26)	-0.07 (0.25)
elemen_rc	-0.41 (0.44)	-0.50 (0.46)	-0.50 (0.46)	-0.35 (0.46)	-0.40 (0.44)
middle_rc	-0.14 (0.44)	-0.02 (0.47)	-0.04 (0.45)	-0.23 (0.45)	-0.15 (0.43)
high_rc	0.59* (0.31)	0.61* (0.31)	0.56* (0.31)	0.72** (0.33)	0.58* (0.31)
birth_year_rc	0.003 (0.01)	0.001 (0.01)	0.003 (0.01)	0.003 (0.01)	0.002 (0.01)
gender_rc	-0.09 (0.08)	-0.10 (0.08)	-0.09 (0.08)	-0.05 (0.09)	-0.10 (0.08)
ed_level_rc	-0.05 (0.04)	-0.06 (0.04)	-0.05 (0.04)	-0.04 (0.04)	-0.04 (0.04)
hshold_income_rc	0.01 (0.01)	0.01 (0.01)	0.01 (0.01)	0.01 (0.01)	0.01 (0.01)
learning_style	0.20*** (0.07)	0.18** (0.07)	0.19*** (0.07)	0.19** (0.07)	0.18** (0.07)
influ_today_rc	0.45*** (0.10)	0.41*** (0.11)	0.44*** (0.11)	0.51*** (0.12)	0.44*** (0.10)
belong_rc	0.13* (0.07)	0.13* (0.07)	0.13* (0.07)	0.12 (0.07)	0.11 (0.07)
univ_approach		0.02 (0.06)			
ameri_values		0.01 (0.05)			
safe_par_work		0.06 (0.07)			
sport_other		0.01 (0.08)			
friends_com		0.10 (0.07)			
follow_rules		0.07 (0.06)			
jobs_after_grad		-0.10 (0.06)			
benchmarks			-0.04 (0.05)		
par_clubs			-0.01 (0.05)		
good_citizen			0.03 (0.04)		
friends_social			-0.02 (0.04)		
get_jobs			-0.03 (0.05)		
safe_place				-0.02 (0.07)	
emo_soc_dev				0.11 (0.09)	
soc_welfare				0.05 (0.07)	
build_com				-0.04 (0.09)	
know_transfer				-0.08 (0.09)	
compulsory_rc					-0.15 (0.13)
Constant	0.43 (0.55)	0.27 (0.57)	0.73 (0.84)	0.03 (1.62)	0.69 (0.59)
Observations	123	123	123	119	123
R ²	0.52	0.55	0.53	0.52	0.53
Adjusted R ²	0.46	0.45	0.44	0.43	0.46
Residual Std. Error	0.55 (df = 108)	0.55 (df = 101)	0.56 (df = 103)	0.56 (df = 99)	0.55 (df = 107)
F Statistic	8.36*** (df = 14; 108)	5.77*** (df = 21; 101)	6.14*** (df = 19; 103)	5.65*** (df = 19; 99)	7.91*** (df = 15; 107)

Note:

*p<0.1; **p<0.05; ***p<0.01

tems have relied on parents' perspectives as proxy voices for children (need citations still), this study shifts the focus and gives weight to student-participants' as appropriate and valuable evaluative authority. I justify this investigation by placing student-participants in the position of primary *consumer* given the fact that they 'consumed' the services, and that they have an opinion. The study uses survey methods to elicit this information to investigate the perceptions of American individuals about the goals, purposes, and outcomes of K-12 schooling.

The 139 individuals who completed the survey ranged in age from 18 to 77 with an average age of 29 years. Respondents whose household income ranged from under \$20,000 to more than \$200,000 came from a range of educational and ethnic backgrounds reasonably representative of the State of Arizona. Across this range of respondents, perception of their K12 experience appears mostly positive (*extremely* or *somewhat satisfied*) but only 24% were very satisfied. The evaluation of key purposes (i.e. the potential to provide benefits; aspirations) of K12 HCBI systems revealed that social and vocational purposes (possibility to make friends, participate in clubs, keep kids safe, and prepare them for college) were more important than those aimed at broader societal obligations (teaching American Values, rule following, and providing base-level education to all citizens). The importance of providing a place for individuals to make friends and offering sports and other activities for students as a key 'purpose' was not surprising given that most young people have school as the place where they spend a majority of their days and it is where we presume they make a majority of peer connections. An additional important purpose was revealed in the respondents' views regarding the affect of the COVID-19: the custodial role of school is critical.

In terms of respondents measuring their own 'outcomes', preparing for success in college, making friends at school, and preparing for future jobs were highly ranked. The purported outcomes of success in benchmarks and meeting state-standards were not identified as im-

portant. The survey suggests a reasonable level of consistency between what people hoped to get and what they actually got out of their K-12 experience except in the case of sports and clubs - people want the opportunity to participate in these activities but don't think it is important that they actually do participate.

Regression analysis helped reveal the linkage between stated level of satisfaction and variables from demographic, purpose, and outcome responses. The strongest predictors of satisfaction were the respondents' sense that: 1) K-12 positively *influenced who they are today*, 2) the teaching style - pedagogical and operational methods - suited their personal *learning style*, and 3) a sense that - even if only slightly - they *belonged*. None of the other purpose and outcomes variables had a significant impact. This suggests that context matters more than principles and content. Further regression analysis suggests a positive correlation between this cluster of variables and that they entrain some social values (e.g. belief in a universal approach to education is a strong predictor of whether respondents believe K-12 positively influenced who they are today). If we consider this block of variables to be a proxy for a measure of 'fit' between users and the infrastructure system, this is consistent with other work emphasizing the importance of belonging (Osterman 2010; Bouchard and Berg 2017; Junger 2016).

These observations must be considered in the light of several limitations of the study. First, a major limitation of this study was its size (n=139) and the standard caveats of statistical limitations associated with survey studies. Second, given that satisfaction is a complicated notion, this survey does not tackle nuanced understanding of what satisfaction means to the individual, but assumes that it generally reflects 'contentedness'. The '*probably satisfied*' was assumed to reflect that the student-participant is *not dissatisfied*, yet it carries with it some 'grumblings' and may differentiate it from being *extremely satisfied*. Third, grouping these two items together does not make clear whether the delineation reflects a level of satisfaction

verses rationale or motivation behind how they used the ‘services’ offered by their K12 HCBI systems to the maximum of their ability. Fourth, the average age of participants was 29. They are mature adults with real awareness of what would have suited them well. The results of the survey would presumably be much different if it had been answered by current high school students and middle school students or to have been completed with many more individuals of many age ranges.

We can leverage the IAD Framework and the notion of the action situation to explore the implications of the survey results for investments in K12 HCBI. Action situations play out in each iteration of the loop in Figure 1 and, more precisely, Figure 2 A. They may reinforce power and the status quo, or generate change and adaptive capacity. The survey contained questions that address some parts of the action situation directly. Where it did not, we can rely on the analysis to make some inferences.

The IAD Framework highlights the fact that three clusters of external variables condition *what* occurs in action situations. Most central to this study is the *attributes of the community* which determines, in part, whose voices are heard in the action situation. Based on the typical participants in K12 HCBI (Figure 2, the students are intrinsically more likely to have the weakest voice). How can the infrastructure serve the needs of the learners if their voices aren’t heard and those with power, i.e. teachers, parents, and administrators have incentives to reinforce the status quo? The voices of this study reveal a desire for change of - not a wish to abolish - the ‘delivery design’ of the HCBI. Students want specific capacity-building platforms that are directed with their talents and life context in mind. Addressing this power asymmetry via the inclusion of the ‘users’ voices about the system will likely improve the performance of K12 HCBI.

The role of *biophysical context* in structuring action situations was not directly addressed in the survey. However, in their responses to Question 11 (see Table 3) participants noted that

they wanted their learning to better match the biophysical context, i.e. experiential learning, practical life skills and to move away from rote-learning of outdated materials. This is suggestive that the biophysical context of learning be moved out of classrooms, and into ‘reality’. Similarly, while there were no direct questions about *rules-in-use*, they are reflected indirectly by responses to questions about benchmarks and whether school should be compulsory. Although benchmarks may be an evaluative criteria, mandates about state-directed standardized testing is a rule just like mandated attendance. Respondents were less concerned about compulsory attendance than on changing the learning experience. Removing mandated state-standardized testing appeared 19 times as a theme in responses to Question 11 (Table 3).

The internal structure of the action situation (Figure 2B) emphasises that participants use *information about* and their *control over* potential outcomes to assign *net costs and benefits* to them. Students have very little control over potential outcomes. Outcomes are dictated by others. Survey results suggest that the dictated outcomes did not match students desired outcomes such as more relevant life skills development, doing taxes, making a resume, preparation for success in college, cooking and nutrition, creative thinking, and experiential learning as reflected in perceived deficiencies in realized outcomes. The survey results suggest that students want more control over content and learning styles. Students also have very little information about potential outcomes. Likewise, teachers, parents, and administrators set potential outcomes with incomplete information about what net costs and benefits students assign to potential outcomes.

In HCBI action situations with significant disconnects of control and information among participants it may be worth considering that some of the aforementioned negative externalities at the system level may be a result of the lack of co-production of teachers, administrators and parents with students, especially those who did not feel they belonged or

that the teaching styles did not fit their learning styles. Indeed, the IAD framework highlights several factors that should be considered to support changing designs within an action situation to suit the values of the full range of participants.

The action situation in which decisions are made based on *potential* outcomes generate interactions among participants that lead to *realized* outcomes. Survey results suggesting a mismatch between potential and realized outcomes at the individual level and have been discussed in detail. At the system level, we have become accustomed to the predominant outcome of controlling and sorting of certain types of children, but to what end? A deeper reflection on who the K12 HCBI is *actually for* may inspire a shift of consciousness from a mechanistic market-driven infrastructure that reinforces the states quo by selecting and differentiating children to one that embodies ecological, sustainable, and humanistic (a broadening of individual capacity-building) that addresses the needs and contexts of individuals alongside the needs of our times (Sterling 2002).

The final element in the IAD framework that completes the feedback processes in Figure 1 - on the left those that generate various long-term *outcomes* and on the right those that are *evaluative criteria*. This is perhaps the most crucial element of the HCBI that calls for redesign. Evaluative criteria that primarily categorize students for participation in various jobs for market-driven processes may have the advantage that they are easy to design and administer, but they may generate a social trap that does not serve us well. There will always be multiple and competing interests, but we are aware of impacts of our current system and we may question some ideologies that dominantly inform the system, especially knowing many of the evaluative norms and values are rooted in colonial times and the industrial revolution (DeMarrais and LeCompte 1995; Giroux 1981; Zion and Blanchett 2017; Wickens and Sandlin 2007).

As various elements in the feedback loop are traced in the IAD Framework, we may iden-

tify several elements that may bias the system toward outcomes that may benefit some student participants, i.e. the ‘winners’ in the present system but do not serve others and may in turn negatively impact society at large in a variety of ways. The results of this study indicate that student-participants recognize that the designs of the current systems need to move away from learning environments that are based on meritocratic paradigms and should focus on individual students’ interests and strengths. These results are in line with previous research demonstrating a positive association between improved learning outcomes and student as agents in their own learning or learning directed to their individual learning styles and reiterates what Zhao 2016 and other researchers point to as the appropriate direction we should take in designing current and future learning platforms (Nolen 2003; Hopper and Hurry 2000). It is also consistent with broader work on collective action where it has been shown where groups create their own rules they perform better than those where the rules are imposed from above (Bowles 2008; DeCaro, Janssen, and Lee 2015). Developing learning environments that are focused on broadening educational opportunities to help student-participants explore and experiment with their passions, interests, and strengths would be empowering and is in line with new learning and pedagogical views presented in a *New Ecological Paradigm for Education* by sustainability education experts (Sterling 2002, 59). If the result we desire is competent, learned, and satisfied next-generation-learners, this research points to placing more value on the student-participants voice. Rather than continuing with capacity-building design being driven by 19th and 20th century status-quo-stakeholder voices (*actors*), we could begin to listen to student-participants, incorporate their observations into K12 HCBI designs, and support them as more important stakeholders in our collective education processes. In sum, we may begin to see student-participants as active agents in our collective HCBI and consider their feedback as useful and valuable ‘soft technology’

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APPENDIX A
ADDITIONAL REGRESSION ANALYSIS

Table 5. Regression summary for survey question “influenced you today”

	<i>Dependent variable:</i>				
	K-12 Influenced you today				
	(1)	(2)	(3)	(4)	(5)
R.i	-0.09 (0.17)	-0.07 (0.16)	-0.13 (0.18)	-0.18 (0.17)	-0.10 (0.17)
N.i	-0.01 (0.17)	0.01 (0.17)	-0.02 (0.17)	-0.10 (0.17)	-0.02 (0.17)
E.i	-0.22 (0.18)	-0.25 (0.17)	-0.22 (0.19)	-0.29 (0.18)	-0.24 (0.18)
kinder_rc	-0.33 (0.23)	-0.59** (0.23)	-0.41* (0.23)	-0.40* (0.22)	-0.34 (0.23)
elemen_rc	0.19 (0.41)	0.15 (0.40)	0.14 (0.43)	0.28 (0.39)	0.20 (0.41)
middle_rc	0.23 (0.41)	0.59 (0.40)	0.28 (0.42)	0.43 (0.39)	0.22 (0.41)
high_rc	-0.16 (0.29)	-0.24 (0.27)	-0.12 (0.29)	-0.10 (0.28)	-0.17 (0.29)
birth_year_rc	-0.01 (0.005)	-0.01* (0.005)	-0.01 (0.01)	-0.01* (0.005)	-0.01* (0.005)
gender_rc	-0.06 (0.07)	-0.06 (0.07)	-0.07 (0.08)	-0.08 (0.07)	-0.06 (0.07)
ed_level_rc	-0.03 (0.03)	-0.03 (0.03)	-0.03 (0.03)	-0.02 (0.03)	-0.02 (0.03)
hshold_income_rc	-0.02* (0.01)	-0.03** (0.01)	-0.03** (0.01)	-0.01 (0.01)	-0.02* (0.01)
learning_style	0.22*** (0.06)	0.14** (0.06)	0.21*** (0.06)	0.17*** (0.06)	0.20*** (0.06)
belong_rc	0.26*** (0.06)	0.20*** (0.06)	0.25*** (0.06)	0.23*** (0.06)	0.24*** (0.06)
univ_approach		0.20*** (0.05)			
ameri_values		-0.04 (0.05)			
safe_par_work		0.02 (0.06)			
sport_other		-0.01 (0.07)			
friends_com		0.01 (0.06)			
follow_rules		0.10* (0.05)			
jobs_after_grad		-0.04 (0.05)			
benchmarks			-0.02 (0.04)		
par_clubs			-0.01 (0.05)		
good_citizen			-0.01 (0.03)		
friends_social			-0.05 (0.04)		
get_jobs			-0.06 (0.04)		
safe_place				-0.04 (0.06)	
emo_soc_dev				-0.07 (0.08)	
soc_welfare				0.03 (0.06)	
build_com				0.03 (0.08)	
know_transfer				0.25*** (0.07)	
compulsory_rc					-0.14 (0.12)
Constant	1.66*** (0.49)	1.48*** (0.48)	2.27*** (0.75)	-1.76 (1.38)	1.88*** (0.53)
Observations	123	123	123	119	123
R ²	0.47	0.57	0.49	0.55	0.47
Adjusted R ²	0.40	0.49	0.40	0.47	0.41
Residual Std. Error	0.52 (df = 109)	0.48 (df = 102)	0.52 (df = 104)	0.48 (df = 100)	0.52 (df = 108)
F Statistic	7.38*** (df = 13; 109)	6.76*** (df = 20; 102)	5.48*** (df = 18; 104)	6.74*** (df = 18; 100)	6.97*** (df = 14; 108)

Note:

*p<0.1; **p<0.05; ***p<0.01

Table 6. Regression summary for survey question “Match your learning style”

	<i>Dependent variable:</i>				
	learning_style				
	(1)	(2)	(3)	(4)	(5)
R.i	0.33 (0.26)	0.35 (0.27)	0.34 (0.27)	0.21 (0.28)	0.27 (0.25)
N.i	0.27 (0.26)	0.40 (0.27)	0.28 (0.26)	0.21 (0.28)	0.24 (0.25)
E.i	0.12 (0.27)	0.11 (0.27)	0.18 (0.28)	0.03 (0.29)	0.05 (0.26)
kinder_rc	0.44 (0.35)	0.25 (0.39)	0.43 (0.36)	0.32 (0.36)	0.39 (0.34)
elemen_rc	-0.69 (0.62)	-0.60 (0.65)	-0.79 (0.64)	-0.50 (0.63)	-0.62 (0.61)
middle_rc	0.24 (0.61)	0.48 (0.66)	0.31 (0.64)	0.35 (0.63)	0.20 (0.60)
high_rc	0.52 (0.43)	0.44 (0.45)	0.51 (0.44)	0.57 (0.45)	0.47 (0.42)
birth_year_rc	0.003 (0.01)	-0.001 (0.01)	0.01 (0.01)	0.003 (0.01)	0.0003 (0.01)
gender_rc	-0.05 (0.11)	-0.06 (0.12)	-0.07 (0.11)	-0.04 (0.12)	-0.06 (0.11)
ed_level_rc	0.06 (0.05)	0.06 (0.05)	0.06 (0.05)	0.05 (0.05)	0.08 (0.05)
hshold_income_rc	0.05*** (0.02)	0.05** (0.02)	0.05** (0.02)	0.05** (0.02)	0.05*** (0.02)
infltu_today_rc	0.50*** (0.14)	0.37** (0.16)	0.47*** (0.14)	0.43*** (0.16)	0.43*** (0.14)
belong_rc	0.28*** (0.10)	0.27*** (0.10)	0.30*** (0.10)	0.22** (0.10)	0.22** (0.10)
univ_approach		0.11 (0.08)			
ameri_values		0.02 (0.07)			
safe_par_work		0.04 (0.10)			
sport_other		0.10 (0.11)			
friends_com		0.02 (0.10)			
follow_rules		-0.005 (0.09)			
jobs_after_grad		-0.06 (0.09)			
benchmarks			0.05 (0.06)		
par_clubs			-0.02 (0.07)		
good_citizen			0.07 (0.05)		
friends_social			0.003 (0.06)		
get_jobs			0.0005 (0.07)		
safe_place				0.13 (0.10)	
emo_soc_dev				0.04 (0.12)	
soc_welfare				-0.06 (0.10)	
build_com				0.16 (0.12)	
know_transfer				-0.04 (0.12)	
compulsory_rc					-0.44** (0.18)
Constant	-0.35 (0.78)	-0.47 (0.81)	-0.78 (1.18)	-4.19* (2.21)	0.42 (0.82)
Observations	123	123	123	119	123
R ²	0.38	0.41	0.40	0.40	0.42
Adjusted R ²	0.31	0.29	0.30	0.29	0.34
Residual Std. Error	0.78 (df = 109)	0.79 (df = 102)	0.78 (df = 104)	0.78 (df = 100)	0.76 (df = 108)
F Statistic	5.21*** (df = 13; 109)	3.52*** (df = 20; 102)	3.90*** (df = 18; 104)	3.63*** (df = 18; 100)	5.52*** (df = 14; 108)

Note:

*p<0.1; **p<0.05; ***p<0.01

Table 7. Regression results for survey response “belong” as dependent variable.

	<i>Dependent variable: Belong</i>				
	belong_rc				
	(1)	(2)	(3)	(4)	(5)
R.i	-0.16 (0.25)	-0.24 (0.26)	-0.24 (0.26)	-0.22 (0.27)	-0.18 (0.25)
N.i	-0.44* (0.24)	-0.45* (0.26)	-0.40 (0.25)	-0.47* (0.27)	-0.43* (0.24)
E.i	-0.53** (0.25)	-0.54** (0.26)	-0.62** (0.26)	-0.59** (0.28)	-0.57** (0.25)
kinder_rc	-0.22 (0.34)	-0.15 (0.38)	-0.22 (0.34)	-0.14 (0.35)	-0.24 (0.33)
elemen_rc	0.55 (0.60)	0.54 (0.63)	0.67 (0.61)	0.54 (0.62)	0.55 (0.59)
middle_rc	-0.55 (0.59)	-0.64 (0.64)	-0.65 (0.60)	-0.59 (0.61)	-0.55 (0.58)
high_rc	-0.09 (0.42)	-0.19 (0.43)	-0.01 (0.42)	0.02 (0.45)	-0.11 (0.41)
birth_year_rc	-0.01 (0.01)	-0.01 (0.01)	-0.01* (0.01)	-0.01 (0.01)	-0.01 (0.01)
gender_rc	0.23** (0.11)	0.18 (0.11)	0.23** (0.11)	0.20* (0.11)	0.21** (0.10)
ed_level_rc	-0.03 (0.05)	-0.03 (0.05)	-0.04 (0.05)	-0.05 (0.05)	-0.01 (0.05)
hshold_income_rc	-0.02 (0.02)	-0.02 (0.02)	-0.01 (0.02)	-0.01 (0.02)	-0.02 (0.02)
learning_style	0.26*** (0.09)	0.26*** (0.09)	0.27*** (0.09)	0.21** (0.10)	0.21** (0.09)
influ_today_rc	0.56*** (0.13)	0.51*** (0.15)	0.52*** (0.13)	0.57*** (0.15)	0.50*** (0.13)
univ_approach		-0.01 (0.08)			
ameri_values		0.04 (0.07)			
safe_par_work		-0.01 (0.10)			
sport_other		-0.05 (0.11)			
friends_com		0.0000 (0.10)			
follow_rules		0.09 (0.09)			
jobs_after_grad		0.04 (0.09)			
benchmarks			-0.05 (0.06)		
par_clubs			0.11* (0.06)		
good_citizen			-0.04 (0.05)		
friends_social			-0.06 (0.06)		
get_jobs			0.03 (0.06)		
safe_place				0.06 (0.10)	
emo_soc_dev				0.08 (0.12)	
soc_welfare				-0.13 (0.10)	
build_com				0.03 (0.12)	
know_transfer				-0.01 (0.12)	
compulsory_rc					-0.37** (0.17)
Constant	1.13 (0.74)	1.09 (0.78)	1.29 (1.12)	0.80 (2.20)	1.71** (0.78)
Observations	123	123	123	119	123
R ²	0.48	0.49	0.51	0.48	0.50
Adjusted R ²	0.41	0.39	0.42	0.38	0.43
Residual Std. Error	0.75 (df = 109)	0.76 (df = 102)	0.74 (df = 104)	0.76 (df = 100)	0.74 (df = 108)
F Statistic	7.65*** (df = 13; 109)	4.96*** (df = 20; 102)	5.98*** (df = 18; 104)	5.07*** (df = 18; 100)	7.65*** (df = 14; 108)

Note:

*p<0.1; **p<0.05; ***p<0.01

APPENDIX B
SURVEY INSTRUMENT

This Appendix contains a summary of the questions, the values the answers can take (so the statistics can be interpreted), and the survey and interview instruments.

B.1 Survey coding table/values

The remainder of this page is intentionally blank. The codebook starts on the following page.

variable	long name	qualtrics_#	source question	question type	possible answer values	answer key
Section I	In this first section, we want to know your views of K-12 schooling based on your own life experiences. Please think about yourself and K-12 schooling when responding to these questions.					
instrument	survey instrument type		which survey instrument (business, random, education, and neighborhood)		R, N, E, B	R=Random, N=Neighborhood, E=Education, B=Business
start_date	start date of response		Qualtrics generated			
end_date	end date of response		Qualtrics generated			
progress	progress completion of survey		Qualtrics generated		39, 68, 71, 97, 100	% completed
duration_secs	time taken to take survey		Qualtrics generated		time	0:00:00
finished	survey instrument completion		Qualtrics generated		0,1	0= not completed, 1=completed
location_lat	location latitude		Qualtrics generated			
location_long	location longitude		Qualtrics generated			
			Please select the K-12 schooling levels you attended in the U.S. (kindergarten, elementary, middle, and high school)			
kinder	kindergarten	Q1_1	""	radio button	21, 22	21=yes, 22=no
kinder_rc	kindergarten re-coded	""	""	radio button	1,0	1=yes, 0=no
elemen	elementary school	Q1_2	""	radio button	21, 22	21=yes, 22=no
elemen_rc	elementary school re-coded	""	""	radio button	1,0	1=yes, 0=no
middle	middle school	Q1_3	""	radio button	21, 22	21=yes, 22=no
middle_rc	middle school re-coded	""	""	radio button	1,0	1=yes, 0=no
high	high school	Q1_4	""	radio button	21, 22	21=yes, 22=no
high_rc	high school re-coded	""	""	radio button	1,0	1=yes, 0=no

sch_type	school type	Q2	During the time of your K-12 schooling, which school type(s) did you attend? (Select all that apply.)			
sch_type_rc	school type re-coded	""	""	check boxes	1,2,3,4,5	1=public school, 2=charter school, 3=private school, 4=home-school, 5=no school
satisfied	satisfied with K-12 schooling	Q3	How satisfied were you with your K-12 schooling?			
satisfied_rc	satisfied with K-12 schooling re-coded	""	""	radio button	1,2,3,4	1=extremely satisfied, 2=somewhat satisfied, 3=somewhat dissatisfied, 4=extremely dissatisfied
		Q4	Some educators have identified a set of items they believe are the main purposes of K-12 schooling . On the scales below, please indicate how important each item was for you during your K-12 experience.			
univ_approach	participate in a universal approach to educating youth	Q4_1	""	radio button	1, 2, 3, 4, 5	1=extremely important, 2=very important, 3=moderately important, 4=slightly important, 5=not at all important
ameri_values	teach American values	Q4_2	""	radio button	1, 2, 3, 4, 5	1=extremely important, 2=very important, 3=moderately important, 4=slightly important, 5=not at all important

safe_par_work	keep children safe while parents are at work	Q4_3	""	radio button	1, 2, 3, 4, 5	1=extremely important, 2=very important, 3=moderately important, 4=slightly important, 5=not at all important
sport_other	offer opportunity for sports & extracurricular activities	Q4_4	""	radio button	1, 2, 3, 4, 5	1=extremely important, 2=very important, 3=moderately important, 4=slightly important, 5=not at all important
friends_com	make friends in their community	Q4_5	""	radio button	1, 2, 3, 4, 5	1=extremely important, 2=very important, 3=moderately important, 4=slightly important, 5=not at all important
follow_rules	teach children to follow rules and do as they're told	Q4_6	""	radio button	1, 2, 3, 4, 5	1=extremely important, 2=very important, 3=moderately important, 4=slightly important, 5=not at all important
jobs_after_grad	prepare kids for jobs after graduation	Q4_7	""	radio button	1, 2, 3, 4, 5	1=extremely important, 2=very important, 3=moderately important, 4=slightly important, 5=not at all important
influ_today	influence who you are today	Q5	In what way do you think K-12 schooling influenced the person you are today?			
influ_today_rc	influence who you are today re-coded	""	""	radio button	1,2,3,4	1=extremely positively, 2=somewhat positively, 3=somewhat negatively, 4=extremely negatively

			In order to help us understand how you measure K-12 schooling outcomes and know what was important to you, please rank the 3 most important outcomes for you. (Drag and drop the 'more important' ones to the top of the list where the top place indicates the most important.)			
		Q6				
benchmarks	meet state prescribed benchmarks/grade-level standards	Q6_1	""	drag & drop	1, 2, 3, 4, 5, 6	1=first place, 2=second place, 3=third place, 4=fourth place, 5=fifth place, 6=sixth place.
par_clubs	Participate in clubs and/or sports	Q6_2	""	drag & drop	1, 2, 3, 4, 5, 6	1=first place, 2=second place, 3=third place, 4=fourth place, 5=fifth place, 6=sixth place.
good_citizen	Learn how to be a good citizen	Q6_3	""	drag & drop	1, 2, 3, 4, 5, 6	1=first place, 2=second place, 3=third place, 4=fourth place, 5=fifth place, 6=sixth place.
friends_social	Make friends and create a social life	Q6_4	""	drag & drop	1, 2, 3, 4, 5, 6	1=first place, 2=second place, 3=third place, 4=fourth place, 5=fifth place, 6=sixth place.
get_jobs	Preparation for getting a job after graduation	Q6_5	""	drag & drop	1, 2, 3, 4, 5, 6	1=first place, 2=second place, 3=third place, 4=fourth place, 5=fifth place, 6=sixth place.
college_success	Preparation for succeeding in college or university	Q6_6	""	drag & drop	1, 2, 3, 4, 5, 6	1=first place, 2=second place, 3=third place, 4=fourth place, 5=fifth place, 6=sixth place.

out_sch_learn	out of school learning	Q7	Do you think out-of-school learning was more valuable to you than in-school learning?			
out_sch_learn_rc	out of school learning re-coded	""	""	radio button	1, 2, 3, 4	1=definitely true, 2=probably true, 3=probably false, 4=definitely false
belong	belonged' in school	Q8	Did you feel you 'belonged' in			
belong_rc	belonged in school re-coded	""	""	radio button	1, 2, 3, 4	1=definitely yes, 2= probably yes, 3=probably not, 4=definitely not
learning_style	k-12 suitable to your learning style	Q9	Did you feel your K-12 schooling was directed well at your own learning style?	radio button	1, 2, 3, 4	1=definitely yes, 2= probably yes, 3=probably not, 4=definitely not
change_sch	wish to change schools	Q10	Did you ever want to change schools?	radio button	21, 22	21=yes, 22=no
change_why	did you wish to change anything about your K-12 experience?	Q11	If you could change one thing about your K-12 schooling, what would it be? And why?	text box	text answers	
Section II						
In this second section, we would like to learn your views on the overall purpose of K-12 schooling. By views, we mean, what do you think about K-12 schooling and its role in American society at large.						
good_platform	good platform for youth to learn	Q12	In your opinion, K-12 schooling is a good platform for educating youth in the U.S.	radio button	1, 2, 3, 4	1=definitely yes, 2= probably yes, 3=probably not, 4=definitely not
cult_intel_dev	cultivate intellectual development	Q13	K-12 schooling is a necessary part of cultivating intellectual development in society.	radio button	1, 2, 3, 4	1=definitely yes, 2= probably yes, 3=probably not, 4=definitely not
cult_social_dev	cultivate social development	Q14	K-12 schooling is a necessary part of cultivating social development in society.	radio button	1, 2, 3, 4	1=definitely yes, 2= probably yes, 3=probably not, 4=definitely not
members_society	create good members of society	Q15	In your opinion, is K-12 schooling necessary in order to create good members of society?	radio button	1, 2, 3, 4	1=definitely yes, 2= probably yes, 3=probably not, 4=definitely not

pos_society	postive for society	Q16	Thinking about the U.S., how much do you think K-12 schooling contributes positively to society at large?	radio button	19,20,21,22,23	19=a great deal, 20=a lot, 21=a moderate amount, 22=a little, 23=none at all
neg_society	negative for society	Q17	Again, thinking about the U.S., how much do you think K-12 schooling contributes negatively to society at large?	radio button	19,20,21,22,23	19=a great deal, 20=a lot, 21=a moderate amount, 22=a little, 23=none at all
		Q18	Some educators have identified the following purposes of school. When thinking about the purpose of K-12 schooling, and children more generally, please indicate how important each one is to you.			
safe_place	provides a safe place for children while parents work	""	""	radio button	1,2,3,4,5	1=extremely important, 2=very important, 3=moderately important, 4=slightly important, 5=not at all important
emo_soc_dev	provides emotional and social development	""	""	radio button	1,2,3,4,5	1=extremely important, 2=very important, 3=moderately important, 4=slightly important, 5=not at all important
soc_welfare	provides social welfare(e.g. meals, counseling, etc.)	""	""	radio button	1,2,3,4,5	1=extremely important, 2=very important, 3=moderately important, 4=slightly important, 5=not at all important

build_com	builds community	""	""	radio button	1,2,3,4,5	1=extremely important, 2=very important, 3=moderately important, 4=slightly important, 5=not at all important
know_transfer	a place where knowledge is transferred to students	""	""	radio button	1,2,3,4,5	1=extremely important, 2=very important, 3=moderately important, 4=slightly important, 5=not at all important
compulsory	school should be compulsory	Q19	Do you think K-12 schooling should be compulsory?	radio button	21, 22	21=yes, 22=no
compulsory_rc	school should be compulsory re-coded	""	""	radio button	1,0	1=yes, 0=no
survey_comments	comments about their answers	Q20	Do you have any comments about any of your answers to the questions in this survey?	text box	text answers	
Section III						
change_COVID	COVID changed their perspective on K-12 schooling	Q21	Do you feel the COVID-19 pandemic has changed your perspective about the purpose of K-12 schooling in the U.S.?	radio button	21, 22	21=yes, 22=no
change_COVID_rc	COVID changed their perspective on K-12 schooling re-coded	""	""	radio button	1,0	1=yes, 0=no
what_change	COVID-change responses	Q22	What has changed?	text box	text answers	
Section IV To help us better understand your answers, we'd like to know a little more about you. An important part of this research included understanding the demographic and financial resources of the participants. Your answers will be kept completely confidential.						
birth_year	birth year choice	Q23	What year were you born?			
birth_year_rc	birth year choice re-coded	""	""	text box	recalculated to current age	

gender	gender choices	Q24	What is your gender?	radio button	16,17,18,19,	16=male, 17=female, 18=non-binary/third gender, 19=prefer not to say
gender_rc	gender choices re-coded	""	""	radio button	1, 2, 3, 4	1=male, 2=female, 3=non-binary/third gender, 4=prefer not to say
ethnicity	ethnicity choices	Q25	Which of the following best describes you?	radio button	9, 10, 11, 12, 13, 14, 15, 16, 17	9= white, 10=hispanic, 11=black or african american, 12=asian, 13=native hawaii or pacific islander, 14= american indian or alaska native, 15= multiracial, 16=prefer not to say
ethnicity_rc	ethnicity choices re-coded	""	""	radio button	1, 2, 3, 4, 5, 6, 7, 8	1= white, 2=hispanic, 3=black or african american, 4=asian, 5=native hawaii or pacific islander, 6= american indian or alaska native, 7= multiracial, 8=prefer not to say
ed_level	education level	Q26	What is the highest level of schooling you have had a chance to complete?	radio button	1, 2, 3, 4, 5, 6, 7, 9	1=less than high school, 2 = high school graduate, 3=some college, 4= 2-year degree, 5= 4-year degree, 6 = professional degree, 7=MA, MS, 9=PhD
ed_level_rc	education level re-coded	""	""	radio button	1, 2, 3, 4, 5, 6, 7, 8,	1=less than high school, 2 = high school graduate, 3=some college, 4= 2-year degree, 5= 4-year degree, 6 = professional degree, 7=MA, MS, 8=PhD

work_hours	work scheme	Q27	Which of these applies to you?	radio button	1, 4, 5, 6, 7, 8, 9	1= working full time(30 or more hours per week), 4=working part time (8-29 hours per week), 5=working part time(less than 8 hours per week), 6=full time students, 7=retired, 8=unemployed, 9=other(not working)
mar_status	marital status	Q28	What is your marital status?	radio button	1, 2, 3, 4, 5, 6, 7,	1=married, 2=long-term partnership, 3=divorced, 4=separated, 5=never married, 6=widowed, 7=prefer not to say
hshold_income	household income	Q29	Which category below best represents the total income before taxes for all the people in your household in 2020?	radio button	1, 2, 3, 4, 5, 7, 8, 9, 10, 11,12,13	1=\$20,000 and under, 2=20,001-\$40,000, 3=\$80,001=\$100,000, 4=\$160,001-\$180,000, 5=I prefer not to say, 7=\$40,001-\$60,000, 8=\$60,001-\$80,000, 9=\$100,001-\$120,000, 10=\$120,001-\$140,000, 11=\$140,001-\$160,000, 12=\$180,001-\$200,000, 13=more than \$200,001

hshold_income_rc	household income re-coded	""	""	radio button	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 0	1 =\$20,000 and under, 2 =20,001-\$40,000, 3 =\$40,001-\$60,000, 4 =\$60,001-\$80,000, 5 =\$80,001-\$100,000, 6 =\$100,001-\$120,000, 7 =\$120,001-\$140,000, 8 =\$140,001-\$160,000, 9 =\$160,001-\$180,000, 10 =\$180,001-\$200,000, 11 =more than \$200,001, 12 =I prefer not to say, 0 =n/a
zip_code	zip code	Q30	What is your Arizona zip code?	text box	text answers - forced five digits	
interview	willingness to be interviewed	Q31	Would you be willing to be contacted in order to participate in a short interview in which we will ask you more questions about your views of K-12 schooling?	radio button	21, 22	21=yes, 22=no
interview_rc	willingness to be interviewed re-coded	""	""	radio button	1,0	1=yes, 0=no

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Start of Block: Section I

Q38 Participant Consent:

I am a student at Arizona State University working under the direction of Dr. Marco Janssen.

If you agree to participate, you will be asked to complete the following survey questions. We will NOT ask you to include your name in this survey. Responses will be anonymous.

If you would like to be eligible for a \$50 gift card, you may provide your email address or phone number. We will delete all email addresses after the drawing takes place.

If you have any questions concerning the research study or your participation in this study, please email Dr. Marco Janssen at Marco.Janssen@asu.edu.

If you have any questions about your rights as a participant in this research, or if you feel you have been placed at risk, you can contact the Chair of the Human Subjects Institutional Review Board, through the ASU Office of Research Integrity and Assurance, at (480) 965-6788.

Q39 Are you 18 years old or older?

Yes (1)

Q37 If you would like to be eligible for a \$50 gift card drawing, you may provide your email address or phone number below. (We will delete all email addresses and phone numbers after the drawing takes place.)

Q42 This survey is aimed at understanding people's views about elementary, middle, and high school (K-12 schooling). We want to understand the role you see it played in your personal life and understand the role you think it plays in society at large.

In this first section, we want to know your views of K-12 schooling based on your own life experiences. Please think about yourself and K-12 schooling when responding to these questions.

Q1 Please select the K-12 schooling levels you attended in the U.S.

	Yes (21)	No (22)
Kindergarten (1)	<input type="radio"/>	<input type="radio"/>
Elementary school (2)	<input type="radio"/>	<input type="radio"/>
Middle school (3)	<input type="radio"/>	<input type="radio"/>
High school (4)	<input type="radio"/>	<input type="radio"/>

Q2 During the time of your K-12 schooling, which school type(s) did you attend? (Select all that apply.)

Public school (1)

Charter school (2)

Private school (3)

Home-school (4)

No school (5)

Q3 How satisfied were you with your K-12 schooling experience?

Extremely satisfied (1)

Somewhat satisfied (2)

Somewhat dissatisfied (4)

Extremely dissatisfied (5)

Q4 Some educators have identified a set of items they believe are the main purposes of K-12 schooling. On the scales below, please indicate how important each item was for you during your K-12 experience.

	Extremely important (1)	Very important (2)	Moderately important (3)	Slightly important (4)	Not at all important (5)
Participate in a universal approach to educating youth (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Teach American (U.S.) values (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Keep kids safe while parents are at work (8)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Offer opportunity for sports & extracurricular activities (9)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Allow kids to make friends in the community (10)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Teach kids to follow rules and do what they are told (11)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Prepare kids for jobs after graduation (12)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q5 In what way do you think K-12 schooling influenced the person you are today?

- Extremely positively (1)
- Somewhat positively (2)
- Somewhat negatively (4)
- Extremely negatively (5)

Q6 In order to help us understand how you measure K-12 schooling outcomes and know what was important to you, please rank the 3 most important outcomes for you. (Drag and drop the 'more important' ones to the top of the list where the top place indicates the most important.)

- _____ Meet state-prescribed benchmarks/grade-level standards (1)
- _____ Participate in clubs and/or sports (3)
- _____ Learn how to be a good citizen (4)
- _____ Make friends and created a social life (5)
- _____ Preparation for getting a job after graduation (6)
- _____ Preparation for succeeding in college or university (8)

Q7 Do you think out-of-school learning was more valuable to you than in-school learning?

- Definitely true (14)
- Probably true (15)
- Probably false (17)
- Definitely false (18)

Q8 Did you feel you 'belonged' in school?

- Definitely yes (1)
- Probably yes (2)
- Probably not (4)
- Definitely not (5)

Q41 Did you feel your K-12 schooling was directed well at your own learning style?

- Definitely yes (1)
- Probably yes (2)
- Probably not (3)
- Definitely not (4)

Q9 Did you ever want to change schools?

- Yes (21)
- No (22)

Q11 If you could change one thing about your K-12 schooling, what would it be? And why?

End of Block: Section I

Start of Block: Section II

Q43 In this second section, we would like to learn your views on the overall purpose of K-12 schooling. By views, we mean, what do you think about K-12 schooling and its role in American society at large.

Q12 In your opinion, K-12 schooling is a good platform for educating youth in the U.S.

- Definitely yes (21)
- Probably yes (22)
- Probably not (24)
- Definitely not (25)

Q13 K-12 schooling is a necessary part of cultivating intellectual development in society.

- Definitely yes (9)
- Probably yes (10)
- Probably not (12)
- Definitely not (13)

Q14 K-12 schooling is a necessary part of cultivating social development in society.

- Definitely yes (14)
- Probably yes (15)
- Probably not (17)
- Definitely not (18)

Q15 In your opinion, is K-12 schooling necessary in order to create good members of society?

- Definitely yes (9)
- Probably yes (10)
- Probably not (12)
- Definitely not (13)

Q16 Thinking about the U.S., how much do you think K-12 schooling contributes positively to society at large?

- A great deal (19)
- A lot (20)
- A moderate amount (21)
- A little (22)
- None at all (23)

Q17 Again, thinking about the U.S., how much do you think K-12 schooling contributes negatively to society at large?

- A great deal (9)
- A lot (10)
- A moderate amount (11)
- A little (12)
- None at all (13)

Q18 Some educators have identified the following purposes of school. When thinking about the purpose of K-12 schooling and children more generally, please indicate how important is each one is to you.

	Extremely im- portant (16)	Very important (17)	Moderately important (18)	Slightly important (19)	Not at all im- portant (20)
Provides a safe place for chil- dren while parents work (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Provides emotional and so- cial development (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Provides social welfare (e.g. meals, counseling, etc.) (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Builds community (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
A place where knowledge is transferred to students (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q19 Do you think K-12 schooling should be compulsory?

- Yes (21)
- No (22)

Q20 Do you have any comments about any of your answers to the questions in this survey?

End of Block: Section II

Start of Block: Section III

Q21 Do you feel the COVID-19 pandemic has changed your perspective about the purpose of K-12 schooling in the U.S.?

- Yes (21)
- No (22)

Q22 What has changed?

End of Block: Section III

Start of Block: Section IV

Q44 Almost Done!

To help us better understand your answers, we'd like to know a little more about you.

An important part of this research included understanding the demographic and financial resources of the participants.

Your answers will be kept completely confidential.

Q23 What year were you born?

Q24 What is your gender?

- Male (16)
- Female (17)
- Non-binary / third gender (18)
- Prefer not to say (19)

Q25 Which of the following best describes you?

- White (9)
- Hispanic (10)
- Black or African American (11)
- Asian (12)
- Native Hawaiian or Pacific Islander (13)
- American Indian or Alaska Native (14)
- Multiracial (15)
- Prefer not to say (17)

Q26 What is the highest level of schooling you have had a chance to complete?

- Less than high school (1)
- High school graduate (2)
- Some college (3)
- 2 year degree (4)
- 4 year degree (5)
- Professional degree (6)
- MA, MS (7)
- PhD (9)

Q27 Which of these applies to you?

- Working full time (30 or more hours per week) (1)
- Working part time (8-29 hours per week) (4)
- Working part time (less than 8 hours per week) (5)
- Full time student (6)
- Retired (7)
- Unemployed (8)
- Other (not working) (9)

Q28 What is your marital status?

- Married (1)
- Long-term partnership (2)
- Divorced (3)
- Separated (4)
- Never married (5)
- Widowed (6)
- Prefer not to say (7)

Q29 Which category below best represents the total income before taxes for all the people in your household in 2020?

- \$20,000 and under (1)
- \$20,001 - \$40,000 (2)
- \$40,001 - \$60,000 (7)
- \$60,001 - \$80,000 (8)
- \$80,001 - \$100,000 (3)
- \$100,001 - \$120,000 (9)
- \$120,001 - \$140,000 (10)
- \$140,001 - \$160,000 (11)
- \$160,001 - \$180,000 (4)
- \$180,001 - \$200,000 (12)
- More than \$200,001 (13)
- I prefer not to say (5)

Q30 What is your Arizona zip code

End of Block: Section IV

Start of Block: Block IV

Q31 Would you be willing to be contacted in order to participate in a short interview in which we will ask you more questions about your views of K-12 schooling?

- Yes (21)
- No (22)

Q32 Please provide contact details (email, phone number, etc.) so that we may contact you to set up a time to meet.

End of Block: Block IV

APPENDIX C
INTERVIEW INSTRUMENT

**Perception of Purpose of K-12 Schooling
Interview Script**

First, I would like to thank you for taking time to talk with me today. I really appreciate it.

[READ CONSENT FORM TO RESPONDENT]

As I read to you in the consent form, I would like to ask some additional questions related to some of the topics covered earlier in the survey you completed. Like with the survey, this one is supported by ASU. The interview will take about 30-45 minutes, and your cooperation is completely voluntary. As a token of appreciation, we will be entering your phone number or email into a drawing for a different \$50 drawing when the interview is complete. Do you have any questions about the study or your participation in the study before we get started?

[Questions on page 2]

If you would like to be entered into a second drawing (not the drawing mentioned in the survey) for a \$50 gift card, please enter your email address below. We will delete your email or phone number after the drawing takes place.

Email/Phone number: _____

Thank you for your participation.



Perception of K-12 Schooling Interview Questions

Table B: Perspectives on K-12 Schooling Questionnaire, 2021

(Semi-structured interviews, 30-40 minutes)

We would like to understand and perceptions of the role of K-12 schooling in American society at large and in your life in particular.

This interview is aimed at understanding Arizonian's views about elementary, middle and high school (K-12 schooling). We want to understand the role you see it plays in society at large and some details about its role in your personal life. To start, in this first section, we want to know your views of K-12 schooling based on your own life experiences. Please think about yourself and K-12 schooling when responding to these questions.

Questions:

1		Want to talk to you about what you think about the purpose of K-12 schooling.
	Main Q	What do you perceive as the purpose of K-12 schooling in your life?
	Main Q	What do you think the purpose of K-12 schooling is?
Get their story		(Tell me about your experiences in school)
	Auxiliary Q	What was your experience of K-12 schooling? Can you tell me the story of you and school and how you felt about it?
Depth:		Whether positive or negative.
	Auxiliary Q	Can you tell me why you more about this answer?
	Auxiliary Q	How did 'X' affect your performance and/or where you are now? (etc...whatever I pick up as their comments - carry on that line of thinking to get more); or
	Auxiliary Q	Once you believe X, how did that affect what you decided to do in your life?
	Auxiliary Q	How you felt and why? Where are you now?
2		Want to see if they thought anything could have been different (imagine change).
	Main Q	Can you think if anything had been different, would it have been a different for you in school? (Better or worse depending on the response to Q1.)
Depth:		looking for what may have affected motivation.....
	Auxiliary Q	After X grade, why did you stay in school and what did you expect to get from it?
	Auxiliary Q	Why do you think you were (or were not) a good student? What made you think that?
	Auxiliary Q	If the schooling had been different, if it could have been different, might it had been better (or worse) for you?
	Auxiliary Q	Were the teacher/school/parents in your life encouraging or not?
3		
	Main Q	What do you think are the most important roles of K-12 schooling? Is K-12 schooling good for your community?
Depth:		
4		
	Main Q	Do you have any feelings about COVID-19 and whether or not the conditions of the pandemic changed your perception of schooling in any way?

APPENDIX D
IRB PROTOCOL

	Page: 1 of 7	
	PREPARED BY: IRB Staff	APPROVED BY: Heather Clark
DOCUMENT TITLE: HRP 503 A Social Behavioral Protocol	DEPARTMENT: Office of Research Integrity and Assurance (ORIA)	EFFECTIVE DATE: [3/26/2020]

INSTRUCTIONS

Complete each section of the application. Based on the nature of the research being proposed some sections may not apply. Those sections can be marked as N/A. Remember that the IRB is concerned with risks and benefits to the research participant and your responses should clearly reflect these issues. You (the PI) need to retain the most recent protocol document for future revisions. Questions can be addressed to research.integrity@asu.edu. **PIs are strongly encouraged to complete this application with words and terms used to describe the protocol is geared towards someone not specialized in the PI's area of expertise.**

IRB: 1. Protocol Title: Perceptions of Purposes of K-12 Schooling

IRB: 2. Background and Objectives

- 2.1 List the specific aims or research questions in 300 words or less.
- 2.2 Refer to findings relevant to the risks and benefits to participants in the proposed research.
- 2.3 Identify any past studies by ID number that are related to this study. If the work was done elsewhere, indicate the location.

TIPS for streamlining the review time:

- ✓ Two paragraphs or less is recommended.
- ✓ Do not submit sections of funded grants or similar. The IRB will request additional information, if needed.

Response:

2.1

The aim of this research is to understand how people understand the role and purpose of K-12 schooling.

At the core of sustainability scholarship is the notion of maintaining our collective capacity to provide human well-being now and into the future. In addition to the need to maintain and protect the function of natural infrastructure for future generations and other species, we argue that there is also a need to focus our attention on *knowledge infrastructure*. Taking the view that K-12 schooling as an iconic example of *knowledge infrastructure/educational infrastructure* we position its role as the formal 'learning and inter-generational knowledge transfer infrastructure' of the economic, political and social system in which it is embedded. This view enables us to focus on the *fundamental function* of this infrastructure rather than on a particular instantiation of it in our research.

Notions of equity, opportunity and well-being are concurrent themes in sustainability research. The COVID-19 pandemic, which resulted in school shutdowns and disruptions to students and families across the U.S., only added to existing concerns about the state of K-12 schooling and the effects of its processes and delivery systems. Knowledge infrastructure has received less attention than natural infrastructure in sustainability research, yet, understanding outcomes, values, negative and positive effects that are essentially transferred from one generation to the next is an important feature of this research. Understanding how the dynamic process of delivering knowledge impacts individuals' lives coupled with the sustainability themes of equity, opportunity and well-being requires examination of individuals' experiences of it. This research takes a small step by surveying/interviewing individual adults about how they view learning infrastructure (K-12 schooling) which helps elucidate its perceived role in society, which, in turn, affects collective investment decisions in types of learning infrastructure delivery systems in the future. Greater understanding of these views may help support sustainable decisions and appropriate investment in learning infrastructures in the future.

Relevant Preliminary Data/Case Studies/Past Studies in Conjunction:

No preliminary data or case studies have been directly collected by the investigative team. Moreover, given the recent and sudden onset of the COVID-19 pandemic, research continues to proliferate about improving learning environments, assessment of satisfaction within a learning environment in order to make school improvement efforts, yet, we propose to move the lens to a larger frame in which we will examine 1) how individual's understand *the role of K-12 schooling* in society-at-large, 2) *the role of K-12 schooling* in their personal lives, and 3) how individual's measure its perceived outcomes.

IRB: 3. Data Use - What are the intended uses of the data generated from this project?

Examples include: Dissertation, thesis, undergraduate project, publication/journal article, conferences/presentations, results released to agency, organization, employer, or school. If other, then describe.

Response:

- Data generated from this project primarily will be used to complete a master's thesis that seeks to understand adult individual's perception of the role of K-12 schooling in society. As a result, the data will be mostly presented in a completed master's thesis.

<p>IRB: 4. Inclusion and Exclusion Criteria</p> <p>4.1 List criteria that define who will be included or excluded in your final sample. Indicate if each of the following special (vulnerable/protected) populations is included or excluded:</p> <ul style="list-style-type: none"> ▪ Minors (under 18) ▪ Adults who are unable to consent (impaired decision-making capacity) ▪ Prisoners ▪ Economically or educationally disadvantaged individuals <p>4.2 If not obvious, what is the rationale for the exclusion of special populations? 4.3 What procedures will be used to determine inclusion/exclusion of special populations?</p> <p>TIPS for streamlining the review time.</p> <ul style="list-style-type: none"> ✓ Research involving only data analyses should only describe variables included in the dataset that will be used. ✓ For any research which includes or may likely include children/minors or adults unable to consent, review content [here] ✓ For research targeting Native Americans or populations with a high Native American demographic, or on or near tribal lands, review content [here] For research involving minors on campus, review content [here]
<p>Response:</p> <ul style="list-style-type: none"> • Participants will be adults capable of consenting; • Adults in the Phoenix Metropolitan area will be eligible.
<p>IRB: 5. Number of Participants</p> <p>Indicate the total number of individuals you expect to recruit and enroll. For secondary data analyses, the response should reflect the number of cases in the dataset.</p>
<p>Response:</p> <p>The total number of participants to be recruited and enrolled:</p> <ul style="list-style-type: none"> • Residents in twelve Phoenix metropolitan neighborhoods; adult students at five institutions of higher learning within the Phoenix metropolitan area; and adults employees at ten major grocery stores in the Phoenix metropolitan area. • Distribution of approximately 500 flyers will be delivered to study sample locations. A maximum number of participants cannot be stated. The goal will be contact as many participants as possible with the survey flyers and instrument. • The greatest number of participants for semi-structured interviews is set at 25.
<p>IRB: 6. Recruitment Methods</p> <p>6.1 Identify who will be doing the recruitment and consenting of participants. 6.2 Identify when, where, and how potential participants will be identified, recruited, and consented. 6.3 Name materials that will be used (e.g., recruitment materials such as emails, flyers, advertisements, etc.) Please upload each recruitment material as a separate document, Name the document: recruitment_methods_email/flyer/advertisement_dd-mm-yyyy 6.4 Describe the procedures relevant to using materials (e.g., consent form).</p> <p>✓</p>

Response:

- The researchers on our team will lead the recruitment efforts and the consenting of participants by reaching out to adult individuals in twelve Phoenix Metropolitan neighborhoods; Six institutions of higher learning, and major grocery stores located within the Phoenix Metropolitan area.
- Potential participants will be recruited via a printed flyer soliciting for their participation. The printed flyers will be distributed to business locations and homes in targeted Phoenix-Metropolitan neighborhoods. Flyers will offer QR codes or url.links with which participants may access the survey. The survey will include a consent form that is to be completed at the start of the research collection instrument. Participants will be invited in the survey to volunteer to participate in a 30-45 minute semi-structured interview.
- Interview participants will voluntarily submit their appropriate contact details through the survey instrument. Once submitted, volunteers will be contacted according to the means they provide(e.g. email, phone or mailing).
- If they opt in, they will be contacted to schedule interviews.

IRB: 7. Study Procedures

- 7.1 List research procedure step by step (e.g., interventions, surveys, focus groups, observations, lab procedures, secondary data collection, accessing student or other records for research purposes, and follow-ups). Upload one attachment, dated, with all the materials relevant to this section. Name the document: supporting documents dd-mm-yyyy
- 7.2 For each procedure listed, describe **who** will be conducting it, **where** it will be performed, **how long** is participation in each procedure, and **how/what data** will be collected in each procedure.
- 7.3 Report the total period and span of time for the procedures (if applicable the timeline for follow ups).
- 7.4 For secondary data analyses, identify if it is a public dataset (please include a weblink where the data will be accessed from, if applicable). If not, describe the contents of the dataset, how it will be accessed, and attach data use agreement(s) if relevant.

TIPS for streamlining the review time.

- ✓ Ensure that research materials and procedures are explicitly connected to the articulated aims or research questions (from section 2 above).
- ✓ In some cases, a table enumerating the name of the measures, corresponding citation (if any), number of items, sources of data, time/wave if a repeated measures design can help the IRB streamline the review time.

Response:

7.1

Surveys

- The research team will contact administrative officials at selected community colleges, managers at businesses, and residents in designated Phoenix Metropolitan neighborhoods. Recruitment of participants will be done by providing information on the Qualtrics link to business managers and community college administrators to share with employees and students. Neighborhood residents will be recruited via printed flyers;
- Using the link to the Qualtrics instrument, participants will respond to survey questions about their perspectives on K-12 schooling;
- Consent forms will be built into the beginning of the Qualtrics instrument;
- Data from the Central Arizona-Phoenix Long-Term Ecological Research (CAP LTER) has been used to inform the sampling;
- Data will be collected May 2021-August 2021;
- The survey is expected to take approximately 10 minutes;
- Participants in the survey will be recruited in one question (at the end) to volunteer to participate the a 30-45 minute online interview by submitted a phone number or email address.

Interviews

- The semi-structured interview portion of this study will consist of audio recorded 30-45 minute semi-structured one-segment interviews;
- Participants for the interviews will be recruited in the survey (Q) where they may enter phone number or email details from which they may be contacted;
- Data will be collected May 2021-August 2021;
- The interview is expected to take approximately 30-45 minutes;
- Instruments used during the semi-structured interview include:
Semi-structured interview script and semi-structured interview note sheet;

7.2

- An ASU student will be conducting both the survey and semi-structured interview research;
- The *survey procedure* will be performed in a virtual format, utilizing phone and email communication for the recruitment and a Qualtrics instrument for data collection. Survey participants will submit their responses through an electronic device of their choice during a 6-week period;
- The *semi-structured interviews* will be performed in a virtual format, utilizing phone and ZOOM. The interviews will consist of an audio recorded 1 hour semi-structured interview.

7.3

- Recruitment: 2 weeks of distributing flyers and contacting administrators and business managers;
- Data collection (survey): Qualtrics;
- Data collection (interviews): Interview responses will be coded and saved to an ASU database, not attributed to a respondent.

7.4

n/a

<p>IRB: 8. Compensation</p> <p>8.1 Report the amount and timing of any compensation or credit to participants.</p> <p>8.2 Identify the source of the funds to compensate participants.</p> <p>8.3 Justify that the compensation to participants to indicate it is reasonable and/or how the compensation amount was determined.</p> <p>8.4 Describe the procedures for distributing the compensation or assigning the credit to participants.</p> <p>TIPS for streamlining the review time.</p> <ul style="list-style-type: none"> ✓ If partial compensation or credit will be given or if completion of all elements is required, explain the rationale or a plan to avoid coercion ✓ For extra or course credit guidance, see “Research on educational programs or in classrooms” on the following page: https://researchintegrity.asu.edu/human-subjects/special-considerations. ✓ For compensation over \$100.00, review “Research Subject Compensation” at: https://researchintegrity.asu.edu/human-subjects/special-considerations for more information.
<p>Response:</p> <ul style="list-style-type: none"> • Participant who successfully complete the instrument will be entered in a drawing for one of two \$50 Visa gift cards, purchased with funding from researcher, Margaret Parker-Anderies. Gift cards will be distributed via email to the winners; • We have referred to the ASU policy on gambling and raffles and do not believe that our incentives violate that policy.
<p>IRB: 9. Risk to Participants</p> <p>List the reasonably foreseeable risks, discomforts, or inconveniences related to participation in the research.</p> <p>TIPS for streamlining the review time.</p> <ul style="list-style-type: none"> ✓ Consider the broad definition of “minimal risk” as the probability and magnitude of harm or discomfort anticipated in the research that are not greater in and of themselves than those ordinarily encountered in daily life or during the performance of routine physical or psychological examinations or tests. ✓ Consider physical, psychological, social, legal, and economic risks. ✓ If there are risks, clearly describe the plan for mitigating the identified risks.
<ul style="list-style-type: none"> • Response: • The researchers do not anticipate that the study participants will incur physical, psychological, social, legal, or economic harm during their participation in this study. We will, however, be sensitive to and will promptly reply to any concerns raised by participants; • To reduce any risks of the study, participants may decide to skip any of the questions or leave/withdraw from the study at any time. Participation in the study is voluntary.
<p>IRB: 10. Potential Direct Benefits to Participants</p> <p>List the potential direct benefits to research participants. If there are risks noted in 9 (above), articulated benefits should outweigh such risks. These benefits are not to society or others not considered participants in the proposed research. Indicate if there is no direct benefit. A direct benefit comes as a direct result of the subject’s participation in the research. An indirect benefit may be incidental to the subject’s participation. Do not include compensation as a benefit.</p>
<p>Response:</p> <ul style="list-style-type: none"> • There is no direct benefit to the participants. However, if the participant completes the survey , they will have the opportunity to be part of a drawing for an e-gift certificate.

IRB: 11. Privacy and Confidentiality

Indicate the steps that will be taken to protect the participant's privacy.

- 11.1 Identify who will have **access to the data**.
- 11.2 Identify where, how, and how long data will be **stored** (e.g. ASU secure server, ASU cloud storage, filing cabinets).
- 11.3 Describe the procedures for **sharing, managing and destroying data**.
- 11.4 Describe any special measures to **protect** any extremely sensitive data (e.g. password protection, encryption, certificates of confidentiality, separation of identifiers and data, secured storage, etc.).
- 11.5 Describe how any **audio or video recordings** will be managed, secured, and/or de-identified.
- 11.6 Describe how will any signed consent, assent, and/or parental permission forms be secured and how long they will be maintained. These forms should separate from the rest of the study data.
- 11.7 Describe how any data will be **de-identified**, linked or tracked (e.g. master-list, contact list, reproducible participant ID, randomized ID, etc.). Outline the specific procedures and processes that will be followed.
- 11.8 Describe any and all identifying or contact information that will be collected for any reason during the course of the study and how it will be secured or protected. This includes contact information collected for follow-up, compensation, linking data, or recruitment.
- 11.9 For studies accessing existing data sets, clearly describe whether or not the data requires a Data Use Agreement or any other contracts/agreements to access it for research purposes.
- 11.10 For any data that may be covered under FERPA (student grades, etc.) additional information and requirements is available at <https://researchintegrity.asu.edu/human-subjects/special-considerations>.

Response:

- 11.1 Only the research team will have access to the data.
- 11.2 The data will be stored on an ASU cloud drive (Google Drive) for up to 5 years.
- 11.3 Survey participants will be asked to submit their responses anonymously via an online survey tool that will not track any personal information. The initial questions of the survey will cover consent procedures (see part 12). When data collection is complete, consent responses will be separated from submissions (they will be downloaded in separate files). Consent responses and submissions will be moved to the ASU cloud drive and stored in separate files, at which point all data stored in the survey tool will be deleted. Once interviews are performed, data collection is complete, and e-gift drawing and awarding is complete, identifying or contact information will be deleted. Data stored in the Qualtrics survey tool will be deleted.
- 11.4 There will be no sensitive data.
- 11.5 See 11.3 Interview participants audio recordings will be stored in an ASU Dropbox folder that is available to the research team. IP address collection will be disabled. The physical files will be kept by Margaret Parker-Anderies through the research collection, compilation, and analysis and then destroyed. No personally identifiable information will be included on the note sheets or in the database.
- 11.6 At the beginning of the survey, participants will complete a consent form. Consent responses and submissions will be moved to the ASU cloud drive and stored in separate files. The signed forms will be stored in a locked storage place of the PI at the Tempe ASU campus.
- 11.7 See 11.3
- 11.8 Identifying or contact information will be collected when voluntarily offered by participants in order to contact participants for interviews or entry into participation in the e-gift drawing.
- 11.9 N/A
- 11.10 N/A

IRB: 12. Consent

Describe the procedures that will be used to obtain consent or assent (and/or parental permission).

12.1 Who will be responsible for consenting participants?

12.2 Where will the consent process take place?

12.3 How will the consent be obtained (e.g., verbal, digital signature)?

TIPS for streamlining the review time.

- ✓ If participants who do not speak English will be enrolled, describe the process to ensure that the oral and/or written information provided to those participants will be in their preferred language. Indicate the language that will be used by those obtaining consent. For translation requirements, see Translating documents and materials under <https://researchintegrity.asu.edu/human-subjects/protocol-submission>
- ✓ Translated consent forms should be submitted after the English is version of all relevant materials are approved. Alternatively, submit translation certification letter.
- ✓ **If a waiver for the informed consent process is requested, justify the waiver in terms of each of the following: (a) The research involves no more than minimal risk to the subjects; (b) The waiver or alteration will not adversely affect the rights and welfare of the subjects; (c) The research could not practicably be carried out without the waiver or alteration; and (d) Whenever appropriate, the subjects will be provided with additional pertinent information after participation.** Studies involving confidential, one time, or anonymous data need not justify a waiver. A verbal consent or implied consent after reading a cover letter is sufficient.
- ✓ ASU consent templates are [\[here\]](#).
- ✓ Consents and related materials need to be congruent with the content of the application.

Response:

- Recruitment materials will describe the purpose and instructions for the study participants. Those who wish to participate will upload their anonymous responses to an online submission form hosted by an online survey tool (Qualtrics);
- At the beginning of the survey, participants will be asked to give a consent for participation.

IRB: 13. Site(s) or locations where research will be conducted.

List the sites or locations where interactions with participants will occur-

- Identify where research procedures will be performed.
- For research conducted outside of the ASU describe:
 - o Site-specific regulations or customs affecting the research.
 - o Local scientific and ethical review structures in place.
- For research conducted outside of the United States/United States Territories describe:
- Safeguards to ensure participants are protected.
- For information on international research, review the content [\[here\]](#).

For research conducted with secondary data (archived data):

- List what data will be collected and from where.
- Describe whether or not the data requires a Data Use Agreement or any other contracts/agreements to access it for research purposes.
- For any data that may be covered under FERPA (student grades, etc.) additional information and requirements is available [\[here\]](#).
- For any data that may be covered under FERPA (student grades, homework assignments, student ID numbers etc.), additional information and requirements is available [\[here\]](#).

Response:

- **Parts of this study will occur in an online survey tool, using the ZOOM platform and via email;**
- **Distribution of flyers to recruit participants will occur in person by Margaret Parker-Anderies.**

IRB: 14. Human Subjects Certification from Training.

Provide the names of the members of the research team.

ASU affiliated individuals do not need attach Certificates. Non-ASU investigators and research team members anticipated to manage data and/or interact with participants, need to provide the most recent CITI training for human participants available at www.citiprogram.org. Certificates are valid for 4 years.

TIPS for streamlining the review time.

- ✓ If any of the study team members have not completed training through ASU's CITI training (i.e. they completed training at another university), copies of their completion reports will need to be uploaded when you submit.
- ✓ For any team members who are affiliated with another institution, please see "Collaborating with other institutions" [\[here\]](#)
- ✓ The IRB will verify that team members have completed IRB training. Details on how to complete IRB CITI training through ASU are [\[here\]](#)

Response:

- Dr. Marco Janssen: (ID: 40137342), 27-Mar-2021
- Margaret Parker-Anderies: (ID: 26849612), 12-Apr-2018

General Tips:

- Have all members of the research team complete IRB training before submitting.
- Ensure that all your instruments, recruitment materials, study instruments, and consent forms are submitted via ERA when you submit your protocol document. Templates are [\[here\]](#)
- Submit a complete protocol. Don't ask questions in the protocol – submit with your best option and, if not appropriate, revisions will be requested.
- If your study has undeveloped phases, clearly indicate in the protocol document that the details and materials for those phases will be submitted via a modification when ready.
- Review all materials for consistency. Ensure that the procedures, lengths of participation, dates, etc., are consistent across all the materials you submit for review.
- Only ASU faculty, full time staff may serve as the PI. Students may prepare the submission by listing the faculty member as the PI. The submit button will only be visible to the PI.
- Information on how and what to submit with your study in ERA is [\[here\]](#). Note that if you are a student, you will need to have your Principal Investigator submit.
- For details on how to submit this document as part of a study for review and approval by the ASU IRB, visit <https://researchintegrity.asu.edu/human-subjects/protocol-submission>.