6 videos on the 5 spaces for design in education

(Transcripts for the videos with abstracts, generated by ChatGPT4)

#1. The 5 spaces for design in education

Abstract (generated by GPT4): Most things in our environment, from the foods we eat to the pets we keep, are products of human intervention, often shaped through artificial selection over time. Consequently, much of our daily interactions revolve around a man-made, or artificial, world. This realization prompts a shift in our perception and interaction with the world, highlighting our ability, even obligation, to reshape things that are unjust or inadequate. This is especially true in the realm of education, a domain entirely crafted by humans, where aspects like classes, schools, and even the concept of "education" itself are malleable designs. The malleability implies that if some educational structures don't cater to all or stifle creativity, they can be re-envisioned for improved results. Embracing this artificiality empowers us to question and potentially revamp existing systems, challenging the status quo. Design, traditionally associated with physical objects, extends to intangibles like experiences, processes, systems, and cultures. Through a proposed "Five Spaces for Design in Education" framework, we can analyze and redesign components across artifacts, processes, experiences, systems, and cultures in education. Central to this is the designer's mindset, characterized by qualities like openness, empathy, and a readiness to iterate. Such a perspective doesn't just aim to refine education but offers the opportunity to wholly re-design it.

Almost everything around us is made up. It is created – whether intentionally or unintentionally – by other humans, including things that we often take to be natural, such as the foods we eat or animals we keep as pets. As it turns out, most of the vegetables we enjoy and the pets we love to spend time with have been "designed" by artificial selection over decades, even centuries. From this perspective, an apple (or an AussieDoodle) is "designed" as much as a pencil or a college application form. This does not mean that there are no natural kinds – such as oceans, trees, or galaxies – out there. But increasingly, we humans have managed to insulate ourselves from the natural world and engage almost entirely with the world of the artificial.

What does that mean for us as humans, and as designers?

This is ASU.

Recognizing that we live, for the most part, in an artificial, human-created world can change how we *are* in the world, how we perceive it, interact with it, and, more importantly, how we can change it. One could argue that it also provides us with a moral imperative to do so because we know that much of the world around us is unfair, often disadvantaging and marginalizing huge swaths of people and communities. Since there is nothing inherently "natural" about these artifacts or processes or systems, we have the agency to change them.
Included in this artificial world is education. Almost every aspect of what makes up today's educational system—classes, schools, credit hours, universities, degrees, even the very idea of receiving an "education"—has been invented by humans. The current design of education does not work for many, particularly the groups that have been historically marginalized. If schools are not fun, if they do not support play and creativity, it is because they are designed to be this way (either intentionally or by happenstance as a side effect of some other decisions that were, at that time, believed to me more important). Because these are creations of humans, they can be reimagined and

redesigned for better outcomes. Although the changing educational system might be incredibly complex, it is worth recognizing that it is designed and so can be re-designed.

In our work, we have found that expanding what we see as artificial, particularly the artificial nature of education and schooling, can enable powerful change. It is enabling in two ways. First, it allows us to interrogate everything around us, not taking it as a given, but rather something that was created and thus can be re-created, re-imagined, and re-designed. Second, it provides a response to those who resist change by making an essentialist argument — "this is *just* how things are." Acknowledging the artificiality of the system suggests that this is how things *may* be, but they don't *have* to be this way.

Another important aspect of seeing the world as artificial is expanding what we mean by the "world." For too long we (and the field of design) have conceived of the designed world as constituted of physical artifacts and other technological tools. Although these are important, we argue that there are many intangible aspects to the designed world. They may include experiences (such as the feeling of awe when faced with the immensities of the cosmos); processes (such as the process of registering for school), systems (such as the K-20 educational system), or even culture (such as the culture of high-school football). Although design in some spheres (such as systems and culture) might be more complex than others, applying a wide-angled design lens can increase agency, empowering change makers. In order to do so, we need a frame, a way of categorizing or classifying the different kinds of "designed things" that are out there in the world.

We have created a framework that supports applying this type of design lens to education. The *Five Spaces for Design in Education* framework presents design as occurring across five interactive spaces: artifacts, processes, experiences, systems, and culture. The framework provides an analytical tool for understanding the relationships among designed entities, shifting perspectives, and offering new possibilities for re-design.

What is common across these spaces is the idea of intentional design and the manner in which designers (whether they be designing an educational app or the culture of a school) approach the work, how they think and act.

Designers bring attributes such as openness, tolerance for ambiguity, empathy, creative confidence, optimism, as well as a willingness to iterate and learn from failure. Designers recognize that what *is* is not what *has to be*. Bringing this perspective to education allows us to do more than just refine or reform it.

Instead, we can re-design it.

This was ASU. Thanks for watching.

#2. Designing Artifacts

Abstract (Generated by GPT4): Artifacts, commonly associated with historical items in museums or archaeological sites, are actually prevalent in our daily lives. These are objects—whether physical or digital—created by humans for a specific purpose. Designers from fields such as engineering, graphic

design, product design, and architecture create artifacts, blending their knowledge of materials and tools with an understanding of the end-users' needs. Their expertise encompasses both aesthetics and functionality. In cooking, for instance, dishes serve as artifacts for nourishment, while utensils, recipe books, and kitchen design are tools designed for specific culinary tasks. Similarly, education is replete with artifacts, from classroom layouts to textbooks and tests. The design process for these educational tools often involves deep thought, exemplified by the extensive resources poured into crafting a single SAT test question. Unlike ancient artifacts that leave archaeologists guessing about their original use and users' opinions, modern designers have the advantage of observing how their creations are utilized, enabling iterative improvements. Future artifacts may seem alien to upcoming generations, but they will undoubtedly bear the mark of our era's designers, ensuring each creation is tailored for its intended purpose.

What image does the word 'artifact' conjure up? Adventurers and objects that 'belong in a museum'? Or the careful attention of archaeologists excavating a midden?

It is a term we often associate with times past and preserved history. But what were these 'artifacts' before they were behind glass? When they were in the hands of people? Before they were mementoes, and when they were just part of everyday life, meant to be used?

Maybe it's time we start thinking about the word a little differently--and looking at the objects around us a little more closely.

Let's take a deeper look. This is ASU.
Artifacts are material or digital objects that have been crafted by humans, which can be manipulated, modified, and used to achieve a goal or purpose. This is the vision most people have for what designers do: that they create things - books and posters, screwdrivers and spatulas, chairs and tables, websites and more. There are a number of professions devoted to the creation of artifacts, and even more for which designing artifacts is *one* part of a whole set of designerly activities they engage in. (Educators, for example.) These professions often work with raw materials in the natural world and engineer them to meet the needs of users using a range of tools, depending on the materials they are working with. These tools can be those both for physical and digital manipulation of the elements they are working with.

These designers are often trained in professional schools such as in engineering, graphic design, product design, architecture and more. The kinds of knowledge these designers have is an amalgamation of knowledge of the materials and tools combined with an understanding of people who will be using their creations. A key component is the development of a sense of the aesthetic—of the relationship of form to function. Designers in this space combine their skills at visualizing and crafting with materials with their knowledge of their audience to create sketches and other representations to generate original ideas. They iterate on these ideas to create their final designs.

If we take the domain of cooking, the end product of cooking (the dish) is an artifact created for a purpose (nourishment or pleasure). But there are a range of other artifacts that play critical roles in cooking, such as the utensils; recipe books or blogs; the architecture of the kitchen and much, much more. These artifacts, or tools, have been intentionally designed for a specific purpose, such as slicing a vegetable a certain way or checking the temperature of a piece of meat in an oven and so on.

Artifacts play a critical role in education as well—ranging from classroom design to the furniture in the room; from posters on walls to textbooks on the shelves; from paper and pencil tests to software that keeps track of student performance…the list goes on. These artifacts are sometimes designed by individuals who may not have formal training in design (such as the student-teacher selecting posters for the classroom) to artifacts that are designed by large teams of people (such as the writing, testing, and publication of textbooks). And these artifacts in many ways instantiate deeper ideas about the nature and role of education.

One of the most important artifacts that play a key role in education are tests. These can be designed for a specific assessment need by a teacher or may be created by a testing service to be used across multiple schools. Much like the domain of cooking, a range of important artifacts play a critical role in creating a test. For example, each test is created of smaller artifacts: single test questions. Test developers design these test questions intentionally for specific purposes then test them with users, in this case, students taking practice tests. According to some estimates, test developers spend around 1 million dollars to develop a single test question on the SAT.

Archaeologists can only imagine people interacting with the artifacts they uncover, and they never get to hear what the original users thought of the objects. Whether the long-ago owner of a hand-ax had praise or complaint for the design is left up to historians to wonder about.

But today's designers can see how the artifacts they create are used, and take their observations along with feedback from the users to better craft the next generation.

So the artifacts we're handing to the next millennium's archaeologists might be just as culturally distant from them as long-ago people's tools are to us--but they'll be imbued with the thoughtful intentionality of today's designers to meet specific needs and purposes.

This was ASU. Thanks for watching.

#3. Designing Processes

Abstract (Generated by GPT4): Making a sandwich involves straightforward steps that are easily repeatable: starting with bread, adding fillings, and sealing with another slice of bread. Drawing a parallel to educational design, processes are defined as structured procedures designed to achieve specific goals, pivotal in intricate organizational systems for ensuring clarity, efficiency, and scalability. Two vital aspects of designing processes are acknowledging the importance of time and sequence. While processes can be as straightforward as grocery shopping, they can also be complex, like running a restaurant. Education, an intricate system, is replete with processes, from lesson planning to graduation applications. Examining testing within education, there are myriad processes from creating and administering tests to their evaluation. Computerized-adaptive tests (CATs), for instance, have revolutionized testing by optimizing the sequence of questions based on the student's ability, making the experience individualized. Reflecting on everyday tasks, like sandwich-making, can prompt one to think of the intricacies involved and inspire re-designing of more complex systems.

How do you make a sandwich?

You start with a slice of bread, add the sandwich fillings, the mayo or chutney, and top it off with a second slice of bread. Depending on the kind of sandwich, there may be additional steps. The final products can be vastly different. But ultimately, it's a straight-forward, endlessly repeatable process.

How do we apply the same idea to educational design? Let's take a look.

This is ASU.

We define processes as a set of procedures or directions that can be used outside of the context it was created for to help people achieve a specific goal. Processes become critically important in complex organizational systems which have many moving parts, and often have users who may not fully understand how this particular piece fits within the broader context. It allows for clarity and structure leading to efficiency, consistency, and scalability.

There are two key aspects of designing processes. The first is the incorporation of the temporal element into design. Time becomes an important element in the hands of a designer. Second, is the incorporation of sequence: the need to do things in a particular order. These are steps that we go through to complete a task—whether it be something simple as boiling water to cook an egg to the complex process for completing the FAFSA application to receive financial aid.

Processes simplify and streamline actions, making them consistent to make things flow smoothly and consistently. Process designers can be both formally and informally trained. For instance, teachers can design lesson plans or activities, while human resource professionals create sequences of activities (such as forms that need to be filled out in a certain manner) to make an organization run smoothly.

Processes can be as simple as shopping for groceries: starting from making a list (sometimes even listing items in order of how they are laid out in the store), going to the store to pick up the items needed, which may include sub-processes for selecting between seemingly equivalent options, and finally checking out and paying for the groceries. As another example, one can consider a restaurant to consist of a series of functions and processes that can be represented as a hierarchical map – of all the functions needed to run the restaurant, from production, hiring, marketing, supply-chain and so on. Each of these processes can also be broken down further into sub-processes, such as prepping the ingredients, taking orders, delivering the food...

Education as a complex social enterprise is full of processes that systemize how work gets done to help the educational enterprise function smoothly. These include lesson plans, within and outside of school activities; to bell schedules; to the processes of applying for admission and graduation, and more.

Let's look at testing in education - there are multiple processes that go into the creation, administration, and evaluation of tests. At an informal level teachers can assess student learning through informal quizzes or evaluations. At the other end are processes for students taking standardized tests and exams that are often conducted under strict rules to prevent cheating. In fact, one industry-changing innovation in standardized tests, computerized-adaptive tests (or CATs), has more to do with processes than any other design space. As a process, CATs focus on creating 'better' sequencing of test questions to reduce the testing time. Students receive test questions that

better match their measured ability based on the question they just answered. This means they may not receive the same test questions in the same order as their neighboring students. Instead, the process adapts the test for the individual.

So here's a test for you – next time you make a sandwich, think about the processes and the sub-processes involved. From supply line to serving, what went into your lunch? What are the different levels of complexities? Where is there room to change?

Practicing this way of thinking in your day-to-day may even help spark an idea to re-design larger, more complex systems, like education.

This was ASU. Thanks for watching.

#4. Designing Experiences

> *Abstract (generated by GPT4): Vacations offer a break from the monotony, but the serenity of a holiday or the excitement of an amusement park is not merely a chance occurrence. Behind these adventures, there's a meticulous process of experience design. At its core, an experience represents a period marked by emotions, perceptions, and reflections. Designing experiences is about orchestrating all elements, ensuring the human experience remains central. By integrating knowledge from fields like interaction design and cognitive psychology, designers create experiences that resonate deeply. Just compare the ambiance and service of a fast-food restaurant to that of a high-end establishment; the distinction is not only in the cuisine but every interaction from menu design to payment. However, one misaligned piece can disrupt a well-designed experience. The educational sector also heavily relies on experiences. Despite scholars emphasizing the value of experience in learning, educational designs often overlook the student's experience, especially in high-stakes testing. These tests prioritize the experience of decision-makers over the test-takers. Hence, in designing experiences, understanding the target audience, and their needs is pivotal, aiming to offer an experience that's both compelling and resonant.*

Cruises, amusement parks, international tours - who doesn't need a vacation?

Whether we visit nearby beaches or travel around the world, it's refreshing to experience something different from our usual day-to-day. But while we're relaxing, exploring, and taking photos to remember our adventures, we're probably not the only ones with the same idea. To find your space in the crowds, you queue for a museum, reserve a beach chair, or follow a tour guide through a historical site.

We usually think of experiences as spontaneous and personal, but how would those adventures have gone if no one put any thought into the spaces you visited or the activities you participated in? What does it mean to design an experience?

This is ASU.

An experience is a piece of time associated with sights, sounds, thoughts and feelings that *leave an impression.* A powerful experience draws on our needs, feelings, contexts, and mindsets to create a compelling sense of engagement that provides relevance and value. Designing experiences brings together a variety of disciplines such as interaction design, graphic design, knowledge of cognitive

psychology, and more, all the while keeping focus on human needs and concerns. It keeps the human experience at the center of every detail.

Experiences can have positive or negative valence. Some experiences can be thought-provoking or pleasant or they can be boring or annoying. A good experience designer marshals a wide range of tools to craft compelling, refreshing, and surprising experiences for their audience. These tools include techniques like getting to know your audience, listening to their needs, and considering their contexts and environments, and then converting this knowledge into an experience that truly engages them.

For instance, think about the experience of going to a fast food restaurant versus a restaurant serving high-end cuisine. These differences go beyond the price-point of the food. Our experience of eating at a restaurant starts from the moment we choose one to go to and it encompasses every aspect of our interaction and engagement with the organization - from the design of the menu, the behavior of the staff and waiters, to the quality of the food and how it was plated and delivered, till the end of the meal and how (and how much) we pay for it.

A good experience is difficult to pull together due to the wide range of contextual factors that play a role in making it happen. In fact, it can be argued that designing a good experience requires a whole list of things to go just right, and it can be easily destroyed by one piece not working right. A thoughtfully designed restaurant experience can be completely derailed and spoiled by the behavior of the person at the table next to us.

Experience plays a critical role in learning and education. Scholars from Dewey onward have argued that all learning comes from experience - though they also add that this does not mean that all experiences are equally educational. The nature of learner experience has rarely been factored into the design of educational systems. Learners often find themselves bored or frustrated by the quality of instruction, and the lack of agency in what they are expected to learn. The standard grammar of schooling in attempting to meet the needs of masses or the mythical "average learner" loses sight of the individual. Nowhere is this more apparent than in the design and implementation of high stakes testing regimes. These tests, that purport to evaluate student learning, are often top-down mandates, and are conducted in spaces and through processes that can be deeply alienating to most students. In fact, the experience of testing - which is often dehumanizing and certainly restrictive - reveals that tests are not primarily designed for the test-takers. Instead, the carefully designed experience of high stakes testing regimes often lies in the experience of people who use the test scores, like policy makers and admissions committees. The scores must be easily and quickly interpretable by these decision-makers and they must differentiate test-takers. The experience of the learners who interact with the test directly is, at best, a secondary consideration.

Whether it's a pleasant meal, an engaging city tour, or a standardized test, designing experiences means framing your question around the people who will interact with it.

There is an art to the design of an experience that goes beyond the elements that go into it. It requires understanding the audience, their needs and expectations and then seeking to go beyond that to create something that is compelling and powerful.

This was ASU. Thanks for watching.

#5. Designing Systems

Abstract (Generated by GPT4): Using the metaphor of a bicycle's interrelated components, the prose delves into systems thinking, a holistic approach that recognizes the interconnected nature of elements within complex structures. Systems, present everywhere, influence numerous facets of our daily lives, from the food we consume to the education we receive. Systems comprise interacting sub-parts whose interplay can lead to emergent properties and unexpected consequences. While they can be daunting in their complexity, comprehending these systems, much like understanding a bike's mechanism, can illuminate pathways for potential modifications and improvements. Such understanding aids in addressing challenges in sectors like education, where reform becomes feasible by acknowledging the intricate interplay of subsystems.

Think about riding a bike…

You put pressure on the pedals. The movement of your hips and knees rotates them. This activates the crank, which rotates a gear, drawing forward the bike chain, which itself is made of many individual links. The bike chain's motion rotates a gear on the bike wheel, causing the wheel to spin. Altogether, this enables you to go further and faster than the movement of your legs alone. A system of interrelated elements allows you to move beyond the capacity of any individual one.

Systems thinking is also crucial from the perspective of a designer when thinking about education - another system with many interrelated parts.

Let's take a closer look.

This is ASU.

Systems are organized and purposeful structures of interrelated and interdependent elements. They are often invisible to us, but systems influence almost every aspect of our lives.

A system can be seen as a goal-driven group of interacting, interrelated, and interdependent elements that make a complex, integrated, and coherently organized whole. Systems are made up of sub-systems that can interact with each other and through that affect the behavior of the whole. To understand and design systems you need to see the wholes, and the sub-parts or sub-systems and most importantly the complex interrelationships between these subsystems. The fact that these sub-systems are interrelated means that influencing one part of the system can ripple through the entire system and influence each other and the behavior of the system in complicated ways. The complexity of these interactions means that interventions can often have unanticipated consequences.

In that sense, thinking in systems means starting from the system as a whole and working back down to the parts, and the relationships between these parts. It involves understanding that the properties of the whole may be emergent from the interactions between the parts. This is particularly true of complex organizations and of society as a whole - such as issues related to public policy, education, healthcare and more.

Designers of systems understand that they need to consider the big picture, while balancing short- and long-term perspectives. They recognize the dynamic, complex, and interdependent nature of systems and acknowledge that we are all part of systems in which we function – and that we influence systems even while being influenced by them. Finally, they recognize that systems are characterized by complex feedback loops that constrain the identification of strict or linear cause-effect relationships and that data for manipulating systems is both measurable and non-measurable.

Let's take food and cuisine as an example. It is clear that there are many interlocking and interdependent systems, many of which are hidden from us. For instance, the global supply chain systems that allow us to purchase food from across the world from our local grocery store are probably not something we know a lot about, nor do we think much about the inhuman conditions in which the meat that we eat is produced and shipped to us. The food industry is also connected to other systems such as the global financial systems that allow for the transfer of funds and capital to keep this entire machinery in place. These global systems interact with local systems of restaurants and stores to get food on our tables. Changes in systems (such as the rise of food delivery apps) can fundamentally change how we purchase and consume food.

In the case of education, schools exist at the intersection of a range of systems that develop curricula, train and deploy educators, and bring children to school to educate and feed them. In fact it can be argued that schools within this system play a far greater role than just transfer of information. Schools are sites for communities to come together, for children to learn to socialize, to explore sports and the arts and much more.

If we focus on assessment of learning in particular - it becomes clear that testing and assessment systems extend far beyond specific classrooms and schools and need to include broader political and policy systems, textbook publishing systems, and companies that create standardized tests, technologies for scoring these tests, coaching systems that exist outside the formal school systems and much more. The in-class test that the student takes, filling out bubbles with a pencil, can be understood only by seeing it as lying at the intersection of a wide variety of socio-technical-economic systems. And seeking to change the system can lead to unanticipated (and maybe even harmful) side effects. For instance, one can agree that educators need to be accountable for the work they do and that good teachers need to be recognized and celebrated. However, if we measure student learning merely through standardized tests, teachers will spend more time teaching to the test than for genuine understanding. It is no surprise then that educational reform is difficult to achieve since there are a range of entrenched systems that help keep it the way it is.

Systems are complicated. They have both positive and negative feedback loops that can often lead to unanticipated outcomes.

But just as we can break down the system of a bike to understand how the parts contribute to the whole, we can identify the parts of systems in education, figure out how they fit together, and locate elements that could change, improve, or work together differently.

With that roadmap, we can start moving towards re-design and reform.

This was ASU. Thanks for watching.

#6. Designing Culture

Abstract (Generated by GPT4): Emoji, those popular icons in our digital communication, may seem universal at first glance, but they can have varied meanings across cultures and contexts. This variation underscores the importance of understanding culture, a pattern of shared beliefs, values, and assumptions that shapes behavior, perception, and identity. Defined by both formal and informal groups, cultures are learned through social interactions, are symbolic in nature, and often implicit, making them challenging to discern and communicate across. The implications of culture in design are paramount as artifacts and processes can have contrasting meanings in different cultures. One example is the "terrible two's" concept, which is seen differently across Western and non-Western cultures. In education, cultural influences determine the role of education, teaching methods, and evaluation strategies. For instance, children's stories in individualistic cultures like the USA emphasize individualism, while in collectivist cultures like Japan, they stress group harmony. Assessments, too, are steeped in cultural beliefs about meritocracy and objectivity. Teachers and school leaders play pivotal roles in influencing educational cultures through their policies and norms. Recognizing culture as a vital design space in education enables us to navigate its nuances and identify areas for potential transformation.

Grab your cell phone. Open up the messaging app. What tops your 'most recent' emoji list? If it's 'face with tears of joy,' you're in line with most of the world. This might make it seem like emoji are universal.

But take a simple 'slightly smiling face:' while in English-speaking countries it is often equivalent to a regular smiley face, in China it is more likely to indicate distrust or disbelief.

Even in the same country an emoji's meaning can change radically based on the context. Look at the 'eyes' emoji: in the US, it can mean suspicion, while in some countries, it just confirms that a message has been seen!

How you use emoji to communicate even simple messages depends on a shared context - a culture.

This is ASU.

In the Five Spaces of Design in Education, we define culture as a pattern of shared basic beliefs, values, and assumptions. It's a shared system of meanings that shapes our behavior, determines how we perceive the world, and provides cohesion and a sense of identity. This includes the customs, codes of manners, social institutions, norms, and practices of a particular group of people. These groups can be formal, legally defined structures such as nations and organizations or informal groups like chess clubs and families.

Cultures are not innate but learned and developed through our social environment and interactions, both consciously and unconsciously. They are inherently social and shared. Cultures also vary greatly, and their implicit nature can lead to lapses in communication. Most importantly, cultures are often difficult to see since they are mostly symbolic in nature. Critical aspects, such as values and beliefs, are implicit and thus hidden.

Designing culture may be the most difficult aspect of thinking about the role of design in society. But it may also be the most important, since it has implications for how the other spaces are understood and instantiated. Artifacts and processes that make sense in one cultural context can have very different meanings in others. It can be argued that culture actually "creates" reality. For instance, consider the idea of "terrible two's"—a developmental stage marked by inappropriate

behavior, out-of-control feelings, and tantrums. As it turns out, cross-cultural research shows that the "terrible two's" may not exist as a construct in non-Western cultures. It has been suggested that the idea is a product of our cultural expectation that toddlers can and need to follow adults' rules at an early stage of life. Toddlers in other cultures are seen as too young to misbehave intentionally or willfully harm a person or object. That leads to a more "indulgent" parenting style that in the long run encourages more cooperative behavior. So, in some sense the very disciplinary strategies that we use to enforce compliance in toddlers lead to the angry defiance, the opposite result.

Unsurprisingly, culture also plays a significant role in education—from defining the role that education plays to how it is conducted. For instance, cross-cultural research between individualistic cultures (such as in the USA) versus collectivist cultures (such as Japan) shows that the stories that children are given during early childhood differ greatly. Books given to American children highlight the importance of individualism, self-direction, and achievement. Equivalent books in Japan emphasize collectivism, conformity, and group harmony.

Building on the examples of assessment and evaluation - it is clear that the learning assessments students are given are part of a broader culture of how we think education should be evaluated and how we think learning should be measured. Tests, as part of a culture of meritocracy, play the role of "objective" measures of achievement or performance. Even if some researchers have challenged the objectivity of these measures, culturally, tests are often accepted as "objective." Thus, tests and the resulting scores influence broader cultural conversations about the value of schools and how they can be measured and improved. Nationwide policies, such as No Child Left Behind or Race to the Top enforce (through incentives and policy) certain measures, as do comparative international tests such as the PISA.

Culture also plays an important role in more local educational contexts - such as schools and classrooms. Though culture is often bottom up (meaning it is emergent from individual and systemic interactions) it can be strongly influenced by leadership. Thus, the teacher's norms for student engagement and participation can determine the culture of their classroom or learning environment. School leaders can similarly influence the culture of their organization through the thoughtful and intentional design of policies, systems and processes for interaction and engagement of various stakeholders (teachers, parents, community groups and more).

Cultures are dynamic and continually evolving. The emoji we may misunderstand today are a far cry from texting twenty years ago. By acknowledging culture as a space of design in education, we can consider how to work within these implicit codes and look for spaces for changes.

This was ASU. Thanks for watching.