Wendy Newstetter:

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Georgia Tech

Good afternoon. It's a pleasure to be part of this esteemed group presenting today. At Georgia Tech, I'm the director of educational research and innovation in the College of Engineering. My home department is biomedical engineering where I was instrumental in designing and developing a problem-based learning curriculum enhanced and facilitated by specially designed learning spaces. I am a cognitive and learning scientist by training and my areas of research include classroom learning interventions and learning in the wild, specifically learning in research labs in the frontiers of science.

As framing for today's webinar, I want to introduce three concepts that I believe are germane to our discussion of how students experience academic spaces, the possibilities and constraints of those spaces, and frameworks for future designs.

Affordance

......ambient information in the environment:

- properties
- surfaces
- resources perceived as useful to achieving a particular activity and to certain functions.

The first word I want to introduce is affordance, which is ambient information in the environment, the properties, its surfaces –

– okay, surfaces, all resources perceived as useful to achieving a particular activity and to certain functions. This notion of affordance comes from E.J. Gibson, the father of ecological psychology, and it aims to capture the perceptual interaction that occurs when we view the environment that we find ourselves in and the artifacts in that environment. From environmental cues, we perceive the potential for action, so in short, affordance refers to whatever it is about the environment that contributes to the kind of interaction that can occur there.

So a very simple example is a doorknob. When you walk up to it, you see the doorknob, and you know that the door affords opening, but let me give you some examples from a spatial perspective.

Okay. What we're looking at here is two spaces in a workshop in the Biomedical Engineering Department. On the left, we see a staging area for various kinds of equipment and tools that would be useful in that space. Now when we think of this from a perceptual standpoint, we can see that the cups afford holding afford insertion and then you'll see beyond the cups, screwdrivers and also drills that actually have very specific holes for holding them. So we could say that when you walk up to this particular space and you're trying to figure out what to do with the tools, you can see the various affordances in this space for inserting, for holding screwdrivers and also drills.

On the right, we have a workspace. The materiality of that particular space, the wood, the width of the table, affords the possibility for all kinds of working with other kinds of materials, cutting, and measuring, and drafting. So once again, we see here this instance of affordance.

Now imagine you walked up to this room and you found yourself in this room for the first time. What would you imagine that this particular *[break in audio]* – well, it can afford a number of things. First of all, it looks like you could have a very large dinner party here of one sort or another, so it affords communion, communing with other people, but it also affords movement because you've noticed that the chairs have rollers on them so you can move these particular chairs around.

You also notice that it appears that this large table is composed of a number of smaller tables, so potentially this large table affords a distribution into smaller gatherings of three to four people in smaller tables. Over on the walls to the right side, it's hard to see here, but those are cabinets and the cabinets afford the possibility for writing on the front of the cabinets as well as for storage on the inside of the cabinets.

The second term that I want to discuss is the term called attunement. Attunement is knowing the constraints of a situation type which entails objects with specified properties of relation. So the way to think about these differently is an affordance is something that an individual perceives from the nature of the actual physicality of that particular design, whereas attunement is really coming from the individual themselves where they know the constraints of the situation. So this second term, attunement, comes from the situated cognition community, a community committed to the notion that cognition is not just in the head but is "stretched across mind-body activity and setting."

Situation theory provides a way of thinking about knowing how to do things and the concept of constraint plays a very key role in this knowing. A constraint is a regularity involving situation types and a situation type is a class of situations with objects that have specified properties of relationships. That's in any situation, we experience an interaction between past experiences, understanding, and the possibilities and constraints of the current one. We are cultural beings and we are attuned to the affordances in a place of potential activity.


So what we have here is actually a pin board that you can walk up and you can actually pin things onto, and in this particular space, then you are tuned to the constraints of this space, which is actually pretty flexible here. You can pin things up, then you can actually paste things on top of other things, and we are also attuned to the possibilities for – again, can you move that forward – for walking up and actually physically interacting with these spaces. So again, the attunement here is coming from the individual in terms of the possibilities for that space in terms of the

constraints but also the affordances of how it could be used.

Finally, we arrive at the third term that I think is very important for this seminar. Sorry, I forgot about this one photograph. This is an instance that I think is really important to think about. Our students today are very attuned to the constraints and possibilities of these large lecture spaces, and in this particular case, these large lecture spaces offer the opportunity for activities that are in many cases unwanted on the part of the faculty member at the front of the room, and that is because the constraints of this particular environment make it possible for them to not pay attention and to actually hide what they're doing down in their laps.
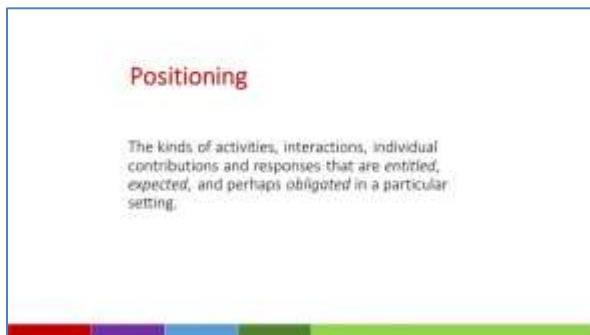
So my final term is positioning, the kinds of activities, interactions, individual contributions, and responses that are entitled, expected, and perhaps obligated in a particular setting. Positioning theory has its roots in linguistics and discoursal psychology. When we engage in anything outside our self, which can vary from communication events to spaces, we operate with the sense of what we are allowed to do, what we should do, and even what we must do. We are positioned, like it or not, to certain inherent rules associated with a particular position we are given. This happens in spaces as well. They position us for possibilities and impossibilities.

So let me give you some examples from our problem-driven learning spaces that we have to support our problem-driven learning curriculum. So this is a classroom. This is a classroom that a team of eight students would go to three hours a week and initially when students walk into this classroom for this first time, they feel very shall we say discombobulated because they can see

from this space that they're being positioned in very, very different ways from a traditional lecture hall. To begin with, all of the walls are writable to the ceiling. The chairs move around. The tables move around. The team can walk in and set up this classroom any way they want to.

And what the walls say is that you can own these walls. You can author these walls. You can write on these walls. You are allowed to write on these walls, and in fact, maybe you are expected to write on these walls, which is what happens in this particular classroom environment. Here we can see a class in action where the expectation to write on the walls is part of how these teams achieve a distributed cognitive system which is necessary for them to actually deal with and solve the complexity of the particular problems they're dealing with.

You can see from the next one that also the possibility of movement around the space. Sometimes I call these exercise rooms because I would encourage students to get up, to use the walls, to develop provisional understanding, to make arguments, to argue with each other, to have those kinds of interactions that are much more authentic to what happens in industry.

And then finally, the walls in the room say we are giving you the right to actually own these rooms, to use them as study caves such that you can actually physically author the room to your particular needs at a particular time. So with these three words, I'm asking Jorge to think about how these might be useful in you thinking about your spaces.