Victor Papanek Going Forward © 2010
Human-Centered Design Curriculum Action Research Pilot Study

Doris Wells-Papanek, IDSA, Tailored Learning Tools
Walter Hargrove, IDSA, Art Institute of Portland

Introduction
Throughout the 2009-2010 school year, Doris Wells-Papanek, M.Ed. and Walter Hargrove, M.I.D. collaborated on an action research pilot study focused on developing a human-centered design curriculum. The purpose of the study is to gain a better understanding of the relevance and influence of Victor Papanek's past work on human-centered design today. Primary references of Victor Papanek's research include an article written by Papanek in 1988 for MIT Press Journals, Design Issues entitled, “The Future Isn’t What It Used to Be” as well as an unpublished video recorded lecture Papanek delivered in 1992 at Apple Computer entitled, “Microbes in the Tower.” Going forward into the present, additional references include highlights of perceptions, insights and experiences from two human-centered design practitioner interviews along with human-centered teaching and learning practices grounded in current applied research on brain-based teaching and student-directed learning using a flexible instructional approach based on student learning needs. The report concludes with a description of a do-it-yourself (DIY) human-centered and student-directed learning process designed for a progression of assignments in an experimental History of Industrial Design class. Initial evidence of the learning experimentation indicates an 81 percent increase in levels of student engagement. The teaching and learning methodology has successfully been applied and tested in various types of classes and demonstrates the capacity necessary to expand into a complete design curriculum pedagogy.

SECTION 1 | Victor Papanek’s Research
Victor Papanek’s research highlights timely insights, understandings, concerns and relevant messages that in turn have had significant influence on practicing designers and students today. Papanek’s investigations were aimed at unearthing new conclusions and findings regarding human responses to an increasingly technological environment.

“The Future Isn’t What It Used To Be”
The seminal article, “The Future Isn’t What It Used To Be” (Victor Papanek, 1988), was written during a time in history when the notion of the human-condition, sustainability and design thinking were not necessarily in the forefront of designers’ minds. Victor Papanek, a designer and educator, was deeply concerned with potential negative impact created by the high-tech industry in each product and service offered. Personal computers, the Internet, computer-aided design tools, etc. were hot—which in turn, as the title of Papanek’s article suggests, rendered our future as a society to be substantially different than it could have been. Victor’s research homed in on innovative insights within developing domains beyond design: ergonomics, ecology, archeology, psychiatry, cultural history, anthropology, biology, ethnology and human geography. His studies produced an accumulative resource of common evidence to demonstrate an “enormous amount of data regarding how people relate to their environment esthetically and psycho physiologically.” His aim was to share “new conclusions of research findings about human responses to an increasingly technological environment.” His work has in part led us to today’s awareness and understandings into how the human brain/mind connects with our emotions, thinking functions and personal experiences from multiple perspectives. Papanek
intentionally framed his message to cause designers to pause and reflect, before continuing to embrace reason, logic and intellect as their primary basis of decision-making driven by rules, taxonomies, classifications and procedural design systems. Victor believed that using systematic, scientific, predictable and computer-compatible structures would encourage force-fitting humans into living and interacting in a technology-centered society, as opposed to a human-centered. Papanek’s greatest concern was the lack of regard for the human psyche at the expense of clarity “…such methods lead to reductionism and frequently results in sterility and the sort of high-tech functionalism.”

“Microbes in the Tower”
In June of 1992, Doris Wells-Papanek, while working at Apple Computer, invited Victor Papanek to share his notions on human-centered design and to deliver a talk, which he entitled “Microbes in the Tower.” A two-hour unpublished video recording of the presentation shared Victor’s numerous insights, understandings, concerns and targeted messages. Highlights relating to human-centered design included the DIY learning process, participatory design, ethics, aesthetics, beauty, excellence and integrity. He began by describing the structure of his talk, “[I will] hand you sort of a series of jigsaw puzzle pieces, turn the whole thing into a do it yourself kit for you, which you can stick together a number of ways, and decide what I talked about.” Victor consciously chose not to offer a scripted lecture, rather an opportunity for the audience to make sense given their interests, learning needs and context. Victor stressed the importance of designers taking responsibility to ensure that people and their needs have a voice in the development of technology and the decision-making process, “Design, architecture and technology must directly relate to people and people’s needs. The biggest challenge for designers, architects and engineers these days is to develop a language, a method of actually letting people participate in the design and architectural and technological processes. We have failed in that. This is not the fault of the people we are working for or with, but this is our fault and we have to think about that.”

SECTION 2 | Interviews with Human-Centered Design Practitioners
In the fall 2009 in New York City, Doris Wells-Papanek, M.Ed. interviewed Sachiko Uozumi and Tucker Viemeister as practicing human-centered designers. Their words represent formative thinking within human-centered design today.

Sachiko Uozumi – Please describe your philosophy on the subject of human-centered design. “Human-centered design resonates with humanity at its core of the philosophy. Design should contribute to society, social needs, and people, period. People often ask me [when] I give lectures... ‘What is human design?’ I show this one picture of a premature baby, being held in the palms of two hands, sleeping. When I show that picture, I say human design is about looking at the design through the filter of – life is precious. When you look at design through this filter, then you understand what designers and people who are involved with design, should do. Do we need another kettle? There has to be a really good reason to make another kettle. If you look at things through the filter, life is precious, then you think—what kind of kettle should I make? ...We are overloaded with stuff. It is a conflict for me as a product designer and consultant to come up with something [that] sells based on a consumer culture. It is a real struggle. That is what motivated me to think of this philosophy of human design.”

Tucker Viemeister – In what ways has your design work created change that matter?
“Basically they (John Lennon and Yoko Ono) didn’t believe I could do what I said I could do so I figured I’d better go get some credentials. So I went to Pratt, which is where my dad went to college. I wanted to design stuff that would change the world. I think the most recognizable thing that I have worked on is the OXO Good Grips kitchen tools with the guys at Smart Design. A designer never knows which thing is going to become the most popular or biggest thing. When we were designing this stuff it was almost like a hobby project. We really weren’t getting paid for it. It was more a test to see if something would work. The project evolved in a really great way, the client Sam Farber was really great to work with. He came to us with a very interesting project. He wanted us to design kitchen tools that were comfortable for people with arthritis to use... the ergonomics of gerontology involved and the whole idea of universal design [human-centered design] sort-of happened there. These prosthetic things that were going to be good for everybody just sort-of grew out of that whole experience. Then the OXO Company took off and now is a huge influence on the design of the rest of the world. People say ‘I want my car to work like a Good Grips.’”

SECTION 3 | How Humans (We) Learn
In response to Victor’s call for design methodology and language, this study cites current educational research on brain-based teaching and student-centered learning. Greenleaf and Wells-Papanek (2007) provide the following framework regarding how humans (we) process for understanding, retention, application and transfer.

DIY Human-Centered and Student-Directed Learning Process
Victor Papanek described the DIY Learning Process as being made up of a series of jigsaw puzzle pieces. As 21st century design educators, understanding how students process for cognition, retention, application and transfer reveals a vast number of possibilities to engage and increase learners’ long-term memory. The goal is to create learning environments and conditions where students are more likely to make greater attempts to process for understanding and application, which in turn increases long-term memory and sustained understanding. The process of creating multiple links and connections across the brain provides a rich opportunity for increased recall, transfer, insight and applications reaching beyond the subject matter into real-world problems.
As humans make sense of new information using reasoning, problem solving and communication, we develop requisite mental tools and comparative thinking skills to learn, act and explore new perceptions by recognizing patterns, seeing relationships and making connections. The human mind is constantly generating internal imagery. If we pay attention, we then notice that each mental image we create is accompanied by a feeling or emotion. Sometimes it is the sense of wonder or novelty that we feel. Other times, the cascade of feelings are strong and distinctly attached to the event, person or topic we are exploring in our mind. Consciously, deliberately tapping into this natural process in the brain serves to “piggy-back” on existing energies the mind is already using. When students are asked to produce evidence of their design or idea, in essence they are generating physical representation that is analogous to the brain’s internal processing. Opportunity to expand designers’ existing visualization skills to include a human-centered DIY learning process is compelling and worthy of further thought and consideration.

The following concept map represents a continuum of conscious choices students make when they learn. Conscious decisions are internally driven ranging from full engagement, willful attention, reluctant compliance or in some cases, a deliberate decision to disregard. The choice to allow a sensory input to enter working memory occurs rapidly (within 15 seconds or less). Current context, perspective on the topic, interest, perceived value and need, collectively lend a hand to determine which input is considered worthy of further thought and therefore processed. That said when humans perceive a threat, the mind and body is void of choice or thought. Instead, threat triggers a spontaneous stress response in the unconscious mind that automatically prepares our body to involuntary produce a fight, flight or freeze reaction.

<table>
<thead>
<tr>
<th>We Engage.</th>
<th>We Attend.</th>
<th>We Comply.</th>
<th>We Disregard.</th>
<th>Or Interrupted.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Motivated by Connection: Interest, Purpose, or Personal Meaning</strong></td>
<td><strong>Conscious Decision to: Attend to Worthy New Learning Experience</strong></td>
<td><strong>Conscious Decision to: Comply with External Influence</strong></td>
<td><strong>Conscious Decision to: Disregard External Influence</strong></td>
<td><strong>Automatic Response to Threat: Fight, Flight, or Freeze</strong></td>
</tr>
<tr>
<td>Student chooses to engage in topics that are connected to information that is meaningful to them, is perceived to be of purpose, associated with emotion, is of high interest, value, or worth. Learners actively seek to connect prior knowledge, relate personal experience, and recognize patterns.</td>
<td>Student chooses to attend to a new learning experience based on perceived purpose, relevance to personal context, interest, value, or worth. Novel idea, thought, or knowledge often is the draw into the experience.</td>
<td>Student chooses to comply regardless of limited perceived purpose of the information, need, interest, value, worth, or application.</td>
<td>Student chooses to disregard information due to no perceived purposeful need, interest, value, worth, or application.</td>
<td>Student’s conscious decision-making process has been interrupted by a threatening need or circumstance, instead a heightened emotional response requires maximal processing with a primary purpose of survival to fight, flight, or freeze.</td>
</tr>
</tbody>
</table>

Source: Adapted from “Engaging Today’s Students,” 2007.

Engaging Today’s Students
From the perspective of a design student today in the digital age, what are the essential components required to engage their heart and mind? What impact might apply relevant learning; student choice, student-to-student student interaction and assessment, feedback and evidence of success have on instructional decision-making and student learning outcomes?

Relevant Applied Learning
Recent brain research says that it is important for students to connect life experiences with new learning. In order for learners to engage, students must perceive content and concepts to be useful and worth investing the effort to make sense out of the lesson. If learners can relate to the content, then they are more likely to retain and recall the information. Willis (2006) describes the importance of relevance in how the brain forms long-term memory. “Any new information must enter the brain through the senses. ...The information travels through initial pathways to the limbic system. After first entering the hippocampus, messages are sent to the prefrontal lobe storage areas... to reactivate any potentially related memories stored there. ...previously stored, related memories can be activated and sent to appropriate areas where they are connected to the new information to build relational memories [requiring meaning in order to pass through]. The brain then makes the conscious connections between these stored memories and the new information, and forms a new integrated memory for storage in the frontal lobe.”

Student Choice
Once students are engaged, next is maintaining interest, motivation and disposition. Research says when students have a sense of control in their educational experiences, their ability to learn and retain the material increases. Reeves (2006) advocates for choice as an essential component to motivating students to their learning. “A recurring theme of the research on motivation is choice. This does not mean that students have the choice of whether to engage in the assigned work, but it does mean that effective teachers can provide choices of how students engage in the work.” Caine and Caine (2006) remind us that learners make thousands of decisions every moment. “Humans have a biological imperative to make decisions in the moment. All students make thousands of moment-to-moment decisions; ...Decisions making capabilities are built into the brain, and they are invoked when students ask genuine questions focused on what matters to them. Such decision-making can naturally lead to the development of new knowledge.”

Student-to-Student Interaction
Learning is a social process. Research indicates our personal identity is reflective, how we are perceived and treated by others largely determines how we see ourselves. Student-to-student interactions in pairs or small groups honor the importance of social relationships, the need to belong and the feeling of being connected. Active engagement through collaboration, articulation and inquiry prompts individuals to challenge their existing learning capacity and strive for acquiring new knowledge and skills. Given (2002) states interaction is inherent in social nature. “A school must be a community of learners... with rituals designed to embrace each student into group membership; it cannot be just a place where students are obligated to spend time. ...Our personal identity is derived from the way in which we are perceived and treated by other members of our groups. We learn, work, worship, and play in groups. As humans we have an inherent social nature.”

Assessment, Feedback, and Evidence of Success
It is vital to remain flexible with instructional approaches based on students’ learning needs. If we gather continuous informative feedback on students’ levels of engagement, motivation and disposition, then we can effectively track their progress to ensure successful learning outcomes. Today’s students want to be aware of what they must know and be able to do. If the goal is for our learners are to take responsibility for their learning and transfer understandings into new situations, then we must provide upfront clear descriptions of key knowledge and skills.
“Students provide each other or the teacher with formative feedback about their level of understanding “in progress,” so that adjustments can be made by the student or by the teacher to ensure improved outcomes. Not all assessment feedback must be reviewed by the teacher. In many circumstances, students can provide each other with useful input toward better outcomes.”

SECTION 4 | Teaching and Learning in Walter’s Experimental Classroom

The Victor Papanek Going Forward © (VPGF) Action Research Pilot Study is grounded in current brain-based learning research, student engagement constructs and the facilitation of highly engaged human-centered learning environments. A vital component of the VPGF study included students enrolled in Walter Hargrove’s experimental History of Industrial Design class at the Art Institute of Portland. The students’ learning experiences were designed to tap into the power of visualization so students could communicate their mental processing as individuals, in collaborative groups, as well as whole class. Students were asked to articulate evidence of what they were processing in their minds as well as research findings. Students were self-directed as they articulated new connections and understandings, as well as patterns and categories of Victor Papanek’s contributions to human-centered design movement today. Students were taught using a flexible human-centered instructional approach designed to be student-directed based on their learning needs.

The primary goals of the exercise were to cause students to: gain a sense of engagement in their learning process, take ownership of their learning outcomes, become motivated to learn from one another and provide constructive feedback to their professor. Over half of the history of industrial design course had been covered with conventional methods. Students read text for homework, attended class, took a short quiz on readings and then participated in a guided class discussion on the readings while linking historic topics to current events/topics where possible. A reading of Victor Papanek had been covered using the conventional method. By this point in the course, individual student engagement patterns had been established and identified. These understandings served as Walter’s baseline and evaluation reference point regarding how the students responded to the new instructional approach. The students were asked to explore and refine four overarching questions: Which three questions would you like to ask of Victor Papanek’s former design students? Which three questions would you like to ask Victor Papanek himself? How would you characterize the importance of Victor Papanek’s legacy? What influence will Victor Papanek’s work have on your future design work? Initial evidence of the learning experiment indicates an 81 percent gain in four essential components of student engagement. Subsequently, the learning process has been successfully applied and tested in various types of classes at the capacity necessary to expand into a complete design curriculum pedagogy.

Sense of Engagement in Learning

Out of 20 students in the class, typically a group of four to five students were fully engaged in their learning process on a regular basis. The majority of students were functioning at “attend” or “comply” levels of learning. (Please refer to Continuum of Learning chart). Of course, there were a small group of students (one to three), who were at “disregard” level the majority of the time. However, with the shift of teaching methods, Walter noticed several students shifted up on the continuum from previous levels of engagement. The disregard students were especially obvious and out of character during open discussion when they chose to volunteer different points of view on Victor Papanek. Students who were traditionally more compliant had a greater
level of participation in the small groups compared to the disregard students. Students became more interested in investigating what Victor Papanek’s classroom was like, or how life experiences influenced his design work. The students openly related their own personal experience as developing designers to Victor’s experiences and his points of view.

**Ownership of Learning Outcomes**

The human-centered process contributed to the students’ feeling of ownership of their learning outcomes. The materials were student selected, as opposed to traditional teacher-generated or text based. Groups, randomly grouped, worked in teams were prompted with the key open-ended questions. Each team was asked to “visualize on paper” an organizational structure that made collective sense as a group. Constraints were put in place to guide students while they selected topics, pulled together valuable information and organized information in a meaningful way. Students with groups would often work as individuals, present their ideas to the team, organize their collective thoughts according to the assignment and finally present the group’s work to the class to inform them of their findings. While engaging in class discussion, students often built upon group efforts to organize the top topics. Acting as the facilitator, Walter prompted his students to move onto the next step or responded as needed to student requests. Because the topics covered were the student’s choice, each learner experienced a sense of investment into the class and felt a sense of ownership of the topic and information.

**Motivation to Learn and Collaborate**

Traditionally, some students may have not felt they had a voice in a large class of 20. Working in independent small groups provided students with a scale where all could become motivated to learn and actively participate regardless of comfort level. The team approach enhanced the social relationships between classmates and developed a connection with individuals to a group. Students had opportunities to openly communicate, reflect on different points of view, acquire new knowledge and collaborate on a meaningful topic. The groups tended to be self-regulating which allowed students the opportunity to monitor and select which ideas went into the mix. The students developed a sense of pride in their learning process and interactions with classmates, which in turn raised the levels and quality of the work. When students had a question or needed clarification, all had the opportunity to voice their thoughts (micro-crowd sourcing). The students did most of the “heavy lifting” in answering the majority of questions that came up rather than the depending on Walter to tell them the answer, which reduced the time drain on the instructor and elevated the confidence of the group. When the group presented their work or findings to the rest of the class, it required the students to reframe the concept to explain or teach others about their findings. Often the most outspoken student started the presentation; however the shyer students had enough ownership, pride and understanding to have the confidence to voluntarily help present the information to the entire class where previously they may not take such a step.

The following “Student micro-crowd sourcing” graph on the left, illustrates collective student-generated “Knowledge of Victor Papanek.” To establish initial background knowledge prior to instruction, students were given homework to read two “Articles on/by Victor Papanek” and find “Artifacts relating to Victor Papanek” (photo, sketch, etc). The artifacts were brought to class for all students to benefit from during open class discussions and make further associations. The “Student & professional crowd sourcing” graphic on right, represents students reaching out via the Internet to practitioners to expand student-generated “Knowledge of Victor
A dedicated “Victor Papanek Going Forward” Facebook Group was created and dialogue initiated between Walter’s students, former students of Victor Papanek, and other professionals. Electronic interactions and interconnectivity broadened boundaries of the classroom and extended “Information known by students” to include “Information known by professionals.”

**Constructive Feedback**
Throughout the class sessions on Victor Papanek, there were multiple opportunities to provide constructive feedback. There were constant open dialogue between individuals and groups during student-to-student interactions. The video recordings were captured of students who volunteered as individuals or as a group to share their voice and experiences. At the end of the learning process, students completed feedback form. Throughout the learning process, Walter assessed student feedback regarding the class and assignment structure, when possible, immediate adjustments were made to enhance the effectiveness of teaching and learning. The students acknowledged and appreciated these modifications and continued providing feedback as needed.

**SECTION 5 | Lessons Learned, Findings and Next Steps**
The facilitator/instructor’s role in the DIY Learning Process was focused on setting up the learning environment, content and process for success. Students were responsible for their own learning and outcomes, guided through steps of exploration and discovery, not directed. Each student’s level of engagement was largely determined by their natural curiosity and the groups’ drive to explore, find connections and recognize patterns. The facilitator addressed process-related questions such as: “What to do with the duplicate questions?” or “What value does the colored post-it-notes during the voting?” Improvements include: continued experience using the tools and learning process by teacher and students, extended time for students to find artifacts etc, and closer monitoring of student follow through on initial reading assignment. Students who did not read the articles were unable to participate in the development of an initial rich source of student-generated questions. However, they were able to contribute in organizing the questions and identifying patterns. In Walter’s opinion, the two days were well worth the time as it covered multiple essential topics, had a direct affect on students’ learning experiences in real time and their future. Having access to professionals in the field to serve as a broader crowd source in the form of a blog or interactive Google Site, would have created additional pathways to connecting content on a deeper and more meaningful level of information.

At the conclusion of the experimental human-centered design class exercises, results from a student feedback survey revealed initial findings of an overall 81 percent gain in essential components of engagement compared to previous History of Industrial Design assignments. Walter has successfully applied and transferred the DIY Human-Centered Learning Process into a corporate sponsored course that required students to quickly identify, organize, analyze and present information in a very short timeframe to address a specific client-driven need. Students worked in groups, presented highlights to the entire class, to then be merged and presented to the client. Students provided overwhelmingly positive verbal feedback expressing that they wished every research assignment were taught in such a format. Due to both of these classroom successes, Walter and Doris are confident that the human-centered teaching and learning methodology demonstrates the capacity necessary to expand into a complete design curriculum pedagogy.

During the class, some number of students joined the “Victor Papanek Going Forward” Facebook Group. The page currently has over 60 members and contains a framework for further human-centered design discussion. Please search for “Victor Papanek Going Forward” on Facebook, and then request to become a member. Access is by invitation only and is a closed forum that requires an account. In addition, a Google Sites is currently under construction where this report will continue to evolve. Please visit the site. Walter and Doris encourage all to absorb, reflect and share with other educators, students, practitioners and former Papanek students to offer feedback to help us take this research to the next level. Direct link: https://sites.google.com/site/humancenteredactionresearch/

References
Given, B. K. (2002). Teaching to the brain’s natural learning systems. Association for Supervision and Curriculum Development.


