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Abstract

The objective of this collaborative research project is to develop and maintain an interactive web portal, TheDesignExchange, to facilitate the capture, analysis and widespread use of methods for conducting design research. The study of design has been shown to have high impact on the quality and success of engineered products. However, design research does not fall into a single disciplinary body of knowledge, and TheDesignExchange fills a need to organize disparate design research methods, develop a community of design educators and practitioners to evaluate those methods, and educate the next generation of design innovators. TheDesignExchange provides a structure to collect the many design methods in use today, their origins, and use. It also will match design methods to design problems and help designers make informed decisions about when to apply these methods. The portal supports the entire design process, providing educators and practitioners alike with a versatile library of proven tools.

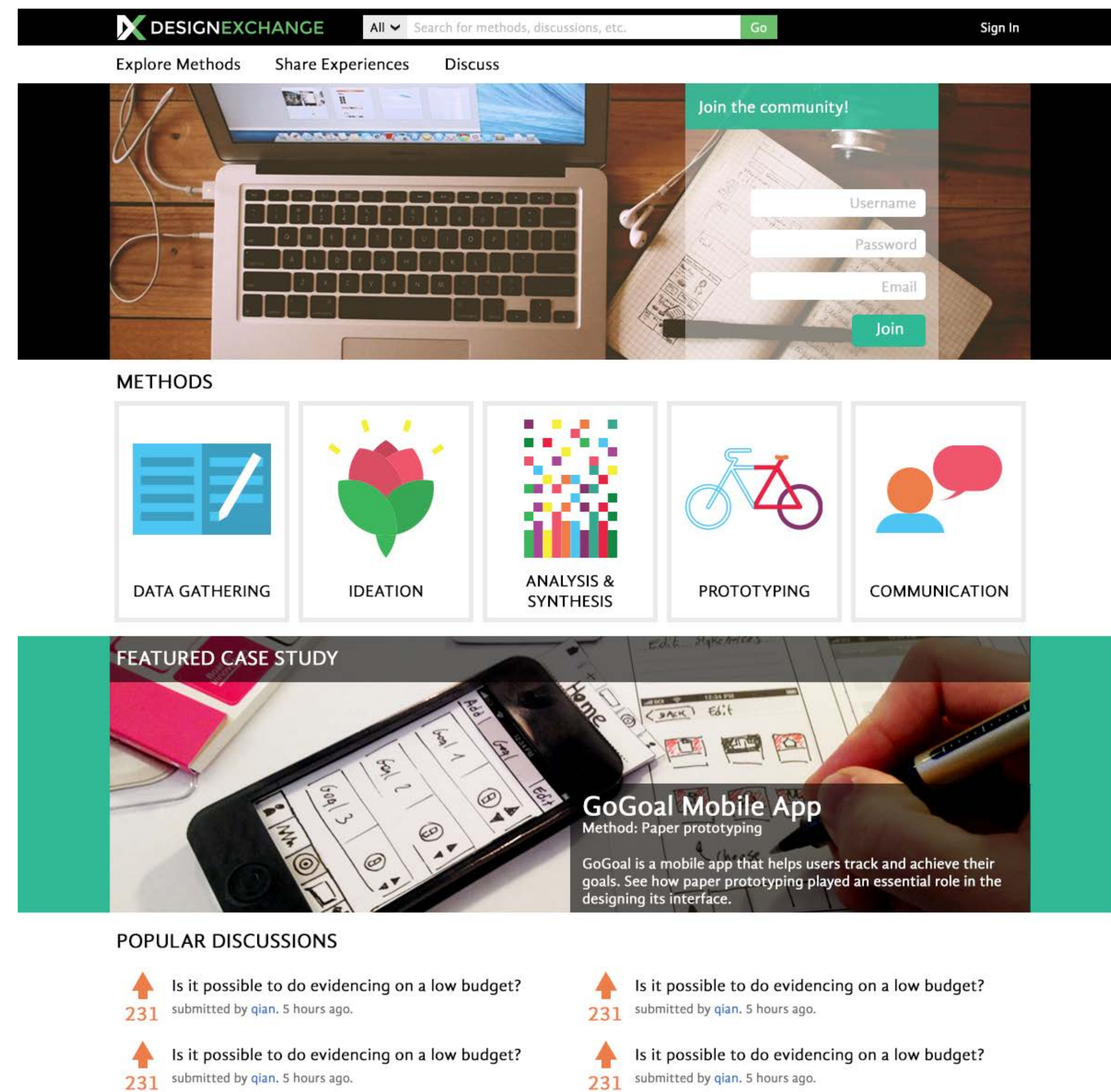


Fig. 1 - theDesignExchange landing page

TheDesignExchange aims to be the largest public library of design research methods. The methods cover a wide range of communities and applications. Faculty, undergraduates and graduate students of diverse backgrounds and heritage participate in this research, as well as practitioners and leaders from industry, non-profit and government design groups. The researchers leverage knowledge gained from TheDesignExchange to identify and teach the underlying skills associated with the various methods, providing recent graduates a more fluid understanding of how, why, and when to apply specific design research methods.

“Build” and “Ideate” Workshops

In order to get input from the design thinking community, theDesignExchange hosted a series of workshops with 20-35 participants in the San Francisco Bay Area. Participants were recruited via a mailing list of professional design and user researchers in the area.



Fig. 2 - Participants during the Build workshop

During the Ideation Workshop, participants were introduced to theDesignExchange and then tasked to spend 30 minutes in groups designing the user experience for the search function of the site. They were provided with a list of 40 ideation methods that can be found on theDesignExchange. The workshop highlighted a few of the ways practitioners approach idea generation. Some groups took time to choose a formal method while others chose based on what “sounds fun” without an apparent plan. Even expert designers commented that the exercise exposed them to new methods. Based on feedback, we revised the initial categorization scheme for Ideate methods.

In the Build workshop, each group was given a set of roughly 35 prototyping method cards from theDesignExchange, each with a method title and description (Fig. 3). They were asked to sort the method cards into categories of their choosing (Fig 4). The activity led to a wide range of categorizations and highlighted the different ways that practitioners thinking about building methods across disciplines.

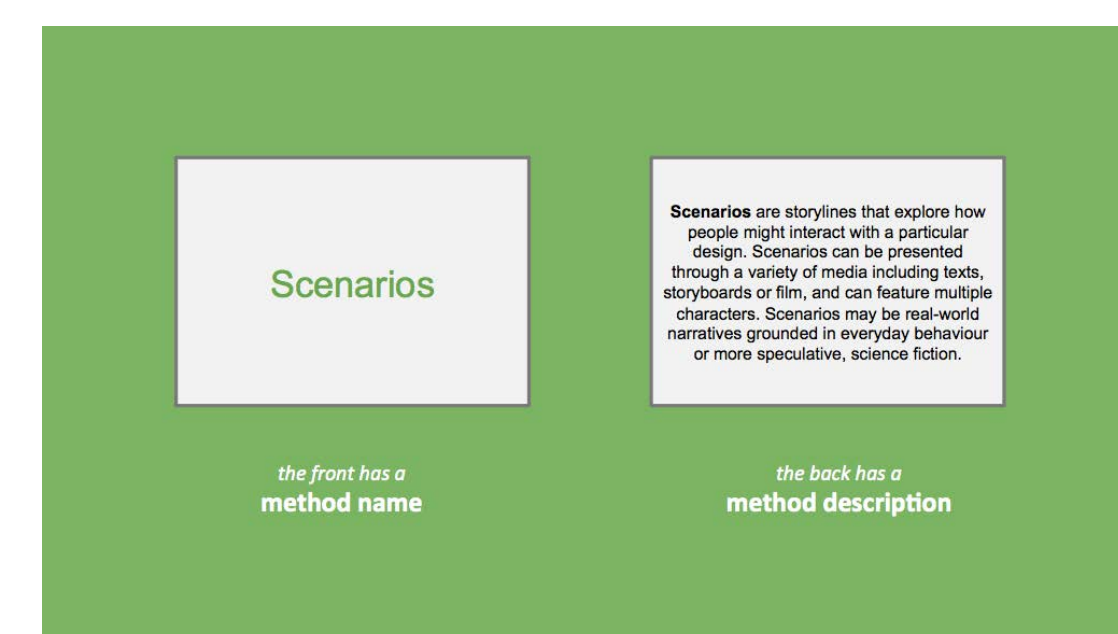


Fig. 3 - Sample method cards



Fig. 4 - Sorted method cards from Build Workshop

TheDesignExchange Supplementing the Classroom

theDesignExchange benefits were tested in an educational context in an advanced multidisciplinary product design course taught at UC Berkeley. Several ideation methods featured on theDesignExchange were presented to students during class. As part of the course, students were asked to complete a concept generation exercise and encouraged to browse the “ideate” section of theDesignExchange to find methods to use. The goal was to see what methods were popular and whether there were methods not featured on theDesignExchange. Of the 36 methods listed, eleven were featured on theDesignExchange and nine were related but used alternate names.

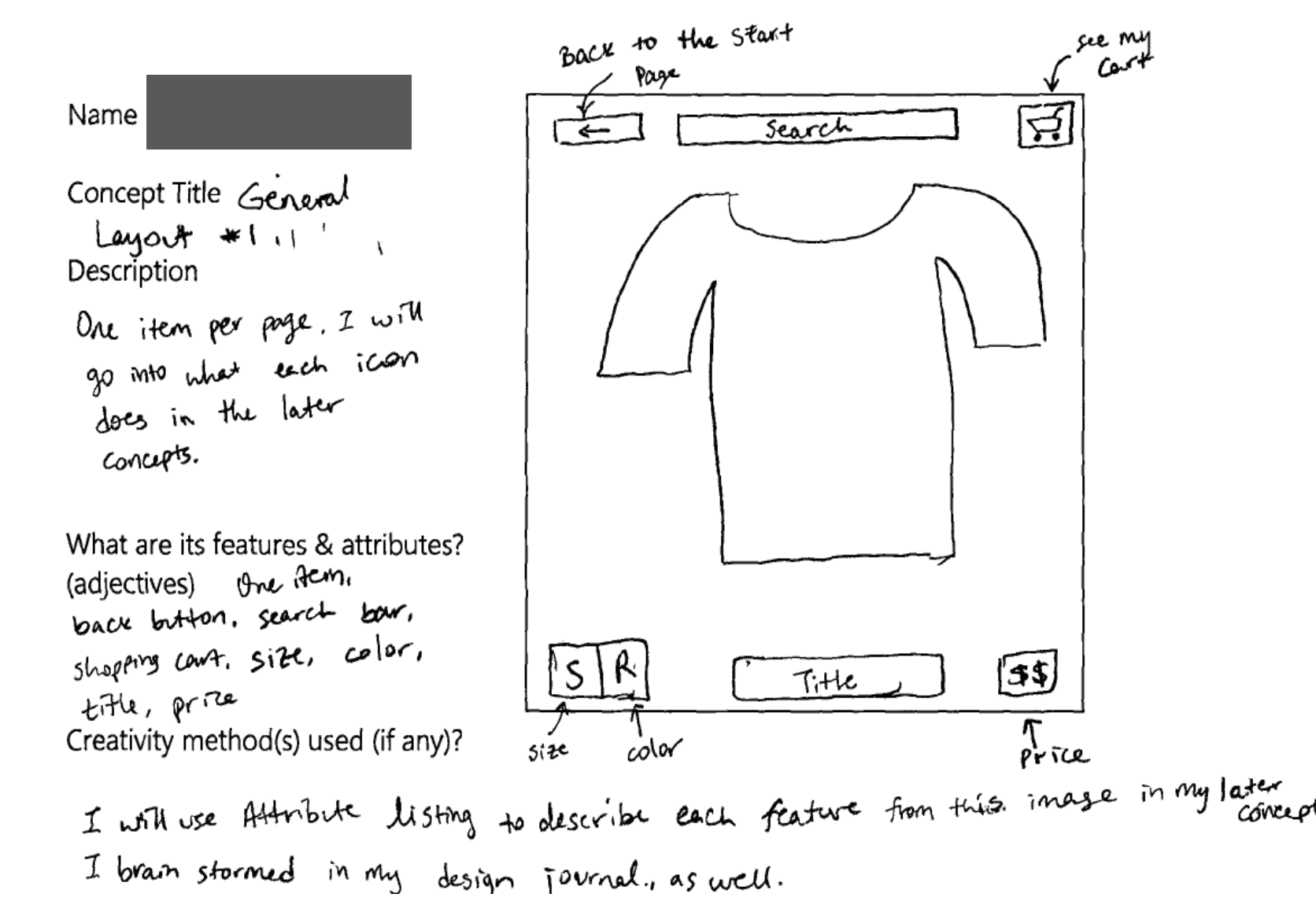


Fig. 5 - Sample concept generation half-sheet

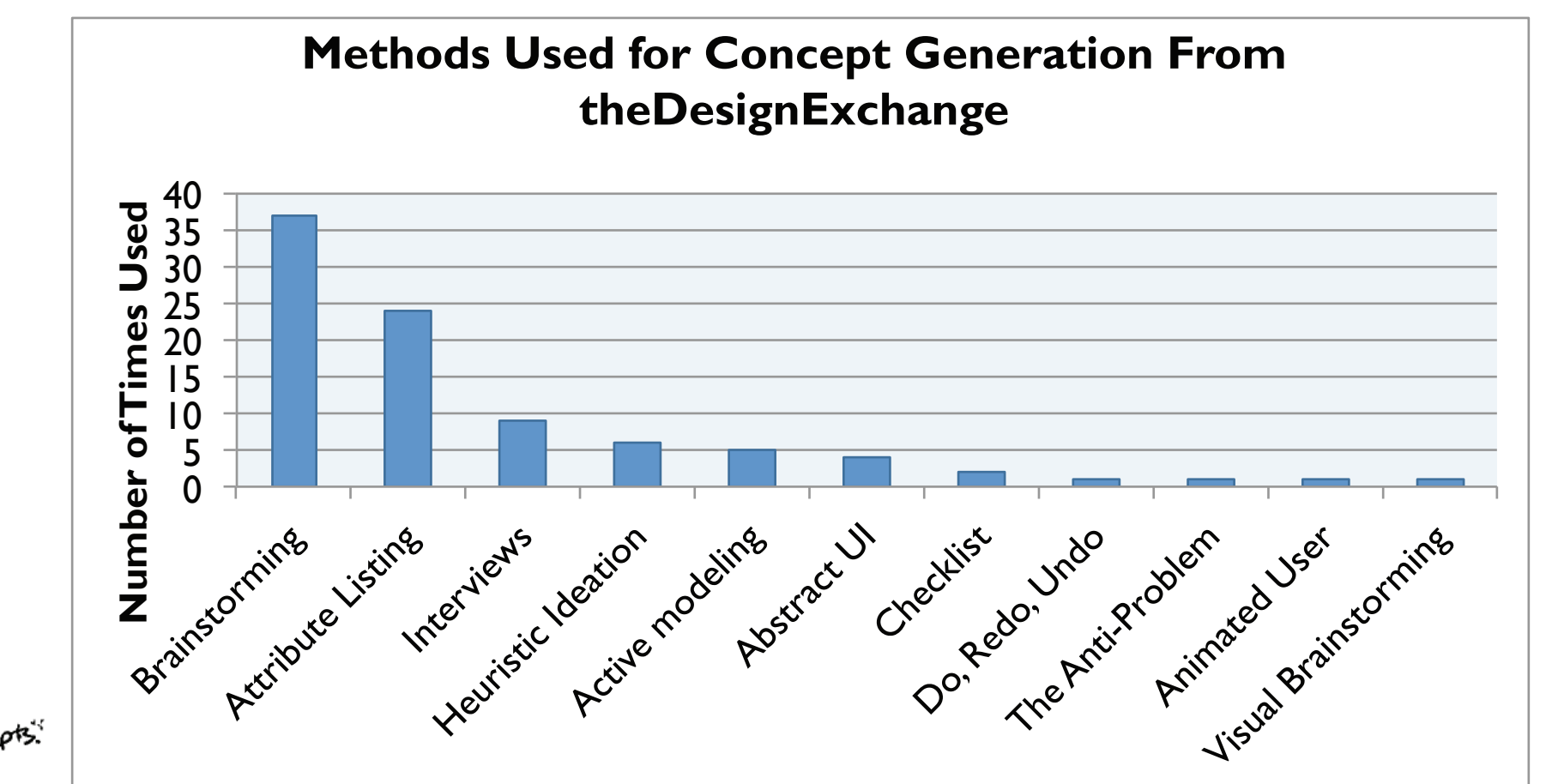


Fig. 6 - Methods used from theDesignExchange

In addition, students were given the option of completing an Ideation and Early Prototyping Module to help them become familiar with theDesignExchange and with new methods. The students were asked to learn about six methods featured on theDesignExchange, selected because they outlined a spectrum of strategies. Students were also asked to explore methods on theDesignExchange and explain which one they found most interesting and why. Finally, they were asked to respond to five open ended questions that involved applying the methods to simple design examples. A rubric was developed to assess the quality of the response and is satisfactory, students were eligible to receive a badge. Pilot testing suggested the module would take an hour and students were entered in a drawing for \$100 as incentive.

Five students completed the module and when assessed against the rubric, all earned a badge. They reported encountering an average of seven new ideation methods on theDesignExchange that they had not known previously. All the submissions referenced the value of ideation methods beyond the individual designer, such as among the student’s project team. Similarly, students discussed the early prototyping methods as a way to guide the team, not just individuals, to a better outcome ([1]).

Elevator Pitch Video

<https://www.thedesignexchange.org/>

Reference: [1] Agogino, A. M., Beckman, S. L., Castaños, C., Kramer, J., Roschuni, C., and Yang, M. C., “Design Practitioners’ Perspectives on Methods for Ideation and Prototyping,” Mudd Design Workshop IX, Claremont, CA, 2015.