Bonded Design in the University: Faculty and Information Technology Professionals Bonding Through Participatory Design

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ABSTRACT

The participatory design approach, Bonded Design (BD), originally developed for use with intergenerational teams provides the framework for the Faculty IT Liaison Program, a project initiated in a large research university to encourage meaningful interaction between faculty and IT professional staff. BD was chosen for its adaptable methodology and its purpose in bringing together two disparate groups in the shared experience of a design team. Study findings indicate that the Bonded Design approach promotes deeper understandings and the generation of design ideas and innovations that might not be considered in a homogeneous peer environment.

TOPICS

information needs; information seeking; information use; user interfaces; information system design

INTRODUCTION

With the growing recognition of the User Experience (UX) movement (e.g., Bell, 2018; Lynch & Horton, 2016; Saanwald, 2017; Schmidt & Etches, 2014) and its emphasis on going beyond traditional user-centered design to actively engage users in all aspects of the design process, participatory design methods have experienced a resurgence. This paper presents a case study demonstrating how participatory design methods, specifically those of Bonded Design (BD), originally developed for use with intergenerational teams can be adapted for use in different contexts. The purpose of the BD methodology is to bring designers and users together in the shared experience of the design team in a mutual process of learning with the goal of designing more user-friendly technologies. As this case will show, such collaboration can also foster a deeper understanding and respect for each other's expertise, resulting in lasting, meaningful relationships.

The experience promoted a new way of learning about "the other", thus directly relating to the conference theme, *Exploring Learning in a Global Information Context.*

SELECTED REVIEW OF THE LITERATURE – PARTICIPATORY DESIGN

Since the 1990s when participatory design (PD) methods gained prominence as a way to design user-centered technologies (Carmel, Whitaker & George, 1993; Muller & Kuhn, 1993; Schuler & Namioka, 1993; Soloway, Guzdial & Hay, 1994), PD has evolved to develop an assemblage of diverse approaches to encourage and support the direct involvement of users and designers/experts in the co-design, within different contexts, of a variety of products and services ranging from technology tools to social institutions (Robertson & Simonsen, 2012; Young, 2017). Participatory design approaches promote a design process that is not just human-centered, but rather, human-involved in which, "users are not simply viewed as objects of study but as active agents within the design process itself…so those who will be affected by change have an influence on the kind of changes that will be made (Marti & Bannon, 2009, p. 8). Recent examples include the design of more user-friendly systems with and for children (Yip, et al., 2016), in planning library services and spaces (Jacobsen & Miller, 2016; McLaughlin, 2015), in higher education (Nesset & Bible, 2018a, 2018b), and in computer learning (Guzdial, 2016).

The strength of participatory design lies in the fact that it is conducted in an operational environment where the solving of real-world problems requires innovative solutions to produce products and services that meet users' needs (Bowler & Large, 2009). Thus, within the shared experience of the design team, participatory design's inclusive methods such as mutual learning and learning-by-doing enable disparate user groups to meaningfully interact and learn from each other to achieve what could not be done alone or within their own peer groups (Large & Nesset, 2009; Large, et al., 2006; Nesset & Bible, 2018a, 2018b).

Bonded Design and The Faculty IT Liaison Program.

The Faculty IT Liaison (FITL) Program was created to bridge a gap that was revealed by a university-wide survey of faculty IT holdings and use: As it is faculty who must use various IT for their research, teaching, and everyday use, and while they may have specific ideas on how the technologies *need* to work to be effective tools, they may not have much knowledge about how they were *designed* to work. Conversely, IT professionals are experts in *how* the technologies are designed to work, but because their interactions with faculty are typically limited to trouble-shooting problems, may not be aware of how faculty are actually using them. Thus, it became apparent that there needed to be more in-depth communication and interaction between these two disparate groups. It was decided that a participatory design methodology would be the most appropriate means of promoting such communication and interaction, and more specifically, Bonded Design because of its efficacy in uniting disparate groups (children and researchers) in the shared experience of the design team.

METHODOLOGY

The Bonded Design methodology (Figure 1) is predicated on the fact that there is a significant gap in knowledge between the designers and users of technology that must be bridged. For example, while the designers understand how a given technology is designed to work, they need to understand how the users actually use it. Conversely, the users may want to use the technology in a certain way but perhaps do not have a sufficient grasp of its capabilities and limitations. So, as was discovered in the original studies (Large, et al. 2006, Large & Nesset, 2009), and confirmed in the university study, the design team experience is often one of learning about trade-offs and compromises.
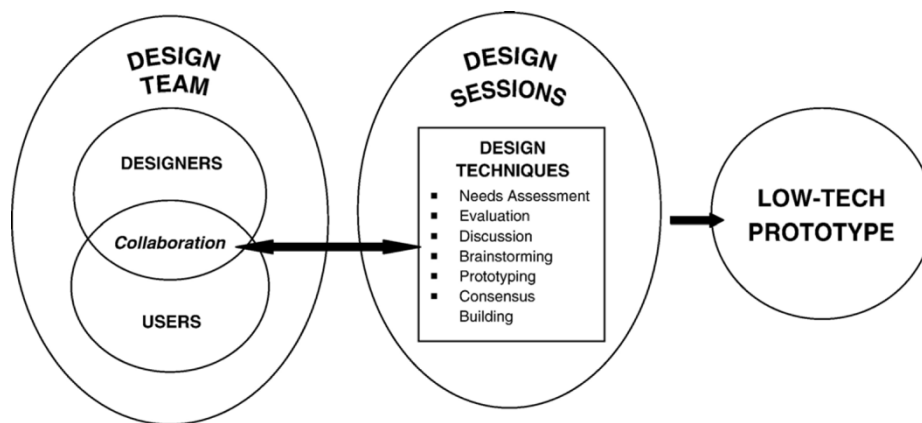
Figure 1. Bonded Design Methodology (Large, et al, 2006)

Needs Assessment.

The actual design sessions are informed by a needs assessment of the greater population. In the original studies, as one of the design session activities the young students polled their classmates for web portal design and functionality preferences. In the university setting, however, the needs assessment took the form of a university-wide IT survey administered to all faculty.

Design Sessions – Intergenerational Teams.

The Bonded Design methodology, as created based on the intergenerational team studies, consists of six design techniques done in the following order and repeated as necessary in an iterative process: 1) needs assessment; 2) evaluation of similar technologies; 3) discussion and explanation of those technologies; 4) brainstorming different ideas for the development of a low-tech prototype; 5) individual prototyping by drawing, working with modelling clay, or other

physical media; and 6) building consensus by discussing elements from the prototyping exercise to be included in the team final low-tech prototype design.

Design Sessions – Faculty IT Liaison Program.

While the same methods were used for the FITL Program, modifications had to be made. For example, in the intergenerational studies, the needs assessment was more of an add-on to the design sessions to foster team spirit. In the university, however, the needs assessment served a much more important purpose, not only as the impetus for the entire FITL Program but also in informing content. Furthermore, since the faculty members were already familiar with the technologies (email, storage, course management system) the second and third techniques of discussion and evaluation of the technologies were combined and shortened. For similar reasons, individual prototyping, which took the form of drawing, was moved before brainstorming so that team members could draw their own mental model of the *ideal* form of the technology under investigation. Individual presentation of each drawing was followed by team brainstorming of the ideas generated from the drawings. As part of the team evaluation, each team member wrote their three favorite design elements on sticky notes which they then placed under broad category headings. The final technique, consensus-building, happened during the team evaluation of the sticky notes when team members developed a final design, in this case, a list of suggested modifications to the technologies to make them more user-friendly. The adapted Bonded Design model is shown in Figure 2.
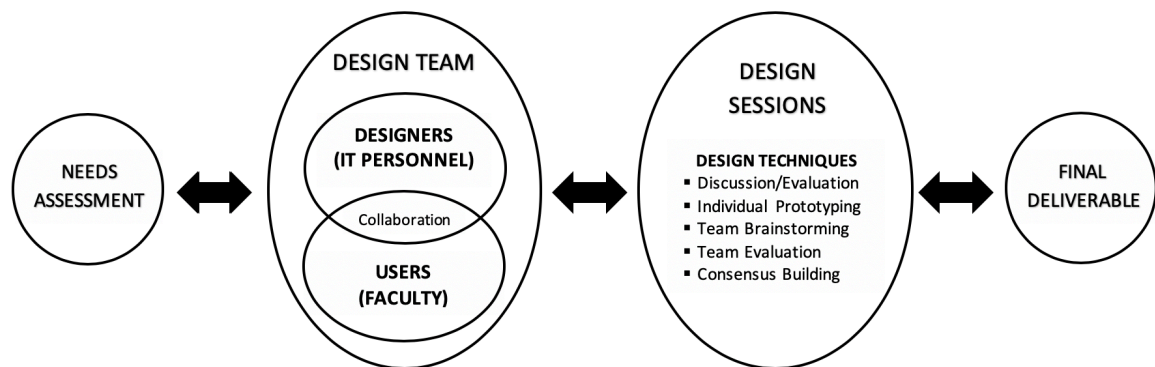

Figure 2: Bonded Design Methodology – Faculty IT Liaison Program ©

CONCLUSIONS

Prelimary results from the first and second iterations of the FITL program indicate that the Bonded Design methodology is a robust, user-centered and user-involved, results-oriented, cost effective, easily implemented, and transferable model applicable to different contexts to accomplish different deliverables. Moreover, a deliverable need not be a tangible item. For example, even if the FITL design teams had not produced anything tangible, just the fact that faculty and IT staff were communicating and interacting in meaningful ways made the Program a success.

REFERENCES

Bell, S. J. (2018). Design thinking + user experience = Better-designed libraries: Librarians are not designers, but they can use certain design thinking principles to help facilitate positive experiences for their users. *Information Outlook, 22*(4), 4-6.

Bowler, L. & Large. A (2009). Design-based Research for LIS. *Library and Information Science Research*. 30: 39-46.

Carmel, E., Whitaker, R. & George, J,. (1993). PD and joint application design: A transatlantic comparison. *Communications of the ACM 36*(4):40–48

Guzdial, M. (2016). *Learner-centered design of computing education: research on computing for everyone.* San Rafael, CA: Morgan & Claypool Publishers.

Jacobsen, L. & Miller, K. C. (2016). A new way to improve library services: Conducting a participatory design study of faculty research practices. *Library Leadership & Management, 30*(3), 1-7.

Large, A. & Nesset, V. (2009). Bonded Design. In M. Khosrow (Ed.), *Encyclopedia of Information Science and Technology, 2nd Edition.* Hershey, PA: Information Science Reference, 383-388.

Large, A., Nesset, V., Beheshti, J., & Bowler, L. (2006). "Bonded Design": A novel approach to intergenerational information technology design. *Library and Information Science Research*, *28*(1), 64-82.

Lynch, P. J. & Horton, S. (2016). *Web style guide: Foundations of user experience design, 4th Edition.* London, UK: Yale University Press

Marti, P. & Bannon, L. J. (2009). Exploring user-centered design in practice: Some caveats. *Knowledge, Technology and Policy, 22,* 7-15. DOI: 10.1007/s12130-009-9062-3.

McLaughlin, J. E. (2015). Focus on user experience: Moving from a library-centric point of view. *Internet Reference Services Quarterly, 20*(1/2), 33-60.

Muller, M. & Kuhn, S. (1993). PD. *Communications of the ACM 36*(6), 24–28.

Nesset, V. & Bible, J. B. (2018a). Building understanding between users and designers through participatory design: The Bonded Design approach. In: Chowdhury G., McLeod J., Gillet V. & Willett P. (Eds.). *Transforming Digital Worlds. iConference 2018.* March 25-28, Sheffield, UK. *Lecture Notes in Computer Science.* Springer Publishing. *10766,* 515-520. DOI: https://doi-org.gate.lib.buffalo.edu/10.1007/978-3-319-78105-1_56.

Nesset, V. & Bible, J. B. (2018b). The Faculty IT Liaison Program: Using participatory design to build possibilities with technology. In: *A Profession and Discipline of Action: Proceedings of the International Conference on Knowledge Management (ICKM 2019),* Vancouver, BC, Canada, 9-10 November 2019.

Robertson, T., & Simonsen, J. (2012). Challenges and opportunities in contemporary participatory design. *Design Issues 28*(3), 3-9.

Saanwald, S. (2017). Practical user experience design for school libraries. *Knowledge Quest, 45*(5), 38-47.

Schmidt, A., & Etches, A. (2014). *Useful, usable, desirable: Applying user experience design to your library*. Chicago: ALA Editions, an imprint of the American Library Association.

Soloway, E., Guzdial, M., & Hay, K. (1994). Learner-centered design: The challenge for HCI in the 21st century. *Interactions, 1*(2), 36–48.

Schuler, D. & Namioka, A. (1993). *Participatory design: Principles and practices*. Hillsdale, NJ: L. Erlbaum Associates.

Yip, J. C., Clegg, T., Ahn, J., Uchidiuno, J. O., Bonsignore, E., Beck, A., ... & Mills, K. (2016, May). The Evolution of Engagements and Social Bonds During Child-Parent Co-design. In *Proceedings of the 2016 CHI Conference on Human Factors in Computing Systems* (pp. 3607-3619). ACM.

Young, S. W. H. (2017). Participatory design in action. *Library Journal, 142*(14), 26.