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STAR Framework Revisited: Curriculum for User-Centered Design Summer Schools

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ABSTRACT

Annually, an interdisciplinary community of students, researchers and practitioners gather together to participate in intensive summer school sessions focused on the teaching and practice of User-Centered Design (UCD). By listening to lectures, working in ateliers, living with target users and facing real-world design problems, participants experientially learn a mixture of UCD processes, ethnographic methods, prototyping techniques and teamwork skills, despite the program's short duration.

Organizing and implementing such programs in ways that optimize the learning process is challenging. As former participants, atelier leaders and instructors for UCD summer schools, the authors made several poignant observations about the need for a formal framework for this learning context. By examining existing educational literature, performing ethnographic research and conducting interviews with past students, atelier leaders, lecturers and organizers, the authors developed the STAR Framework for UCD summer schools. [see Schadewitz, Adler, Moncur, Roberts, 2006]

While this framework offers organizers clear direction on structuring summer school environments, it provides little guidance on the curriculum itself. Special attention should be paid to the content, order and delivery of the curriculum, particularly given the limited time frame of the schools. Building upon the established STAR framework, this paper proposes a curricular construct that will maximize knowledge transfer within the summer school context.

INTRODUCTION

For millennia, there has been much debate about education and its role in society and professional practice. From the educational philosophies of Aristotle, Plato and Socrates to more contemporary writings by Dewey (1897), Bobbit (1918), and Vygotsky (1978), there are many perspectives on learning processes and the role that teachers, students and formal curricula play in education. While these differing views have lead to a variety of teaching practices, a few things remain constant within university-level education. A field of study is deconstructed into a series of 12- to 18-week courses, each focused on a particular aspect of a specified discipline. Professors utilize a blend of didactic, innovative and contextual teaching methods to impart a minimum set of

skills on the students who are evaluated and graded on their ability to grasp and repeat the selected concepts. When a certain level of mastery is achieved, students move on to the next, presumably deeper, phase of learning.

While, for centuries, this model has proven to be successful, the overall educational process is bound by university policies, course schedules, performance-evaluation methods, location, student population and funding. In response to the inherent boundaries of the traditional collegiate system, as well as in support of continued learning after graduation, short-duration summer workshops have emerged in recent decades as a new and complementary educational model. (IIDj, 2003; Ball, 2005)

Within the User-Centered Design field, this model is particularly relevant. Each year, an interdisciplinary community of Masters and PhD students, researchers and practitioners from computer engineering, social sciences, Human Computer Interaction, visual communication and other related disciplines, gather together to participate in intensive workshops which last 2-to-5 weeks. Hosted by organizations like the Convivio Network and the Institute for Information Design, these programs are devoted to furthering the User-Centered Design discipline. Although the theme, the physical locale and the participants vary, these summer schools remain focused on the teaching and practice of UCD in the context of the local community where they are conducted.

The underlying goal is to introduce a diverse set of students to the foundational tenets of UCD such as ethnography, prototyping techniques, design methods and evaluative research, while encouraging multicultural and multidisciplinary collaboration, hands-on experience, risk-taking and innovation. The summer academies blend didactic lectures from experts in the field with more experiential atelier work focused on designing concepts for the local community. Intensive design summer academies like these are essential, as they offer an environment for contextual learning and experimentation that is difficult to create in other educational settings (Schadewitz, et al, 2006).

After participating in several design summer schools (Convivio 2004 & 2005, IIDj 2003), we gained an understanding of the work required to plan and execute an effective summer school. Through further observation, interviews and an interaction design pattern workshop held in situ, we explored many of our hypotheses about the

organization of summer schools. Leveraging these findings, the "Star Framework" was developed as a mechanism for intentionally and efficiently structuring future summer sessions (Schadewitz, et al, 2006).

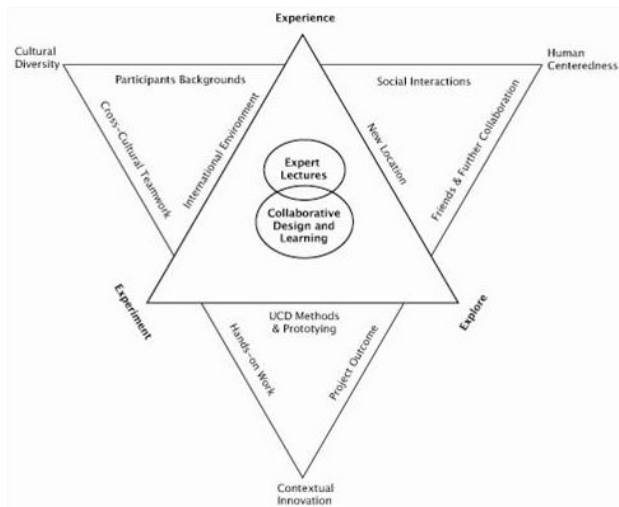


Fig. 1. The main elements of the STAR Framework

Represented by a six-point star in Figure 1, the framework, consists of three foundational principles and three essential activities which expand the traditional university curriculum. The core principles are cultural diversity, human centeredness and contextual design and innovation. **Cultural Diversity** ensures a mix of cultural perspective, socioeconomic status, educational discipline and professional expertise. **Human Centeredness** represents the design methodology but also the social maxims of the summer school. **Contextual Design and Innovation** relate the design and learning processes to a concrete physical, social and cultural environment in which the design projects are grounded.

These principles are linked by three additional activities that ensure participants remain engaged:

- **Experiencing** cultural diversity and human-centeredness within social and work-related interactions;
- **Experimenting** with new approaches and methods through hands-on practice within a novel team composition;
- **Exploring** innovative design ideas through human-centered inquiries and prototypes.

As Figure 1 shows, four sub-triangles also emerge which represent the four parameters that must be accounted for throughout the program development and implementation cycle: being part of an **international community**, enjoying multifaceted **interactivity**, learning UCD methods, and practicing UCD through **project-work**.

In efforts to evaluate the efficacy of the STAR framework, the authors participated in the planning, execution and evaluation of two additional summer academies (Convivio2006,I-DO2006). The framework effectively provided a structure for organizing the logistics and activity structure for a good summer school, but it did not place any emphasis on the content of the curriculum.

Through an examination of instructional design theory, existing design education practices and the challenges

inherent to curriculum development, this paper seeks to expand the scope of the STAR framework.

LITERATURE REVIEW

The word "curriculum" which has its roots in Roman chariot races literally means "to run" or "course". The theoretical discourse about the meaning and application of this term is about as old as its origins. Despite the long-standing debate, most educators agree with John Franklin Bobbit's basic notion that curriculum is the course of experience in which human being takes form, as well as with the basic understanding that learning is a deliberate process and thus its goals must be specified in advance (Bobbit 1918). John Kerr further articulates that learning can take place in groups or individually within or outside of the school setting (referred by Smith 1996/2000).

In *My Pedagogic Creed*, John Dewey (1897:79) highlighted the importance of contextual learning and its implications on curriculum when he stated "I believe that there is, therefore, no succession of studies in the ideal school curriculum. If education is life, all life has, from the outset, a scientific aspect, an aspect of art and culture, and an aspect of communication [...] The progress is not in the succession of studies but in the development of new attitudes towards, and new interests in, experience [...] I believe finally, that education must be conceived as a continuing reconstruction of experience; that the process and the goal of education are one and the same thing." Building upon Dewey's focus on experiential learning, Ralph W. Tyler (1971) focused on four key areas: identifying educational goals, selecting and organizing experiences, and evaluating the success of the educational process.

After examining the collective work of many educational philosophers and practitioners, Mark Smith (1996, 2000) proposes several ways of deconstructing and categorizing current curriculum theories:

- Curriculum is a product or body of knowledge to be transmitted
- Curriculum is the process of how students, teachers and knowledge interact
- Curriculum is about identifying and teaching the practices of a community
- Curriculum is about the context of learning as much as it is about the content and structure.

In addition to the content, context, structure and outcome of the educational process which have been highlighted in this examination of curriculum thus far, it's evident that given the multicultural, multidisciplinary nature of UCD summer schools, differing learning styles should be accounted for within the curriculum. George Kolb (1976) has developed an experiential learning theory which describes four learning styles as well as a four-stage learning cycle:

- Feeling: concrete experience abilities
- Acting: active experimentation abilities
- Reflecting: reflective observation abilities
- Thinking: abstract conceptualization abilities

Leveraging the work of Dewey, Tyler, Smith and Kolb, we need to ask ourselves the following six questions as we seek to establish a curriculum framework for UCD summer schools:

1. **Product:** What educational goals should summer school planners and participants seek to achieve?
2. **Practice:** What educational experiences can we provide that will achieve these goals?
3. **Approach:** What flexibilities should be added to accommodate the different learning styles?
4. **Context:** What modifications should be made to the learning process to accommodate the specific context of the summer school environment and the host community?
5. **Evaluation:** How can we assess whether or not these goals have been attained?
6. **Process:** How can this set of educational experiences be organized effectively?

To validate our assumptions that a more formalized curriculum was a necessary addition to the Star Framework, we compiled and categorized data from initial observations and participant interviews conducted during the Convivio (2005, 2006) and I-DO 2006 summer schools. In addition, where further understanding was required, we conducted targeted follow-up interviews and questionnaires. The profile of summer school participants and research respondents can be found in Table 1.

Program	Location	Overall Participation	Respondents
Convivio 2006	Edinburgh Scotland	54 Participants -41 Students -8 Academic Lectures -2 Industry Lecturers -3 Atelier Leaders	Questionnaire #1: 27 Questionnaire #2: 16 Questionnaire #3: 34 Interviews: 3
I-DO 2006	Hong Kong	34 Participants -20 Students -7 Academic Lectures -0 Industry Lectures -4 Atelier Leaders -3 Organizers	Questionnaire #1: 11 Questionnaire #2: 8 Questionnaire #3: 5 Interviews: 11
Convivio 2005	Timisoara Romania	47 Participants -34 Students -5 Academic Lecturers -3 Industry Lectures -5 Atelier Leaders	Questionnaire: 16 Workshop: 40

Table. 1. Summer school participants and research respondents

The following themes emerged from the data:

Product: While students positively reported that they learned UCD methods and enjoyed the overall experience, there were many inconsistencies noted. Participants were confused about the goals and expected outcome. Because they had different levels of experience within the field, some reported that lectures were too basic but others could not find the connection between the lectures and their practical work. We learned that foundational topic areas should not be left solely to the individual atelier leaders to convey, but need to be addressed corporately during the first few lectures. Further, a strategic and timely alignment of lecture content with the activities taking place in the ateliers was important.

Practice: Since students came from various cultural and professional backgrounds, there were requests for differently-structured tasks. While, some students wished for additional theoretical explanation, most requested more hands-on activities. Students and atelier

leaders found it beneficial to alternate between abstract lectures in the morning and hands-on experiences in the afternoon, which gave students an opportunity to practice the techniques they'd learned earlier in the day.

Approach: Due to the experience and specialization of the atelier leaders, the ateliers were often structured in ways that supported only a few of the many learning styles. Participants expressed a need to share their experiences with the other ateliers to learn different approaches to UCD.

Context: The community where each school was held was an influencing factor on the specific lectures and hands-on activities provided. Students and academia perceived inclusive activities in and with the local population as positive and inspiring.

Evaluation: Throughout the summer school session, atelier leaders, lecturers and organizers have the opportunity to probe students individually or within groups to assess the status of their learning process. In addition, at the end of the course, students are required to present their work to an audience of their peers, the program leaders and organizers and members of the local community. Since their summer experiences will be synthesized and distilled into this presentation, the final state of the group's knowledge acquisition process will be evident. However, what's lacking in all the summer schools is the ability to assess an individual student's learning progress. This was criticized by a few participants.

These findings suggest that the summer workshops and their participants would benefit greatly from an effort to focus on more than just the logistics-planning but to formalize the curriculum as well.

PROPOSED CURRICULUM

An effective summer school curriculum will address the following dimensions: Product, Practice, Approach, Context, Process and Evaluation. Several modifications to the Star Framework can be made to accommodate each of these focus areas.

Product: To ensure that students consistently learn the foundational tenets of UCD, core topics should covered throughout the workshop:

- an overview of the overall goals, timelines and expected outcomes,
- an introduction to UCD and its multidisciplinary nature, stating clearly how each of the specific disciplines work together to achieve the final result.
- an overview of UCD techniques and methods including:
 - UCD Lifecycle/Stages
 - User Research
 - Design and Innovation
 - Probes and Prototyping
 - User Testing / Evaluation Techniques
 - Cross-cultural teamwork and team dynamics.

Additional topics can be added once assessments of the student profiles, atelier leader approaches and local community needs have been made.

Practice: While the lecture content is important, equal consideration must be given to the techniques or practices that students should embody at the end of this learning process. In addition to the hands-on research and design, additional activities can be utilized to convey the notion of UCD practice to students. First, examples of successful case studies can be shared, highlighting the techniques used as well as the outcome. Also, students should be exposed to UCD praxis within professional design studios and corporations.

Approach: The order and content of the expert lectures and atelier activities should be aligned with the expected experiences of the participants to promote a daily journey through the 4-stage learning cycle. This approach will help address the students' varying learning styles.

- **Feeling:** Students should be encouraged to connect personally and emotionally with the local environment. During this phase, students can perform ethnographic research, observation and other atelier work in situ. In addition, a series of social activities can be constructed to embed students in the local environment.
- **Acting:** Each afternoon, students should work in their ateliers to apply the techniques and methods learned.
- **Reflecting:** Regular mechanisms for individual and group reflection should be provided, ranging from journaling or blogging to group discussions that help connect recent lectures to their atelier experiences.
- **Thinking:** Lectures and discussions with experts can deepen the students' knowledge about the UCD discipline and encourage critical thinking.

Context: In experiential learning environments like these, context is an integral part of the learning process. Lectures about the history and current state of the community as well as visits to ethnographic museums and cultural centers are good opportunities for the participants to dive into the local culture. Specific activities should be identified to ensure that students personally experience the daily life of the city's residents. One example might be to ride the city bus to a lunch venue that is popular with the locals in order to have a team discussion or to conduct ethnographic activities.

Evaluation: While quizzes and other similar evaluation methods might not be appropriate for this learning context, it is necessary to identify and embed creative evaluative milestones into the schedule. Also, formal project critiques and regular feedback sessions should be conducted.

Process: The original Star Framework addresses the overall process and structure for organizing summer school sessions, particularly around the three core principles and three critical activities displayed in figure 1.

CONCLUSIONS

Summer schools are an important addition to the university educational system and there has not been much research on curriculum design within this context. Existing research on instructional design and learning styles suggests that special emphasis should be placed on Product, Practice, Approach, Context, Process and Evaluation within summer school curricula. As a result, several important improvements to the STAR framework have been identified. However, we recommend that, with these changes, the framework remain flexible enough to address differences in the learning environment.

There are still several opportunities to further expand this work. One area of exploration would be to apply research on collocated, collaborative teams to the curriculum design challenge. Our ultimate goal is to incorporate this curriculum framework into an upcoming user-centered design summer school.

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