



Context-Centered Design

Bridging the Gap between Designing and Understanding

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Background

The design of Electronic Medical Record (EMR) systems and other clinical information systems challenges traditional HCI design in the following two ways: 1). system interactions involve multiple clinician/non-clinician teams, various interactive medical devices and medical artifacts in highly mobilized contexts; 2). it is extremely difficult for designers to understand the highly knowledge-intensive clinical medicine field and design a system fit into the hospital environment. Past literature suggests that **context of system use** could potentially solve these EMR design challenges.

Context-Centered Framework

We developed an operational method to address context of the system use issue on top of 8 HCI theories to answer the following three research questions.

1. How should Context be defined when it is applied to interactive system design and evaluation?
2. What are the components of the Context when it is viewed as an interactive property?
3. What is the importance of Context?

Activity as a unit of analysis for studying context in system design.

- **Goal** determines what contextual information for the activity is.
- **Setting** is the place where users perform activities. It includes the resources involved in the task solving process.
- **Rules** of using the resources.
- **Awareness** is an understanding and consciousness of the setting and activity.

Experiment Design

An empirical study was carried out to examine the impact of this framework on a mobilized nursing task using scenario-based design and claims analysis approaches on groups of Nursing and Designing students. The two experimental groups used an Context-Centered instruction which adapted from Context-Centered Framework, whereas the two control groups used the regular scenario-based design instruction.

	Context-centered SBD instruction	Regular SBD instruction
Design Groups	31 included	29 included
Nursing Groups	28 included	29 included

Participants were asked to read instruction first, then write claims for the following four system features outlined in a Nursing Handheld system scenario.

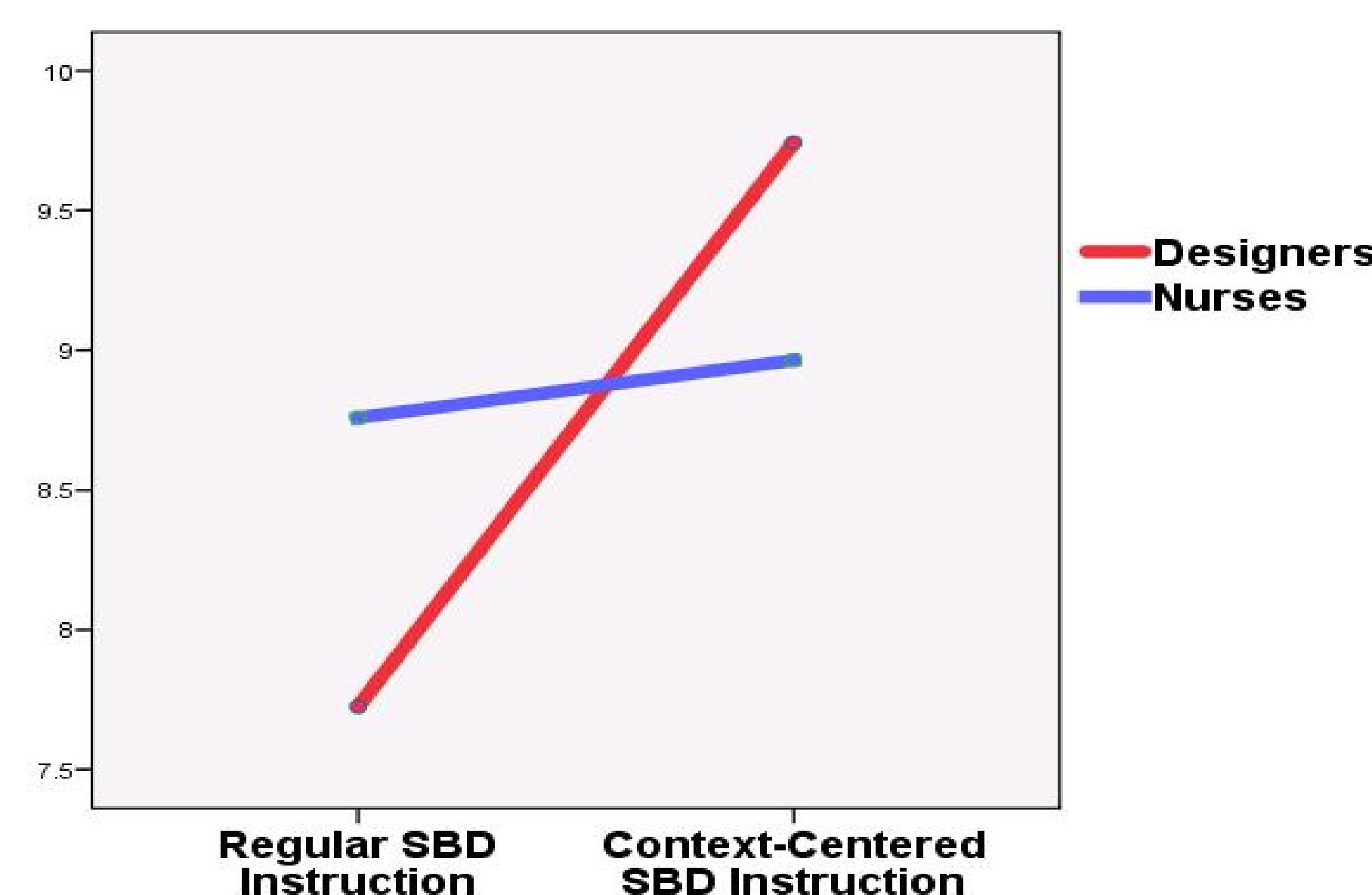
1. Send alarms when need help
2. Display patient charts
3. Receive lab testing results
4. Leave notes on electronic white board



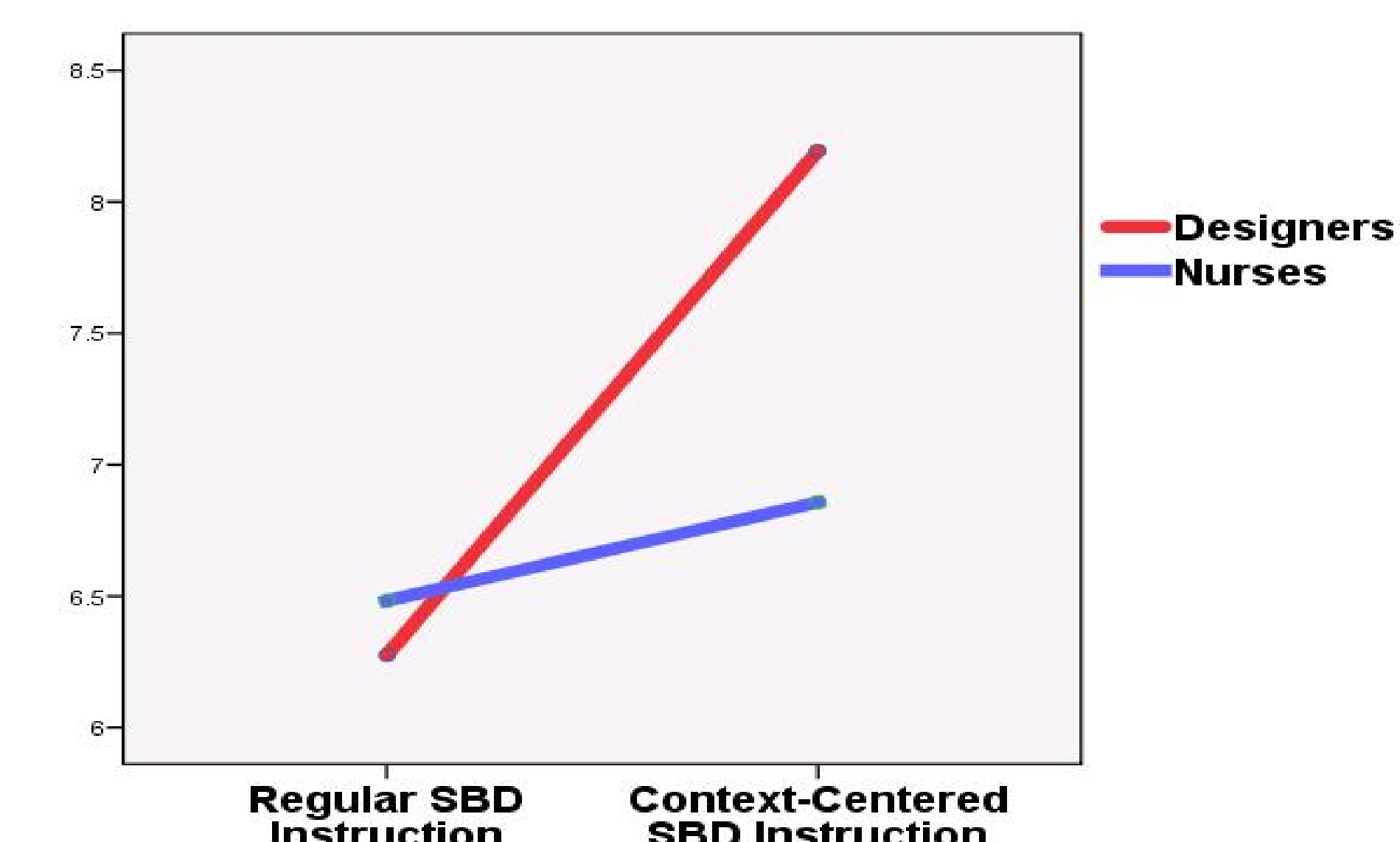
Results

Two HCI experts rated the claims one subject generated individually on the following three metrics. Data have been analyzed using two-way ANOVA.

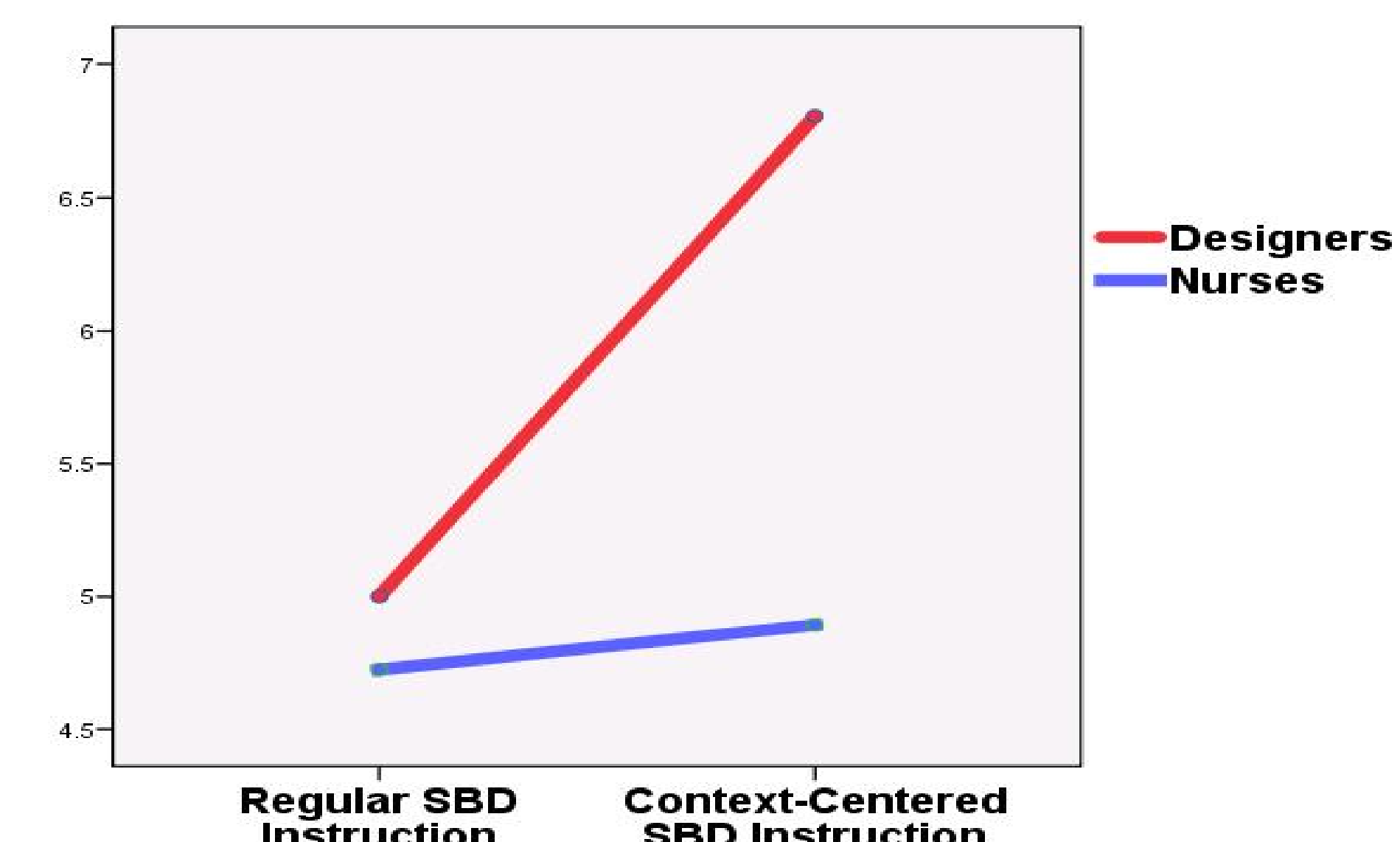
1: How well the claims represent the system features in the giving scenario?



2: How well the claims contribute to designing a useful system?



3. How useful are the claims if they are used for system design?



Conclusions

The results indicate that designers understood the clinicians' working environment better and incorporated more usability concerns in their design through using the contextual-centered framework. This suggests that focusing on the context of system use could improve the quality of design for those situated in the highly complex, mobile and ubiquitous environment and benefit clinicians' practice.