Cognitive Ethnography: A Methodology for Measure and Analysis of Learning for Game Studies

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ABSTRACT

This paper describes cognitive ethnography as a method of choice for game studies, multimedia learning, professional development, leisure studies, and activities where context is important. Cognitive ethnography is efficacious for these activities, as it assumes that human cognition adapts to its natural surroundings (Hutchins, 1995, 2010) with emphasis on analysis of activities as they happen in context; how they are represented; and how they are distributed and experienced in space. The methodology is described for increasing construct validity (Cook & Campbell, 1979; Campbell & Stanley, 1966) and the creation of a nomological network (Cronbach & Meehl, 1955). This description of the methodology is contextualized with a study examining the literate practices of reluctant middle school readers playing video games (Dubbels, 2008). The study utilizes variables from empirical laboratory research on discourse processing (Zwann, Langston, & Graesser, 1996) to analyze the narrative discourse of a video game as a socio-cognitive practice (Gee, 2007; Gee, Hull, & Lankshear, 1996).

Keywords: Cognitive Ethnography, Comprehension, Design, Discourse Processing, Game Studies, Literacy, Reading, Socio-Cognitive, Validity

INTRODUCTION

As a methodological approach, cognitive ethnography assumes that cognition is distributed through rules, roles, language, relationships and coordinated activities, and can be embodied in artifacts and objects (Dubbels, 2008). For this reason, cognitive ethnography is an effective way to study activity systems like games, models, and simulations —whether mediated digitally or not.

BACKGROUND

In its traditional form, ethnography often involves the researcher living in the community of study, learning the language, doing what members of the community do—learning to see the world as it is seen by the natives in their cultural context (Fetterman, 1998).

Cognitive ethnography follows the same protocol, but its purpose is to understand cognitive process and context—examining them together, thus, eliminating the false dichotomy between psychology and anthropology.

Observational techniques such as ethnography and cognitive ethnography attempt to describe and look at relations and interaction...
situated in the spaces where they are native. There are a number of advantages to both laboratory observation and in the wild as presented in Figure 1.

**NOMOLOGICAL NETWORK**

As mentioned, Cognitive Ethnography can be used as an attempt to provide evidence of construct validity. This approach, developed by Cronbach and Meehl (1955), posits that a researcher should provide a theoretical framework for what is being measured, an empirical framework for how it is to be measured, and specification of the linkage between these two frameworks. The idea is to link the conceptual/theoretical with the observable and examine the extent to which a construct, such as comprehension, behaves as it was expected to within a set of related constructs. One should attempt to demonstrate convergent validity by showing that measures that are theoretically supposed to be highly interrelated are, in practice, highly interrelated, and, that measures that shouldn’t be related to each other in fact are not.

This approach, the Nomological network, is intended to increase construct validity, and external validity, as will be used in the example, the generalization from one study context, such as the laboratory, to another context, i.e., people, places, times.

When we claim construct validity, we are essentially claiming that our observed pattern -- how things operate in reality -- corresponds with our theoretical pattern -- how we think the world works. To do this, it is important to move outside of laboratory settings to observe the complex ways in which individuals and groups adapt to naturally occurring, culturally constituted activities. By extending theory building with different approaches to research questions, and move from contexts observed in the wild, then refined in the laboratory, and then used as a lens in field observation.

The pattern fits deductive/inductive framework:

- Deductive: theory, hypothesis, observation, and confirmation.
- Inductive: observation, pattern, tentative hypothesis.

These two approaches to research have a different purpose and approach. Most social research involves both inductive and deductive reasoning processes at some time in the project. It may be more reasonable to look at deductive/inductive approaches as a mixed, circular approach.

Since cognition can be seen as embodied in cultural artifacts and behavior, cognitive ethnography is an apt methodology for the study of learning with games, in virtual worlds, and the study of activity systems, whether they are mediated digitally or not. By using the deductive/inductive approach, and expanding observation,

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*Figure 1. Features of methodology*
Motivational and Cognitive Aspects of Applying Educational Games as a Learning Tool

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www.igi-global.com/chapter/motivational-cognitive-aspects-applying-educational/64291?camid=4v1a