

# Evaluating the Relationship between Cognitive Style and Pre-Service Teachers' Preconceived Notions about Adopting Console Video Games for Use in Future Classrooms

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## ABSTRACT

*This article explores the impact of perceptual cognitive styles on pre-service teachers' attitudes toward video games. Using a cognitive style continuum measuring field dependence and field independence, the authors conducted an exploratory study to measure the potential impact of cognitive style on pre-service teachers' dispositions towards the use of games in their future classrooms. Results showed that participants who planned on becoming teachers were generally found to be more field dependent than peers who elected other major fields of study. These participants also demonstrated a general reluctance towards using console games in their future classroom situations. After the brief experience playing the console game, however, these pre-service teachers' attitudes changed significantly with regards to their game playing attitudes and preferences.*

*Keywords: Attitudes, Classrooms, Console, Education, Field Dependence, Field Independence, Group Embedded Figures Test (GEFT), Learning, Microsoft Xbox 360, Nintendo Wii, Teaching, Video Games*

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## INTRODUCTION

In this article, we review the results of a study in which we investigate the relationship between future teachers' pattern recognition aptitudes and their preconceived notions about console video games. We hypothesized that these attitudes would correlate with whether or not teachers recognize console video games as being useful for teaching. For the purposes of this study, we elected to analyze a continuum measuring field dependence and field independence, a well-known perceptual concept articulated by cognitive psychologists in the 1960s. Using the Group Embedded Figures Test (GEFT) developed by Witkin et al. (1962), we explored the impact that field dependent-field independent cognitive style had on participants' preconceived impressions and eventual enjoyment of video games. We also investigated the connection between console choice type (Xbox 360 vs. the Nintendo Wii) and those attitudes.

The present study was inspired by previous work (Kenny & McDaniel, 2011) that explored teachers' general acceptance and use of serious games in the classroom. We extended that prior research by investigating whether or not a simpler gameplay mechanic would have any significant effect on teachers' attitudes towards games as useful instructional interventions. There has been some speculation in the literature that technological experiences leave a lasting impression that influences both cognition and affective response. For example, Salomon, Perkins, and Globerson (1991) describe a situation in which "the intellectual partnership with a computer tool can leave a transferable cognitive residue in the form of, for example, a generalized ability for self-regulation and guidance" (p. 6). Such residue would in turn "allow them to become involved in higher order activities in subsequent partnerships with intellectual tools" (p. 6).

In our prior study (Kenny & McDaniel, 2011), we also found that the encoding of internal knowledge structures may have been based on participants' exposure to gaming tech-

nologies, a theory initially proposed by Pillay, Brownlee, and Wilss (1999). They suggested that novice players initially encode surface structures that are later triggered by situations that convert these surface structures to organized knowledge. This work implies that exposure to gaming technologies has the potential to leave long lasting impressions of both the affective and cognitive variety if games are later encountered a subsequent time in the classroom as a potential teaching tool for adoption. The authors suggested in the earlier study that this theory would be an interesting avenue for later investigation; this current work furthers our understanding of these notions.

For the sake of this study, we chose to focus primarily on the attitudes of the participants towards console video games. We believe that console video games, although less likely to be used in the classroom than computerized educational games, are interesting because they often offer more usable control mechanisms, better graphical capabilities, and robust methods for socializing online. These are all characteristics that will likely emerge in next generation educational technologies. We hypothesized that individuals found to be field independent would at least initially demonstrate more positive attitudes towards console games than their field dependent counterparts and, correspondingly, would tend to play console games more often during leisure time hours. Conversely, we believed that field dependent individuals would find console games to be more complicated and difficult to learn unless they were provided instruction on game play mechanics prior to playing. We also knew from our own experiences as well as those expressed in the literature (most notably in Gee, 2003) that those who play video games tend not to require instructional manuals to learn how to play. Rather, most seem to acquire the process knowledge required to succeed in video games through emphatic trial and error, something we believe may be counterintuitive to the pedagogical methodologies embraced by those aspiring to the teaching profession.

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