A Study on the User-Centered Approach to Serious Games Development
- *focused on Construal Level Interventions*

Hye Rim Lee, Eui Jun Jeong, Jung Hyun Woo
Dept. of Digital Culture & Contents, Konkuk University, South Korea
E-mail : nevercry21@naver.com, Jeong12@konkuk.ac.kr, woowithu@naver.com

With the pervasion of gaming culture, serious games have been paid attention with various positive effects on game users[1,2,3,4]. Serious games, thus, have been applied to various areas such as education, advertising and marketing[2,5,6].

Serious games are defined as purposive digital games primarily focused on specific goals with entertainment[5]. Changes in user behavior or perception are usually made by intentional interceptions on the point of user selection in serious games. Thus, in designing serious games, it is important for designers to consider user-centered approaches with strenuous theories for consistent and effective design tactics.

Recently, many studies about serious games have reported diverse significant effects on users,[1,2,3,4,5,6] but there is little research on effective approaches from theoretical perspectives. Therefore, the current study employs the Construal Level Theory (CLT hereafter) to suggest a theoretical design approach for effective development of serious games.

CLT posits that everyday life judgments, predictions, evaluations are influenced by different psychological distance dimensions depending on whether an individual uses a high-level construals (abstract) or low-level construals (concrete) thinking perspective[7]. In other words, choices about event, activity, or object can be perceived as either near or distant since people mentally represent or construe such events or objects at different levels of abstraction.

CLT argues that construal level is a function of psychological distance which reflect an egocentric bias in people's choices with events or objects[7]. Proximal events are represented at a lower-level construal(LLC), and such people in LLC focus on relatively concrete, unstructured, contextualised, subordinate and secondary features of the events. In contrast, higher-level construal(HLC) is abstract, schematic, decontextualised and comprises the essence of the events or object. Psychological distance derives from people's subjective experience that something is close or far away from the self, here, including temporal (present vs. future), spatial (nearby vs. far away), and social (e.g., ingroup vs. out-group), hypotheticality (likely vs. unlikely)[7,8].

One of the most important and effective conditions regarding CLT is message(or cue) matching(or congruency)[9]. If a distant cue in games (e.g., mission messages) is at the same distance as perceived distance, persuasion effects of the message is much greater than those in non-congruent distance. Specifically speaking, if a temporally distant messages(e.g., long time ago) meet with similar level of spatial distance(e.g., in a far-away place), users could effectively follow the storylines with a little cognitive effort. Such cues(or messages) matching have been applied to picture & words congruency experiments[10]. For example, pictures showed a much greater matching effect with concrete messages(LLC), whereas words did with abstract messages(HLC). Such matching cues had significant effects not only on user selection related to preference but also user behavior change related to self-control and goal-setting [10].

Considering potential effects of CLT in persuasion, CLT can provide serious game designers with effective directions. Players in games should choose or determine their directions whenever they meet new problems, mission, or roles. In the selection process, if designers consider message matching effects, they may be able to predict user selection effectively and lead the users into the desirable intentional points.
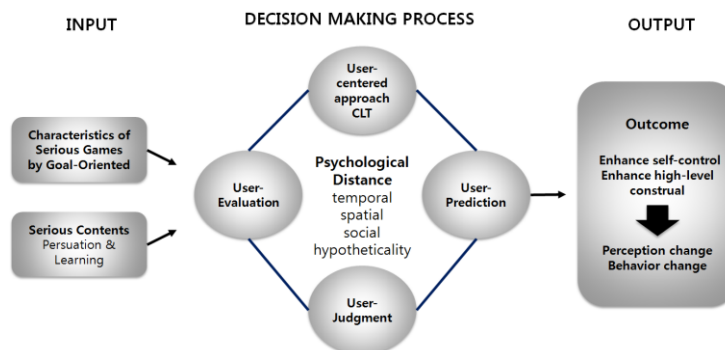

Figure 1. CLT in process-outcome serious games model

We can also consider different characteristics of users from CLT perspective. HLC people are more attracted to abstract messages, as LLC people are to concrete cues [9]. For LLC users, cues should be in the proximal distance to maximize persuasion effects in games. Concrete goal-settings are much congruent to LLC users where as abstract missions are to HLC users.

In sum, CLT could provide useful implications for serious game designers in development processes. [Figure 1] shows essential points that needs to be considered in serious game development process. Designers need to consider user CLT with purposes of their serious games in persuasion and learning. Regarding decision making process, psychological distances should be employed to maximize persuasion effects. Finally, such design tactics would cause effective results in user perception and behavior.

References

[1] E.M. Raybourn, "A new paradigm for serious games: Transmedia learning for more effective training and education", Journal of Computational Science, ELSEVIER, 2013, pp. 1-11.

[2] H.R Lee, E.J Jeong, "Creative Evolution of Digital Leisure Culture, Serious Games", Journal of the korea contents association, The Korea Contents Association, 2013, 13(12), pp. 48-61.

[3] Zyda, M., From visual simulation to virtual reality to games, IEEE Computer Society, 2005, 38(9), pp.25-32.

[4] Gee, J. P., What video games have to teach us about learning and literacy, 2003, New York: Palgrave MacMillan.

[5] D. Michael, S. Chen, Serious games: Games that educate, train, and inform, Course Technology PTR, USA, 2006.

[6] D. Djaouti, J. Alvarez, and J.P. Jessel, Classifying Serious Games: the G/P/S model, Handbook of Research on Improving Learning and Motivation through Educational Games: Multidisciplinary Approaches, IGI Global, USA, 2011, pp. 118-136.

[7] Y. Trope, N. Liberman, and C. Wakslak, Construal Levels and Psychological Distance: Effects on Representation, Prediction, Evaluation, and Behavior, Journal of consumar psychology, 2007, 17(2), pp. 83-95.

[8] Y. Trope, N. Liberman, Construal-level theory of psychological distance, Psychological Review, 2010, 117(2), pp. 440-463.

[9] S.J.Katz & S. Byrne, Construal Level Theory of Mobile Persuasion. Media Psychology, 2013, 16, pp. 245-271.

[10] K. Fujita, J. J. Carnevale, "Transcending Temptation Through Abstraction : The Role of Construal Level in Self-Control", Psychological Science, 2012, 21(4), pp. 248–252.