

The Effects of Making-Game Activity and Learning Ability on Learner's Intrinsic Motivation and Divergent Thinking

Session Description

In the classroom, Computer game making activities give your students the opportunities to create lively interactive simulations, enhancing learner's intrinsic motivation and divergent thinking.

Introduction

A lot of active researches about computer games has been conducted about the educational effect and availability in such a situation that influence the entire society in such a way that not only does it change the way of living as well as the play culture of children. However, despite the big advantages that the educational game have in terms of learning situation, the existing educational games has limitation in actively accommodating a variety of learner's needs, namely, problem situations based on his or her own experience, functions or objects to add or delete as it provide the learners with pre-equipped, thoroughly built-in structure as an effective medium or environment of learning.

This means that the availability of computer games has its limits in relation to the learners' need, seeing from the perspective of play's property; it implies that, it guarantees the active participation of the learners as well as experiences the controlled sense indicating the making game-based activity can be deemed as available in educational effect.

This research has conducted to examine the effects of the computer game making activities on learner's intrinsic motivation and divergent thinking. In the classroom, Computer game making activities give your students the opportunities to create lively interactive simulations for any subject, for any grade level, and by students with a wide variety of learning styles. Children learn by building things.

Traditionally, Games have been defined as competitive activities that have rules, goals, feedback, interaction and outcomes. Games motivate students via fun, and this is a part of the natural learning process in human development (Bisson & Lucker, 1996).

Habgood(2005) stated making computer games is a creative activity that can bring together logic, music, mathematics, artwork, planning, teamwork and general IT skills into a task that children find genuinely motivating. Not only does it challenge and engage children in all sorts of educationally valid ways, but it also seems to provide an opportunity for some children that are not normally academically successful to boost their self-esteem by excelling at this rewarding activity. Assessment of the effectiveness of making games as cognitive tools is a

complex issue, and several variables, such as learner differences, assessment methods, and implicit knowledge, must be considered.

Kafai(2006) said that the instructionists, accustomed to thinking in terms of making instructional educational materials, turn naturally to the concept of designing instructional games. Far fewer people have sought to turn the tables: by making games for learning instead of playing games for learning. Rather than embedding “lessons” directly in games, constructionists have focused their efforts on providing students with greater opportunities to construct their own games—and to construct new relationships with knowledge in the process. Research has only begun to build a body of experience that will make us believe in the value of playing and making games for learning.

From a scientific point of view, the products of creative thought sometimes referred to as divergent thinking, and Amabile(1998) argued that to enhance creativity, intrinsic motivation is needed.

The goal of divergent thinking is to generate many different ideas about a topic in a short period of time. It involves breaking a topic down into its various component parts in order to gain insight about the various aspects of the topic. Divergent thinking typically occurs in a spontaneous, free-flowing manner, such that the ideas are generated in a random, unorganized fashion. Sometimes a student can be fascinated in a subject and are eager to learn more without outside influence or help. This kind of a situation is when there exists a large amount of intrinsic incentive to motivate a child. It is when a student enjoys an aspect of an activity enough to be motivated within. An intrinsic motivation could arise in any subject of interest such as dinosaurs, famous people, or far off places. However, topics that are learned in schools today do not arouse children since they find the information useless in their everyday lives (Slavin, 2000). The role of personal interest is crucial in a learning situation. It has been proven that a child who is intrinsically motivated tend to make use of strategies that require a larger amount of effort and that allow them to develop more intensely. They prefer tasks of higher levels than an extrinsically motivated child (Lumsden, 1994).

That’s why I paid attention to divergent thinking and intrinsic motivation. My hypothesis is trait of game making activities are deeply continuous with divergent thinking and intrinsic motivation, ultimately it will enhance students’ learning.

This research will look into the ways how the intrinsic motivation and divergent thinking can be shaped through making game activity, how far they can go, and in what ways the degree of learning abilities and making game activity can be related to each other.

The research questions that are going to be pursued are as follows.

1. Does the making-game activity show any meaningful difference to the intrinsic motivation of

the learners in making computer game?

2. Does the making-game activity show a meaningful difference to the divergent thinking of the learners?

3. Considering the Making-game activity types and the level learner's ability on a incorporative base affect the meaningful difference of the learner's intrinsic motivation?

4. Considering the Making-game-based activity type and the level of learner's ability collectively effectuate any meaningful difference in the learner's divergent thinking?

Research Methods

The main target of this research has been focused on the six-year school student in W elementary school, located in Osan in Kyonggi Province. This research carried out to six-year student in W elementary school that was located in Osan, Kyonggi Province with main target of 84 students of 2 classes randomly collected. One of the two classes is a group whose type belongs to an autonomous making-game based activity, while another assigned to a demonstrative making-game based one. Two kind of learning groups applied to this experiment over a period of 12 weeks. T-hypothesis testing and 2-way ANOVA has been conducted using SPSS 13.0 to analyze the result of the intrinsic motivation and divergent thinking according to the making game activity type and the level of learning ability in this study.

For the research, The Work Preference Inventory (Amabile, 1994) was used to evaluate the intrinsic motivation of a student, and Torrance Test of Creative Thinking (Torrance, 1964) was used to measure the divergent thinking of a student.

[Research design]

O1 G1 X1 O2
O3 G2 X1 O4
O5 G3 X2 O6
O7 G4 X2 O8

G1, G3 : Learning Ability High

G2, G4 : : Learning Ability Low

O1, O3, O5, O7 : Pretest of dependent variable (WPI, TTCT)

O2, O4, O6, O8 : Posttest of dependent variable (WPI, TTCT)

X1 : autonomous making-game based activity

X2 : demonstrative making-game based activity

Results and Discussion

The results of this research are as follows:

1. The hypothesis 1 that the making game based activity influence meaningful difference in the intrinsic motivation ($t=2.479$, $p=.015$) has been affirmed. In other words, the numerical value in intrinsic motivation has proved higher in autonomous (self-regulating) making-game based activity than the demonstrative (indicative) making-game based one.

2. The hypothesis 2 that are likely to display a meaningful difference in the intrinsic motivation according to the making-game based activity type has been affirmed. In other words the divergent thinking displayed higher when conducted in the self-regulating making game based activity than indicated making game based one.

3. The hypothesis 3 that making game-based type and learning ability might have interaction effect with the intrinsic motivation has been disapproved ($F=.765$, $p=.384$). In other words, investigation into the main effect of making game-based activity proved meaningful with a result of numerical F value of 6.175 and .015 as p, however, it cannot bring about any meaningful result in the interaction effect with p .05 indicative of making game based activity type and the level of learning ability.

4. The hypothesis 4 that making game based activity and learning ability level might have an interaction effect on the divergent thinking has been disapproved ($F=.306$, $p=.582$). In other words, The making game-based activity has shown meaningful with a result of 6.720 in the value of F, and .011 as p, but resulted in p .05 falling short of meaningfulness in terms of the interaction effect showing making game-based activity type and learning ability level.

On the basis of the research result shown as above, it has found out that the making game-based activity type have an effect on the learner's intrinsic motivation and divergent thinking, with the result that the level of learning ability does have an effect on the divergent thinking, but not on the intrinsic motivation for its meaningful difference. Also it has indicated that there is no interacting play between the making game-based activity type and the level of learning ability.

I'd like to suggest the following based on the result of this research.

It is estimated that the lesson designed to apply active making-game based activity considering the learner's intrinsic motivation to invigorate the learner's active participation in class in terms of a variety of instruction –learning activities based on logics, music, math and arts has been

shown effective and with a high expectancy of the advancement of divergent thinking and the drill effect of creativity of learners through making-game based activity that contained the factors of regulations, compensation (redemption), challenge and competition related to the contents they have learned.

With this process, It is expected that the learners can experience the heightened self-regulating sense of themselves, with a high expectancy of promotion of interest, intrinsic motivation, retention of learning and the development of high-level intelligence such as invigorative thinking and reasoning faculty. In order to get this it is required to have a cognitive strategy that the making-game activity can be fully made available for the use of learner's cognitive tool. It is estimated that the subsequent research making a close investigation to the relevance between the learner's diverse variables and the making computer game based activities related to the accomplishment of learning to develop the availability of the research are further investigated.

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