Research in development of a network simulation game for education of democratic citizens

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Abstract

In order to solve the problems of modern society, it is important to improve the quality of democratic citizens such as democratic attitude and function and for example, reasonable and democratic ability to solve problems, the capacity for decision-making, the dignity of man, communication, and compromise. If the network simulation game for education that has the advantages of simulation and the game and network are used, it may be helpful for the education of democratic citizens for improving the quality of democratic citizens. In this research, the flexible DB manipulating tool is added to make use of the game corresponding to the level of the learner and the needs of teacher and situation, unlike existing games.

1. Introduction

If the network simulation game for education is utilized, it may be helpful for developing democratic attitudes such as a reasonable spirit, capacity for decision-making [2], communication, participation, and compromise, which are the present insufficient factors in school education for democratic citizens.

It is desirable that the simulation be designed so that instructors can correct the insufficient factors among the items of the existing simulation game. This study examines the necessary matters when this network simulation game for education is designed and established as follows.

3. Design

1) Scenario

In this game, each learner becomes a head of a district (Gu) Office in Busan and implements the policy of the district that he/she is in charge of, executes its budget and reflects the residents' opinions in the district.

Each head of the Gu offices grasps the current status of their own district through the data indicating various situations of the Gu area.

When the situation is not good, a variety of incidents happen. If the head cannot adequately deal with these incidents, his/her support rate will drop. In this case he/she cannot run for the mayoral election in the future.

2) Instruction-learning system

The DB and the main system have been separated in the city construction-type learning game designed in this research.

Figure 1 shows the design in which an instruction system and a learning system have been separated. The gray square indicates the instruction system and the white square indicates the learning system. Also, the rectangle box shows the DB and the round circle shows the algorithm and the execution.

3) Data Base

In this system, a variety of databases such as the Indicator DB, Relation DB, Event DB and Incident DB are used. The Indicator DB stores the current status of an area, which includes the death rate, the support rate, and the health index. The indicator DB can be modified and it is closely related to the learners' reactions. The Relation DB stores the relation among each item of the Indicator DB. The Event DB deals with all events generated by learners or the system in the form of messages. The Incident DB generates incidents by comparing the current area DB and the actual area DB.

Figure 2 shows the relation among each item of the Indicator DB. The solid line indicates a proportional relationship, while a dotted line indicates an inverse proportional relationship. Each item and each relationship are illustrations that can be modified by instructors.

4) Structure and procedures

(Fig. 1) Instruction-Learning System

(Fig. 2) the relation among each item of the Indicator DB
Figure 3 shows the general structure and procedures of the simulation [1]. However, this type of structure and procedure is not suitable for a network simulation game, which is conducted under the multiple learners’ environment. Figure 4 indicates the structure and procedure of the network simulation game suitable for the multiple learners’ environment.

In Figure 4, the interaction results among learners under the multiple learners network simulation environment are reflected in the overall scenario.

5) DB manipulation tool

The game in this research provides a variety of DB and feedback varies according to the algorithm of DB. Therefore, it is considered that the DB can be easily reorganized depending on the learners’ level, the learning contents and the instructors’ perspectives.

4. Implementation

1) Game progress

? Selection of initial role

? Initial budget allocation

? Budget planning and execution

? Indicators, incidents and collection of opinions

? Conversations, meetings, and budget support request

The heads of each Gu office may select one of the three following selections when they have to execute budgets exceeding the given budget size.

First, they can raise taxes. This method can easily secure the budget in a short time. However, securing the budget will be difficult in the long run since the Gu residents can move to other areas after they lose credibility with the head of the Gu office.

Second, they can request budget support from the city government. This is a method by which budgets can be supported through persuading other Gu heads of offices and the mayor of the city in a teleconference meeting. This method has merit in that a vast budget can be secured, even though the procedure is rather complex and there exists the risk of being turned down. In terms of education, this method is useful for the improvement of the qualities of democratic citizens.

The third method depends on the situation. This is a method of proposing joint budget execution to adjacent or interested head(s) of Gu office(s).

By using this method, huge budgets can be obtained, while the procedure, compared with other two methods, is simple. However, this cannot be utilized in all situations, and it requires the ability to persuade other parties.

? Re-election

While executing a budget through the collection of opinions and indicators, credibility can increase or decrease. Depending on this credibility, a Gu office head obtains the qualification to run for mayor. This process is decided by the vote of other Gu office heads and the mayor on a regular periodical basis.

2) DB manipulation and establishment of relations

This game is different from existing simulation games in that items can be modified, added and deleted according to the advices of instructors or experts, in addition to adjusting only figures of data by classifying main programs and data. In this game, the relationship among the data can be modified as well.

5. Conclusions

Unlike most other educational simulation games, in which a learner learns alone, the network simulation game in this research can utilize various learners’ interactions such as the qualities of democratic citizens in important learning formats.

Even though I did not verify the effect of this simulation game in the real education field, I expect this will contribute to and foster the qualities of democratic citizens.

The author think further researches should be conducted for the development of educational simulation games that are flexible and extendable according to diverse situations and requirements. Also, research to verify the real effects of network simulation games will be substantially required in the future.

References
