

Chapter 25

A simulation game for the development of administrative work processes

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ABSTRACT

Simulation games can be applied as a novel method for participative development of work in organizations. We are designing a new type of simulation game, called the **WORK FLOW GAME**, for the development of administrative work processes as part of organizational change. The aim of this chapter is to describe the **WORK FLOW GAME** and its design characteristics. A case study in administration showed that work processes can be improved effectively and simulation games may have positive effects on participants' motivation, learning and communication. Simulation games are encouraging methods for combining participative development and new interactive learning. Simulation games seem to facilitate the implementation of new information systems and to promote organizational change.

PARTICIPATIVE DEVELOPMENT OF WORK WITH SIMULATION GAMES

Simulation games have mainly been used for educational purposes in a school environment; their applications in organizational training and development still seem to be limited. A successful organizational change should be managed in a participative way. There is a great need for tools and methods to support employees' participation in the improvement of work systems. Therefore, it is argued that simulation games, which are tailored for a specific organizational context, can be used as a novel method for participative development of work systems and work processes.

In Scandinavia, games have been applied in the context of participative design of information systems or implementing new information technology into organizations. In the process-orientated approach, attention is paid both to the process (for example, learning) and to the application of computers (Eriksson *et al.*, 1988; Ehn *et al.*, 1990; Bødker *et al.*, 1993). It has been suggested that we should move from the traditional system description to scripts of work actions. Games have been used to support discussion about design

alternatives and to make requirement specifications on aspects of work organization, technology and education (Ehn *et al.*, 1990). For effective use of information systems in offices it is usually necessary to develop and redesign the whole work process.

Administrative work processes have proved to be complex and time-consuming. Work processes consist of various interconnected administrative tasks and activities. They often concern several hierarchical levels and departmental functions of the organizations as well as external customers. By work processes we mean tasks involved in material and information flow in organizations, such as the handling of invoices, applications or appeals in offices, or process from order to delivery in factories. It is usually difficult to develop these kinds of processes although they may have great improvement potential both on productivity and on human well-being. In literature, many general games have been described for organizational improvement (especially business games and production games) but their usability and suitability for office environments seem to be limited.

In Finland, we have used simulation games as a method for analysing and developing work processes by active participation and communication by employees as part of organizational redesign and change (for example Piispanen and Pallas, 1992; Ruohomäki, 1994). Based on our first promising experiences, we have decided to formalize and design simulation game methodology for the development of administrative work processes. According to our knowledge, our type of simulation game has not yet been described in the literature (Ruohomäki and Piispanen, 1994).

Designing the simulation game method

The simulation game method for the development of administrative and office work will be designed as part of a project which focuses on the development of new tools and methods for the development of administrative and office work. The project is part of a large national programme in Finland for promoting productivity in both private and public sectors.

Definition of the simulation game

A simulation can be described as a working representation of reality; it can be an abstracted, simplified or accelerated model of the process. A game is played when one or more players compete or cooperate according to a set of rules. A simulation game combines the features of a game with those of simulation (Saunders, 1988).

Modifying Gagné's model (1976) would illustrate the relationship of reality, models and simulation games. First, the real work system (for example administrative practice and work processes) should be analysed and described. Second, on the basis of the analysis, a model is formed. Work analysis and modelling should be conducted in a participative way with employees. A model can be a simplified representation of the work system showing its major elements and their relationship, for example workflow charts and task

descriptions. Third, on the basis of the model a simulation game can then be constructed (see also Vartiainen and Ruohomäki, 1994).

Description of the WORK FLOW GAME

Our new type of simulation game for the development of administrative work processes is called the **WORK FLOW GAME**. It can be described as an action-orientated simulation where participants with different professional roles analyse, develop and test work flows in cooperation and dialogue with each other. The **WORK FLOW GAME** is based on the model of reality, combining critical features of the work system. It also has the features of a game: roles, rules, scenario, game material and cooperation.

The **WORK FLOW GAME** has the following design characteristics:

- It is tailored, together with representatives of the company, for a specific organizational context and specific needs in administration and offices.
- It is based on a 'real case' representing the whole work process simulated in accelerated time.
- It is based on work activities, interaction and communication of participants.
- Participants represent different organizational units and hierarchical levels, including managers and customers.
- Employees have roles as actors and observers; a consultant, a change agent or a researcher has the role of game facilitator.
- Participants act according to a set of specific written rules.
- Game materials include similar tools and materials as needed in real work.
- A game session takes one day including introduction, action phase and debriefing.

The objectives of the WORK FLOW GAME

Simulation games can be used as a method to gain human well-being (motivation, qualifications, job satisfaction, optimal workload) and productivity in organizations (competitiveness, effectiveness, customer satisfaction). The objectives of the **WORK FLOW GAME** are:

- to develop and redesign administrative work processes
- to encourage the employees to use their knowledge and abilities for participative development
- to promote employees' learning and communication, improving their skills and knowledge
- to facilitate the implementation of new information technology and organizational change.

A CASE STUDY IN ADMINISTRATION

We applied two **WORK FLOW GAMES** for the participative development of administrative work processes in the finance department of a Finnish university in order to facilitate the implementation of the new information system for

accounting. The organizational change involved the redesign of organizational structures and simplifying complicated work flows. The purpose was to improve customer service, speed up and computerize work flows, and to redesign job entities. The first game was played in the beginning of the project. The second game was conducted six months later, before the implementation of the new information system. The empirical data were collected with questionnaires, test tasks and interviews both before and after the game sessions.

The first game: the present work flow

The first game aimed at demonstrating the present manual work flow in order to identify its problems, such as bottlenecks and overlapping tasks, and needs for improvements. The objective was to gain an overview of the work process as a whole. The idea was to get different viewpoints from employees and to support their ability for participation, as well as to facilitate communication.

In the first game, we demonstrated the work flow of the manual handling process of a typical invoice. The simulation was based on the modelled work flow of the real process. This simulated work flow was played through in the game, ie, it was externalized, visualized and dynamically acted by the participants.

All employees of the finance department, their managers and external customers (N = 50) participated in the game. The 26 employees who were involved in the real handling process had the role as actors. They played through the simulated handling process of a typical invoice by performing manually their ordinary tasks and using their normal tools, papers and documents. The actors talked aloud about what they were doing, how and why they were performing their tasks, which tools and documents they were using, and to whom they were sending the invoice next. The other 24 participants (management and representatives of computer and technical departments) observed the game with a list of questions in order to find areas for improvement. The game leader facilitated the on-going process and organized discussions.

The invoice and its documents were handled by several employees from different organizational units. The messenger sent it from one person to another and the game went on continuously without breaks until the customers received the document back. After the work flow process, we had an intensive debriefing session organized in small group discussions. Participants critically analysed the simulated work process from different viewpoints.

Results: the work flow was too slow

The game revealed the complexity and slowness of the work process involving a lot of overlapping tasks and excessive manual routines. The process took over one month, while the ideal duration was two weeks. The participants reached agreement on the fact that the process was too slow and complicated. The learning results of the first game can be summarized in the following way:

- Participants gained an overview of the work flow and they realized the broader context of their jobs in the organizational function.

- The problems at work and in customer service, as well as the improvement needs, were understood in the organizational context.
- Employees were motivated for organizational development and they understood the necessity for improvements.
- Participative planning began immediately after the game. Employees produced lots of developmental ideas and starting points for new solutions. A new model for the second game was then planned on the basis of these ideas.

The second game: a new model

The aim of the second game was to test a new model for the work flow before its implementation. The aim was to simplify and speed up the work process. The educational purpose was to help employees form an overview of the use of an information system in an organizational context, and to practice new working methods and skills in computerized tasks.

In the second game, we demonstrated a new model of the work flow in the context of the new organizational structure. Employees were working in a semi-autonomous work group serving certain customer group directly. Employees practised broader computer-supported tasks and used the new information system as a tool.

The 50 participants had roles as actors and observers, as in the first game. Actors participated in the handling of the same typical invoice as in the first game. They had now a kind of group role, so they had to plan their work activity together. Observers critically analysed the new model with a list of questions. The handling of the invoice was played through in several phases. After each phase, we had breaks for questions and discussion.

In debriefing, organized in small groups, the participants evaluated and analysed the new model and the information system. They shared their personal game experiences and viewpoints with each other. Each group then presented its experiences and conclusions to the other groups. The game sessions were videotaped and the group work was documented for further analysis.

Results: the work flow was improved

In the second game, employees learnt computerized tasks in the context of the new organizational structure, and they realized their need for further training and support. In the simplified work flow, overlapping tasks and several routines were eliminated, and half of the tasks were computerized. As a result of these improvements:

- Handling phases of the invoice were sharply reduced from 62 to 39 work phases.
- The invoice can be handled by a group of four or five persons instead of 15 employees.
- The through-put-time of the invoices was shortened from one month to 5–15 days.
- Customer service was improved.

The improved work flow and the new information system were later implemented relatively smoothly into the university administration. The work process was shortened and in real situations speeded up. (The follow-up study showed that real invoices were handled in two weeks.)

Positive experiences of participants

Participants' game experiences were collected with questionnaires and interviews. They found the WORK FLOW GAME to be effective, motivating and inspiring. They had good opportunities to participate, communicate and to learn interactively. They were motivated for further training and improving their work. From the managers' point of view the games were successful and worth their time-consuming planning. The managers thought that cooperation, communication and general working atmosphere were improved after the game sessions. They thought that simulation games had been helpful in implementing the new information system and in planning new work processes and organizational solutions.

CONCLUSIONS

The WORK FLOW GAME is an effective and encouraging method for combining organizational development, participative design and interactive learning. Simulation games seem to facilitate implementation of new information systems and to promote the improvement process and organizational change.

Simulation games support employees' involvement in a pleasing way. Through using simulation games, complex and usually abstract administrative work processes can be formalized and visualized to show their principles. Participants have the possibility to express and externalize their practical and experienced-based knowledge about administrative work to other employees. When the simulation game is closely linked to an ongoing redesign process within a specific organizational context, it provides an immediate experiential reference that guides and promotes the real work redesign effort. The effects on a real work system can be seen, for example, in more fluent work processes as well as in better customer service, as in this case. In the simulation games, participants learn from their game experience through active participation and debriefing. The WORK FLOW GAME seems to have positive effects on participants' motivation, cognitive learning and communication.

When applying simulation games for the development of work, improvements should be gained in human and organizational performance. More well-described case studies with careful quantitative and qualitative evaluation are needed to understand the role of simulation games in work development and to compare them with other training activities. In our project, we are going to evaluate several case studies in administration with a follow-up. We are going to design a usable simulation game method with a handbook for further applications in organizations.

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