The WORK FLOW GAME

– A catalyst for organization development

Virpi Ruohomäki

Helsinki University of Technology

Laboratory of Work Psychology and Leadership

P.O.Box 9500, 02015 HUT, Finland

virpi.ruohomaki@hut.fi

This paper deals with the simulation/game called the WORK FLOW GAME (WFG). It is a tailored and activity based development method, in which the employees simulate their work activities. The WFG integrates work processes improvement, participation and the learning of participants. The longitudinal case study describes and evaluates the use of the WFG in an industrial company.

KEYWORDS: organization development; the WORK FLOW GAME.

There has been growing interest and experience in using simulation/games for organization development. Based on the review (Joldersma & Geurts 1998) the simulation/games for organizational change differ from traditional management games in their attention to change processes in a dynamic environment as well as the tacit knowledge and perceptions of the participants; additionally, simulation/games can be used to fulfill objectives in individual and organizational learning. However, so far successful applications of simulation/games and empirical evidence about their possible effects have been limited within the context of organization development.

This study suggests that simulation/games can be used as an effective method to promote organizational change. The paper describes and evaluates the WFG as part of the organization development project and the implementation of a new information system. The paper aims to study participants' experiences in the WFG, and to evaluate the potential effects of the WFG.

The WORK FLOW GAME (WFG)

The WFG is based on a simplified model of the real work process, which is simulated during the game day. The WFG is a tailored and man-based simulation/game in which the employees simulate their work activities together. The participants have their own professional roles and tasks. The design characteristics of the WFG are summarized in Table 1 (Piispanen et al. 1996, 1998).

The WFG integrates three essential factors of organization development together: participation, work process improvement and learning. The WFG has been influenced by participatory development approach (Ehn et al. 1990, Eriksson 1990), group work methods, sociodrama and practical problems in developing knowledge work. The WFG has features of action research where the participants are involved in the development work and solving the practical problems of their daily work. However, the WFG is more structured compared to other methods usually used in action research and participatory development approaches, like workshops, quality circles or dialogue-conferences.

The WFG is used for developing cross-functional work processes. Here, the term work process is used according to Harrington (1991, p. 9) as, "any activity or group of activities that takes an input, adds value to it, and provides an output to an internal or external customer." A work process typically integrates the contribution of several functions of an organization thus the term cross-functional work process is used. In the WFG the simulated work process is either related to an organizational support process (like salary payment process) or to a core process of the organization (like customer service process or order-delivery process). The work process under development can also be inter-organizational between two or more organizations.

Business process reengineering (BPR) concerns radical redesign of business processes enabling information technology to achieve dramatic improvements in measures of performance, such as cost, quality, service and speed (Hammer & Champy 1993). Compared to BPR, the WFG is not aiming at dramatic redesign, rather a step-by-step approach. Organization development strategy with the WFG is interactive, not linear top-down. The application of the WFG considers human capacities for learning and innovating as well as the well-being of personnel, often neglected in BPR projects.

The application of the WFG follows the phases of the experiential learning cycle (Kolb, 1984):

- Briefing (planning and introduction to the WFG);
- Concrete experience (playing the WFG);
- Reflection and abstract conceptualization of experiences (debriefing discussions);
- Active experimentation of learned issues (development activities after the WFG within real work context).

The WFG is an effective method for analyzing the present state of work processes, and for testing new operational modes before implementation (Ruohomäki 1995). The WFG is tailored to the specific context and needs of each organization, so every application is unique. The WFG has so far been used in about one hundred organizations, for example, in the following situations (Ruohomäki 1995, Piispanen et al. 1996, 1998, Pankakoski 1998):

- Quality problems in current operations;
- Dissatisfaction of customers with the quality of service;
- Problems in co-operation, communication or the division of work;

TABLE 1: The design characteristics of the WFG.

Object of simulation	The work process: a typical example case that has actually occurred.
Participants	All the employees who have been involved in the work process, including the customer and other stakeholders.
Roles	Players and observers in their own work roles, game facilitator and messenger, other auxiliary roles as needed.
Game setting	Round table setting, players in the inner circle, observers in the outer one.
Course of events	According to a script describing the flow of the work process divided into acts.
Game rules	Common agreed rules.
Game material	Documents and tools used during the real work process.
Directing of the game	Facilitator acts according to the script and follows game rules. Clock and gong also used.
Documentation	Videotaping, recording, observations, etc.

- Implementation of a new information system;
- Change towards process-based or team-based organization.

Research material and methods

The longitudinal case study (Eisenhardt 1989) describes and evaluates the WFG. The evaluation focuses on the participants' experiences collected by questionnaires and interviews before and after the WFG. Video recordings were used for documentation of the WFG. Participants' ideas for work and organization development were written down, and their implementation was followed up. The performance measures on the quality and efficiency of the salary payment process were collected before and after the development activities. The physical and mental well-being of salary administration personnel was evaluated with occupational health checks by a company nurse. Data were gathered at different phases of the one-year development project. The follow-up was conducted six months and 18 months after the project was finished. (Figure 1).

The participants of the WFG (N=39) were the employees of the case company whose tasks were related to the salary payment process. The participants represented the following units of the company: production (n=23), salary administration (n=8), personnel administration (n=3), information technology department (n=3), financial administration (n=1) and company health care center (n=1).
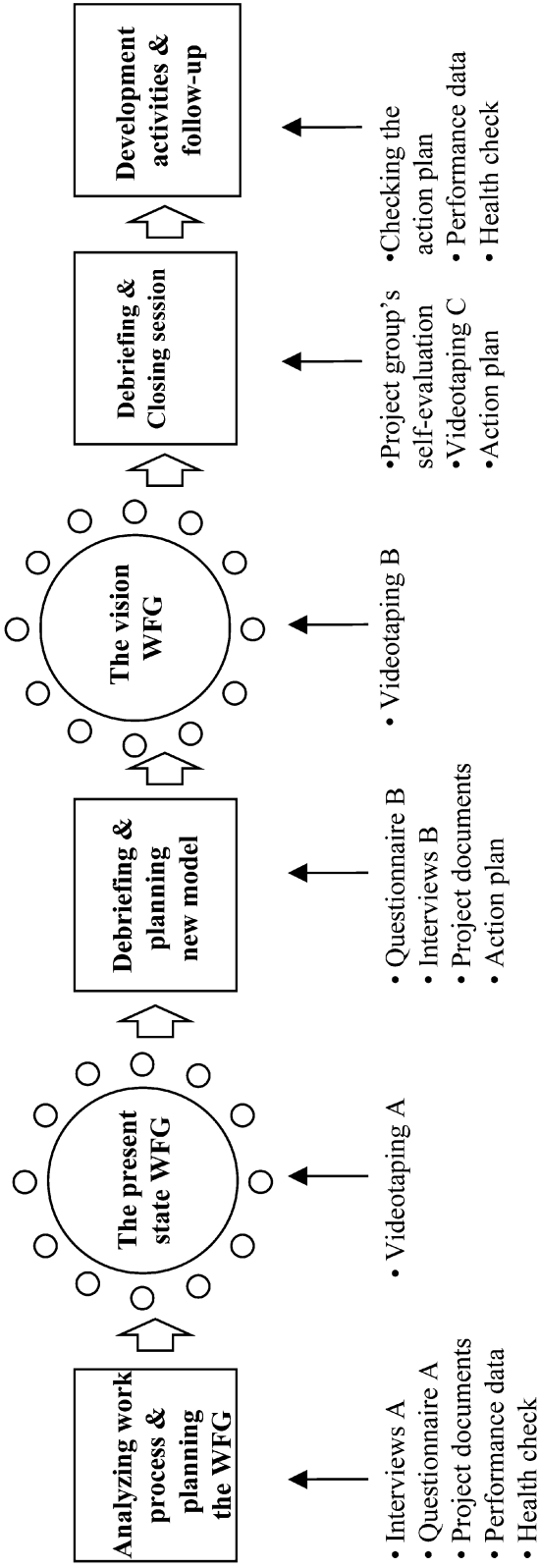
FIGURE 1: The methods and execution of the study

Case description

The company represents the process industry in chemistry and is one of the leading tire manufacturers in Europe. The company employs about 1500 persons. The personnel is encouraged to participate in decision making and the development of their own work. The cross-functional organization development project started when the representatives of the company asked the researchers to help in managing the organizational change. First, a new information system for salary payment was needed. Before the new information system could be planned, it was necessary to analyze the present salary payment process and to design a new operational mode. Second, the goal was to improve the quality and efficiency of the salary payment process. The right amounts of salaries were paid to the right persons at the right time without error. However, there were shortcomings in almost 30% of the timecard stamps or absence forms. Of the work time forms, 3% were incorrect, which corresponds to some 50 incorrect forms every week. Salary administration personnel spent about two hours per person every week on corrections and verifications of errors. Third, the goal was to support the well-being of the salary administration personnel, who had heavy workloads and did a lot of overtime. The division of tasks was unclear and the personnel felt their work was undervalued. (Ruohomäki & Pankakoski 1995).

The organization development project focused on the salary payment process of workers paid by the hours. The invisible and complicated work process had to be visualized and made more concrete. The WFG was applied first, to present the work process in order to identify its problems, and to start the improvements. Then, the WFG was used six months later to test a new operational mode for salary payment. Next, the phases of the WFG are described.
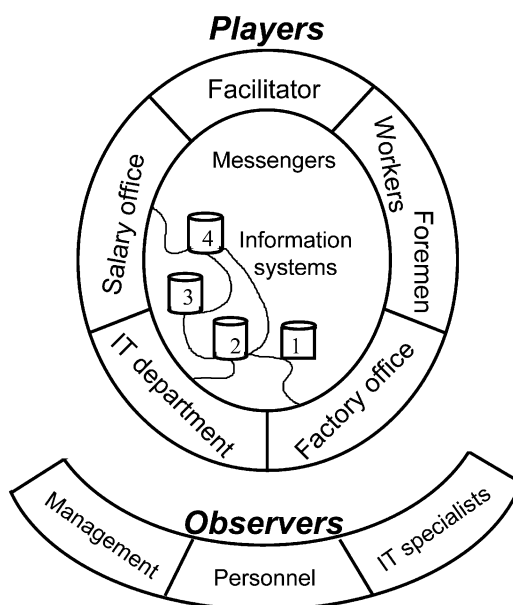

Figure 2: The game setting of the Work Flow Game

Planning the WFG: Analysis and description of the work process

In the WFG the idea is to demonstrate with real case examples how the salary payment is produced in different units of the organization by several employees. The salary administration selected three real case examples to be simulated in the WFG. A project team of eight employees and managers with the researchers was responsible for the planning and carrying out of the WFG. The project team analyzed and described the salary payment process. As a result, a general work flow chart of the process was drawn and the manuscript on simulation was written. The manuscript included in chronological order all the work phases and tasks of the personnel, the documents they used and tools or information systems they used. Before the game day, a briefing was arranged for all the participants.

The first WFG: Visualizing the present state

The participants of the game day included 12 players and 27 observers, two messengers, one assistant and two visitors. Two researchers acted as facilitators during the game day, taking care of rules and instructions. The participants were seated in a circle, which formed the game setting. The players sat in the inner circle and the observers were in the outer circle of the setting. In the center of the circle all the necessary information systems needed in salary calculation had been gathered. The computers were symbolized by baskets where the necessary printouts were put. (Figure 2).

In the half-day simulation, the three examples of the salary payment process selected were simulated. The salary payment process was followed step-by-step, from one person and workstation to the next in the same manner as the events of the real work process. By simulating the work process, the participants can see simultaneously events that have occurred at different times and places. The players were those employees who had been involved in the example salary payment process: workers, foremen, factory office clerks, salary calculators, representatives of the IT department and the company nurse. They performed their normal tasks and handled the original papers and documents. The same equipment was used as in performing real tasks (telephones, computer screens, work time forms, timecards, folders, forms). Each player described his/her tasks one at a time by thinking aloud (thinking aloud –technique, Ericsson & Simon 1984):

- What they do and how they perform their tasks;
- Which equipment and document they use;
- What kind of problems are faced when performing tasks;
- Who the next person is in the work chain that they contact or send the documents to.

The observers were representatives of management, foremen, IT specialists, work instructors, union representatives and office employees who were not directly involved in the case. They made notes about improvement needs and ideas for development with a list of questions. Two persons acted as messengers moving in the middle of the game setting. One messenger transferred paper documents from one work unit to the next. The other messenger moved computer printouts between various information

systems. This was a way to visualize the information flow, and which documents were distributed in paper and which in electronic form.

Debriefing: Ideas for improvement

Debriefing after the simulation is an integral part of the WFG. The purpose of the debriefing is to gain insights into the meanings of simulation/gaming experiences (Lederman & Kato 1995). In the WFG, the aim of the debriefing was to reflect and evaluate the simulated work process together, and to find improvement ideas. The participants were divided into six cross-functional groups. The notes of the observers provided an outline for the group discussions. The participants discussed their experiences and shared their observations. The debriefing, which took three hours, was then summarized in a joint discussion with all participants. The outcomes of the small group discussions were presented to other groups. After the debriefing, the project team with the researcher classified the ideas for improvement into four groups: 1) ideas which are ready for implementation, 2) ideas which need preparation before implementation, 3) ideas related to the information system of the salary administration and 4) other dreams or wishes. The action plan for implementing the ideas was prepared (what actions will be done, by whom, and when).

Planning the new operational mode

The planning of the new operational mode began on the basis of the improvement ideas presented by the participants. Its core idea was created in the debriefing group of managers representing the personnel administration, the financial department, the IT department and production. They presented the idea to all the participants in the debriefing of the WFG. The cross-functional management group was able to make the decision to acquire and budget for a new information system immediately after the game day.

A central aspect of the new mode of operation was a new division of work that the salary payment process would be based on, after the change to project-based salary payment, and after new information systems were implemented. A new division of work was planned in meetings with the salary administration. The routine tasks were to be automated and employees could concentrate on the handling of the special cases. The information system planning team defined what information systems were needed and how they were to be connected to each other. The idea was to plan one integrative information system. The data needed to pay the salaries would be available from a single information system. The workers save data concerning their working hours directly on a computer and the information is then transmitted electronically directly to the salary administration. In planning meetings with the various personnel groups, a common view of the new operational mode was achieved. However, it was difficult to imagine how the new operational mode would work as a whole. Therefore, "the vision for the future" was tested with the second WFG before implementing it in practice.

The second WFG: Testing a new mode of working

With the second WFG the new operational mode was tested six months after the first WFG. The purpose was to demonstrate and evaluate the new way of working in an "as if" –situation. For the participants, it served as a common forum for discussion, "what if…?". All those persons who had participated in the first WFG were invited to participate. There were 12 players and 25 observers. The game setting was similar to the setting in the first WFG. The same three case examples used in the first WFG were simulated in half a day. Each player described his/her tasks one at a time by thinking aloud. This time, the players demonstrated the different phases of the salary payment process according to the new operational mode. The observers' task was to evaluate the new way of working. Symbols were used for the new information system, because real systems were not yet available. It was emphasized that the mode was still a draft and the participants could now influence it. The demonstration was on a more general level than the first WFG, because there were still many open questions.

Debriefing: Evaluation of the new mode

The aim of the debriefing was to share experiences, and to evaluate the new operational mode. The debriefing was arranged in six cross-functional groups, who discussed on the basis of a list of questions. The notes of the observers provided an outline for the group discussions. The groups wrote down their views on the new mode of operation from the following perspectives: How is the division of labor working? What is cooperation and communication like? What is the fluency and quality of the salary payment process? What are possible needs for development in the process, and its critical phases? The outcomes of each groups' work were presented to the other groups in common discussions. The participants agreed that the new operational mode served its purpose well and it received wide appreciation within the organization.

TABLE 2: Effects of the WFG on cross-functional interaction (N=28).

Interaction between…	Very much improved	Improved	No effect	Weakened	Very much weakened
Occupational groups	7	18	3	0	0
Organizational units	4	20	4	0	0
Hierarchical levels	4	17	7	0	0

TABLE 3: Participants' perceived learning (N=28).

Perceived learning	Very good	Good	Moderate	Poor	Not at all
Overview of the work process	9	18	1	0	0
Quality problems	3	22	3	0	0
Different viewpoints	4	19	5	0	0
Own tasks in the work process	6	13	8	1	0

Closing of the project

The closing session was a summing up of the one-year project. It served as the project group's self-evaluation and feedback to the researchers. The project team checked the goals of the project, and the implementation of the development activities. The project group summarized what development activities had been conducted and what were still in progress.

Advantages of the WFG

The participants considered the WFG a useful method for organization development (26 persons out of 28 respondents, 93%). They had positive attitudes towards the WFG (25 out of 28, 89%). The respondents (n=26) answered the questionnaire's open question, "What was best in the WFG?" with the following themes:

- The demonstration of the work process as a whole (11 out of 35 responses);
- People from different organizational units were able to interact and collaborate (8);
- Different stakeholders understood the importance of the quality of the process (3);
- The WFG was well structured and planned (3);
- Learning together (3).

Arena for interaction, communication and collaboration

The WFG created an arena for cross-functional interaction and communication. The WFG offered excellent or good opportunities to express one's opinions (26 persons out of 28 respondents, 93%), and to hear each other's viewpoints (20, 71%). The WFG demonstrated that cooperation and communication between different stakeholders plays an important role in the fluent proceeding of the salary payment process. After the WFG interaction was improved (Table 2). In the interviews the participants emphasized cross-functional collaboration as the best part of the development project, and appreciated the participatory approach.

TABLE 4: Improvement ideas awakened before and after the WFG.

Improvement ideas	Before	After
Information system	6	14
Salary payment system	7	6
Cutting unnecessary tasks	3	6
Division of work and responsibilities	3	5
Communication and cooperation	5	3
Training and education	-	3
Common working procedures	-	4
Other issues	5	6
Total	29	47

Learning together

The WFG offered a new perspective on salary administration: it is not a separate unit of the organization but closely tied to the operations of other departments. The WFG gave the opportunity to observe the distribution of tasks and responsibilities between the various parties. The participants acquired an overview of the work process and its quality problems, and realized the different viewpoints of the stakeholders (Table 3).

Idea generation promoted

The participants generated a number of improvement ideas for work and organization development. After the WFG, the number of ideas was 62% higher than before it (Table 4). Most of the respondents reported that the WFG promoted very well the rise in new ideas. After the development project, idea generation continued and spread throughout the company. The number of ideas doubled from previous years. The company's own documents showed that the personnel of the whole company made as many as 20,300 initiatives and suggestions per year (about 10 per person) of which 90% are implemented through the company's initiative scheme.

Follow-up: smooth implementation

The follow-up study showed that the ideas for improvement were implemented over different time spans. Many of the ideas, mainly concerning routines, could be carried out immediately after the WFG, while the developments relating to the new information system required cross-functional planning and were more time consuming. The new information system was implemented relatively smoothly into the organization according to the planned timetable. The users were quite satisfied with the information

system, and found it to be relatively easy to use.

Improved quality and efficiency of the salary payment process

The study suggests that development activities lead to a higher quality in the salary payment process. The number of errors in the absence forms was reduced from 30% to 2%, while the number of errors in the work time forms reduced from 3% to 1%. As a result, the factory clerks needed to spend less time than before on corrections and verifications of errors. As a result of the project, a more efficient salary payment process was achieved. Many repetitive routines were automated and unnecessary tasks were cut, like mailing internal statistics every two weeks. The amount of time spent on salary payments decreased by 2-4 working days per month. The amount of overtime for salary administration decreased, and overtime was reduced from 20% to 10%.

Well-being of employees improved

The salary administration personnel reported that their work was appreciated more highly through the development project. When asked at the beginning of the project the perceived value of their work was quite low (x=2, scale 0-5). They estimated it to be higher (x=4, scale 0-5) six months after the development project. The factory office clerks were satisfied with their new enriched job description, the variety of their tasks and new titles as department secretaries. The elimination and automation of repetitive routine tasks released their resources for handling new, more interesting tasks. The salary administration personnel had slightly more influence on their work and its changes after the project (x=2.8) than before it (x=2.5) (scale1-3). For example, they had more possibilities to participate, and the managers asked for their opinions more often.

The follow-up showed that the workload peaks related to every salary payment period were decreased. According to the job-related health checks among salary administration personnel, their pain symptoms in neck, shoulders and back areas had decreased, which indicated less work related stress reactions. At the beginning of the project, six persons out of eight suffered from these pain symptoms weekly. Afterwards, only one person suffered these pain symptoms. The results seem to suggest that the well-being of the personnel was improved through their ability to influence their work, through clarified responsibilities and new job descriptions.

Goals achieved

The management and the project team considered that the organization development was successfully facilitated with the WFG, and that the results would not have been gained without the WFG. The goals set for the development project were achieved: the planning and implementation of the new information system was promoted; division of work was clarified; communication and cooperation were increased; the quality and efficiency of the salary payment process were improved. The personnel was involved in the development activities, which supported their mutual learning and competencies in participatory development work. The new information system was

successfully implemented eighteen months after finishing the project.

Discussion and conclusion

This study showed that with the WFG it is possible to integrate the improvement of work processes, employees' participation and learning as part of the organization development. The WFG provides an arena for cross-functional interaction and communication. The WFG is an effective method for analyzing the present state of work processes, and for testing new operational modes before implementation. With the WFG the bridge between the present and future mode of operation can be built on the participants' own ideas, rather than the ideas of consultants or researchers usually used in expert-driven approaches.

The "present state WFG" served to create a shared overview of the salary payment process, to identify its development needs as well as to find improvement ideas. The participants proposed many improvements, which created a basis for a new operational mode. It was demonstrated and tested with the "vision WFG". The new operational mode – including the new division of work, improved work process and new information system – received widespread appreciation and commitment from the personnel, and was successfully implemented.

This study showed that in addition to the typical objectives of simulation/games concerning individual and organizational learning (Joldersma & Geurts, 1998), organizational goals may also be achieved with the WFG concerning cross-functional communication, implementation of the information system, the quality and efficiency of work, and personnel well-being. The way the WFG influences these issues depends on the way the improvement ideas are implemented and how development activities are carried out in the specific organizational context. The WFG forms an integral part of the organization development and its potential effects can be seen over different time spans. In this study, the development activities and implementation of the new information system led to a higher quality and efficiency of the salary payment process as well as to better working conditions for the salary administration personnel. These organizational results may not be direct effects of the WFG because of many changing and uncontrollable variables, but they can be seen as indirect effects enabled by the WFG. In sum, the role of the WFG can be described as that of catalyst for organization development.

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