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Abstract

This article introduces some basic concepts of a systemic-constructivist perspective. These show that gaming simulation corresponds closely to a systemic-constructivist approach to learning and instruction. Some quality aspects of facilitating and debriefing simulation games are described from a systemic-constructivist point of view. Finally, a structure for debriefing, and some concrete examples of systemic-constructivist debriefing-methods are presented.

Keywords

constructivism, debriefing, examples of debriefing methods, facilitation, problem-oriented learning, systems theory

Gaming simulation as a methodology has a long tradition of creating learning opportunities that are active, engaging, and willing to embrace a variety of perspectives on such questions as, *What is knowledge? What is learning?* And tends toward a negative answer to the question, *Is there one best way to support learning?* This tradition is in accord with theories of constructivism which provide a strong supporting rationale for the practices and methods of those who choose to use simulations and games to support learning. Constructivism and systems thinking are two theoretical frameworks that invite exploration of complexity and avoid single-solution responses to questions about the complexity of human behavior. After briefly introducing each of these frameworks this article examines how they relate to gaming simulation. As *games*, *simulation* and *gaming simulation* are terms that can be used interchangeably, this article uses the single term *gaming simulation* throughout and applies the notion of action to episodes within particular events.

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Constructivism

From an epistemological point of view, constructivism proposes that people actively create their own sense of what is real. Constructivists make no claim to be able to recognize absolute truths, and hold that there are no existing criteria with which to check the trueness of knowledge. One consequence of constructivist thinking is a greater tolerance of alternative and unconventional opinions about the nature of truth and reality. From this point of view, all human reality, including scientific theories, are neither true nor false, but rather represent certain segments of possible views of reality. The notion of a subjective reality is linked to concepts of a social construction process (Berger & Luckmann, 1969) in which an individual's creation of their reality occurs within an exchange process between the individual and society and/or within encompassing social systems. This social construction of reality is carried out fundamentally by means of communication. In this regard, cognition is always partly subjective and is also an outcome of interaction processes by which members of a group establish shared social representations of reality via communication.

Systems Thinking

Including reference to the interconnections among different life areas in decision-making processes is called systems thinking. When thinking and behaving in such a systemic way, we are more likely to be focused on processes of change as a result of interactions between ourselves and one or more social systems (Senge, 1990). Systems thinking involves a holistic approach, taking into account as many different factors as possible to avoid interpreting problems from a single point of view. A range of likely outcomes and possible effects of planned actions can thus be considered. From this systemic point of view, communication processes and actors' ongoing patterns of communication are therefore analyzed as social *systems*. Gergen (1994), for example, demands a variety of perspectives be applied rather than insistence on apparently true points of view in a social dialog. Communicating from within a variety of perspectives requires is essential as is a willingness to learn how to deal with higher levels of uncertainty. Accepting the coexistence of many possibilities of interpretation, often also challenges one's own perceptions of reality. It also requires appropriate techniques of reflection, to make changes in perspective possible. Furthermore, it requires an appropriate and relevant communication and dialog culture, and willingness to put perspective change and the exchange of mental models into practice. That is, successful cooperation, teamwork, and use of collective experiential learning techniques for knowledge exchange are all important. This, in turn, indicates the need for, and value of, suitable learning environments to assist development of relevant competencies.

Designing Systemic-Constructivist Learning Environments

From a constructivist point of view, all learning processes must strive to provide a variety of perspectives. Teachers must therefore reduce their reliance on traditional

externally driven knowledge transfer and competency advancement methods, where factual content and instruction processes are preset. More suitable for supporting such increasingly complex learning environments are self-organized forms of learning in which discussion, the practice of reflection, and questions are not an exception but are the main part of education and learning. In such settings learners take over the initiative and share responsibility for designing learning processes for themselves (Brown, 1997). Learning experiences need to have the capacity to enhance learners' personal development as they gain capacity to question the validity of acquired knowledge and develop a sensitivity toward social processes. Unlike situations of passive knowledge transfer, learners become drawn into an active, experience-based way of learning, oriented toward discovery of what is personally important.

Systemic-Constructivist Approaches and Problem-Oriented Learning

Gerstenmaier and Mandl (1995) emphasize that problem-oriented learning is based on a constructivist view of learning. This constructivist perspective on learning means that learners do not acquire one objective reality but, rather, become more able to align their world with and/or challenge existing mental models. The processes of communication used for imparting knowledge in such social systems do not lead to absolute truths, but do help to construct an intersubjective reality. Learning is seen to involve designing knowledge and therefore is regarded as an actively subjective and collective process. Moreover, learning is a process in which internal factors, unique to an individual, are seen to be interdependent with external situational conditions. Since the construction of individual and social reality in learning processes is dependent on context and situation, the most important elements, from a systemic-constructivist point of view, include interdisciplinary cooperation, ability to alter levels of observation and fostering of perspective variety (Kriz, 2000). This approach to supporting learning processes emphasizes the following five characteristics:

- learning as an active process
- learning as a constructive process
- learning as a self-controlled process
- learning as a social process
- learning as a situational process

Knowledge is thus built up within different situations and within a social community. Learners co-create knowledge in a self-organized and active way. The problem-oriented approach to learning (Gruber, Mandl, & Renkl, 2000), for example, requires the following learning environment:

- complex and authentic contexts, encouragement for experience-oriented learning
- multiple contexts, perspective variety, method variety

- social contexts, team-learning, and teamwork
- instructional contexts, adequately supported by the facilitator, that include team-reflection and articulation of learning processes

Gaming Simulation can be characterized as a prime example of such a cooperative (Huber, 1987; Renkl, Mandl, & Gruber, 1996), experience-oriented (Johnson & Johnson, 1994; Kolb, 1984), problem-oriented and therefore situational (Gräsel, 1997; Mandl & Gerstenmaier, 2000), and primarily self-organized (Weinert, 1982; Greif & Kurtz, 1996) method of learning and education. Similarly, the methods used in gaming simulation correspond to a systemic-constructivist view of learning.

Simulation Games as a Systemic-Constructivist Learning Environment

Acceptance of the notion of the social construction of knowledge is clear in the design, execution, and debriefing of gaming simulation activities. That is, they are particularly meaningful learning methods since they put into practice the main principles of problem-oriented learning. Gaming simulation as a learning environment enables participants to deal with as if real problems in authentic situations. At the same time it is a form of cooperative learning because it challenges and provokes team-based problem solving. Even a simple gaming simulation can include multiple contexts. Furthermore, the use of different gaming simulations can enhance and draw on competencies relevant across a wide spectrum of complex situations. Knowledge obtained this way can also be used in new, hitherto unknown domains. This way of learning with multiple perspectives inculcates flexibility for transforming new knowledge into action. Using gaming simulation invites solving of more complex problems, through the application of suitable problem-solving strategies. The major rationale for using gaming simulation is not only to define objectives and strategies for achieving learning goals but also to implement action to achieve them, and furthermore, to diagnose, analyze, and assess responses to critical situations that occur, and to make the consequences of decisions transparent. Participant competencies are also enhanced through discussion of learning and problem-solving strategies during the debriefing—a further time for contributing to multiple perspectives and the construction of a common social knowledge.

Quality Aspects of Facilitating Gaming Simulation from a Systemic-Constructivist Point of View

Any trainer or teacher, choosing to conduct a gaming simulation and adopting the term *facilitator* to define their approach, is faced with the question of what role to take during a gaming simulation. In contrast with traditional instructional approaches, novice facilitators will be faced with uncertainty concerning the complexity and momentum of the gaming simulation action, and may experience fear of losing control or facing discipline difficulties. In actual fact, some form of guidance or leadership is essential

in gaming simulation to assure the necessary conditions for participants' self-organized processes (Kriz, 2000). Some researchers suggest a facilitator is doing well when participants scarcely notice their presence. However, a facilitator must always remain sufficiently active in the background to ensure arrival at an appropriate end point. Additionally, they must be present in a very focused and observing manner to be aware of participants' decision processes and group dynamics. This attentiveness ensures the facilitator can make appropriate regulatory interventions, which is described as a form of "active inactivity" (Kato, 2004; Leigh & Spindler, 2004).

Possible Approaches to Facilitation

The facilitator ideally uses a development-oriented approach to leadership. Wagemann (1999) suggests that a leader must change their approach as they interact with a group, and in considering the executive (leadership) duties of a facilitator working with a group of learners, the following three approaches are particularly relevant:

- **Shaper:** As a shaper, the leader provides direction through a clear introduction to the process (the briefing) arranges the setting (spatial arrangements, etc.) and provides necessary resources.
- **Obstetrician:** as an obstetrician, the leader supports participants to give birth to the activity for example, by assisting performing plans, clarifying questions of procedure and uncertainties (concerning rules, etc.), addressing problems of group dynamics as a mediator, giving motivating feedback.
- **Coach:** once the first steps of the gaming simulation are underway, participants should be able to work independently. The leader (as coach) serves mainly as observer and supporter. The goal is promotion of participants' capacity to attain solutions and decisions independently.

Of course it is necessary—particularly during longer gaming simulations (e.g., lasting several days)—to shift among these roles repeatedly. Facilitators must watch events closely and supervise the process, while avoiding use of an authoritarian policing manner. They may need to suspend the action, bringing participants together to explain the meaning of important rules or stimulate continuation of the action (Capaul, 2000). They may also need to undertake extra tasks, such as handling software in computer-supported gaming simulations, and completion of evaluation/game documentation actions. Sometimes a facilitator may occupy more than one role during the action (e.g., banker, supplier, and customer in a business simulation game). All such tasks require detailed knowledge, thorough preparation, and a continuous overview of the action.

Importance of the Briefing

Introducing the nature of the gaming simulation method, together with relevant learning objectives, is essential to a well-formed briefing or introduction. Rules and

roles must be displayed clearly and in enough detail. Key rules—that must be obeyed—are identified as indispensable to meaningful action and the attainment of learning objectives. The extent to which participants are free to devise their own rules and interpret roles must be made clear. The more open (free of constrictions on action) the gaming simulation the more critical is the tightrope walk between the allowance for self-organizing rules and creative solutions of problems. As participants gain momentum this sometimes results in a creative reinterpretation of rules or the use of rule gaps. Where possible, everything that does not endanger the attainment of central learning objectives and does not exceed ethical limits should be allowed. If a rule has not been explained during the introduction, and is not absolutely necessary, do not introduce it later in the action. Careful coordination is essential to ensure a clear boundary for participants regarding changes to handling rules and roles, and in regard to adjustment of rules in the course of the action by facilitators themselves. This is especially true if more than one facilitator is conducting the gaming simulation.

Clarification of reasons for participation and discussion of participants' situational definitions about possible outcomes of an activity are important during the briefing phase. Is it, for example, fundamental to them to—win at any price? Solve problems rationally? Demonstrate skills extremely well? Behave *professionally*? Different participants will have different motives and situational interpretations. This can be best managed through use of a clear introduction informing participants about the purpose of the game and the facilitator's own (and/or program-based) motives and situational definitions. Yet, it is well to remember that the range of motives and situational definitions can never be entirely controlled (Jones, 1997).

Ethical Standards

Another characteristic of effective quality assurance is observation of ethical standards. On one hand, the voluntary nature of participation must be a guiding principle at all times. Yet on the other hand, it is often reasonable in simulation games to put pressure on players, thus causing temporary strong emotional reactions, including frustration. Unexpected emotional outbursts may require a consideration of time-out to process emotions by means of reflection and discussion and to clarify the intent of specific processes. Generally, it is worthwhile, before starting, to create a trusting and open atmosphere among participants (supported by suitable warm-up exercises and team exercises) and to explain the voluntary nature of participation as challenge by choice. In practice, sometimes a so-called full value contract may be placed—a contract (i.e., a verbal and/or written agreement) assigning in what ways participants will interact with each other to optimally support learning. Such a catalogue of values corresponds to desired behavior patterns (e.g., to give feedback and be willing to receive it, etc.) and also to behavior patterns that will not be tolerated (e.g., physical violence, bullying, etc.).

Quality Aspects of Debriefing Simulation Games from a Systemic Constructivist Point of View

Since models underlying gaming simulation represent aspects of reality (at least a socially designed reality), the question arises of how participants' experiences and results can be related back to their own contexts. The term *debriefing* refers to the methods used to combine participants' reflections on their experiences with assessment of mental (cognition, emotion, etc.), social (action, communication, etc.), and systems processes (change of resources, structures, etc.) to deduce applications for real situations beyond the gaming simulation experience.

Long-term application of new attitudes, knowledge, and social competencies, acquired through use of gaming simulation, needs suitable methods to guarantee the transfer of what has been learned to the usual life and routines of participants. The use of effective reflection and transfer activities (see for example the techniques described below) creates appropriate conditions for learning to be applied to creation of new innovative concepts. These techniques can also be used for planning the future of a team and one's own personal professional future. To conduct a gaming simulation without including adequate debriefing is ineffective and even unethical (Crookall, 1990; Stewart, 1992).

Six Phases for Quality Debriefing

This reflection-oriented phase requires a structured facilitation process with specific underlying criteria to give it value for everyone who was involved. Basically, each debriefing includes a sharing of participants' experiences during the action and a period of reflection regarding the outcomes and their possible meanings in real situations (Lederman & Kato, 1995). A simple and effective model for guiding this process follows. It divides the debriefing process into six phases (in accord with Thiagarajan, 1993) to which specific reflection topics and basic questions can be assigned precisely (Kriz & Nöbauer 2002):

Phase I: *How did you feel? Participants are invited to describe their emotions after completing the simulation game and to recall and recount their feelings during the game.* This makes it possible to release tension and ensure greater calmness and concentration for a less emotional discussion of experiences in the following phases. The function of this phase is to calm down and to create a degree of distance from preceding events, and to lead participants away from the roles they had in the action. Sometimes, long or intensive emotional processes appearing during the game, and continuing beyond it, result in very limited rational discussion of experiences. A role dropping ritual can be helpful to support the release of role identification. However, discussion of the question "*How did you feel?*" is always important to help make transparent participants' different feelings about situations in the activity, and participants' emotionally charged assessments. In this way participants learn that the same situation can be perceived and

judged quite differently. A climate of mutual confidence is necessary in this phase for participants to openly communicate about feelings, which can contribute to deeper mutual understanding. It is important that the facilitator does not press anybody for a statement, accepting that some participants will not openly report feelings or will do so only superficially. If defense mechanisms do appear (rationalization, explanations, and justifications of behavior, making fun of the feeling-question, etc.) the importance of this phase and also of the following ones must be emphasized so that participants understand what lies ahead. Firmly but gently, the facilitator must return to the main topic of this phase (i.e., the expression of feelings). Feelings that are expressed must at no time be devalued or criticized.

Phase 2: *“What has happened?”* In this phase, participants are encouraged to talk about their perceptions, observations, and current thoughts about the activity itself. The aim is to collect and analyze information and understand different positions while doing so. The facilitator may ask specific questions referring to intended learning objectives and needs of the participants. The action may be reconstructed so as to examine critical situations in detail. Factual aspects may be discussed in this phase, for instance, an assessment of different decisions and problem-solving strategies of a team. Here, the facilitator’s own observations and assessments of strategies and so on can be included, especially through reference to such things as an evaluation process that may use the gaming simulation documentation. The processes of group dynamics may also be highlighted. Giving and receiving personal feedback can also be included here. Sometimes it is necessary for a facilitator to tell the truth about the game at the beginning of this phase, especially when different groups of actors had different roles and rules that may be as yet unknown to other players.

Phase 3: *In what respects are events in the gaming simulation and reality connected?* In this phase, the relationship between experiences and reality are thoroughly examined, to begin a transfer of the experience and knowledge to participants’ own lives. However, as noted in the opening remarks it must be pointed out again that reality and real life are already social constructions. Nevertheless, there is a difference between the situation of the gaming simulation and other situations beyond the setting of the action. Therefore, participants discuss in this phase the meaning of the game, for example, in regard to future design of team processes in their workplace. A central topic of this phase is whether particular behavior patterns observed during the action have appeared accidentally and merely once, or whether those behaviors connect to communication and action patterns in other situations elsewhere. If accidental and once off, experiences in the gaming simulation have little to do with reality and are not relevant. If observed and/or experienced in other situations, reflection must be deepened, since it is important to identify and commit to changes and improvements. This is the phase where the gaming simulation model and reality are compared with each other. A deconstruction of the action and design occurs in this phase through discussion of relationships between gaming simulation elements (roles, rules, and resources used in the game) and system elements (roles, rules, and resources of the simulated system in reality). Similarities

and differences between the experience and reality must be reflected on to avoid participants reaching inappropriate generalizations or conclusions.

Phase 4: *What did you learn? In this phase, participants identify their most important learning and report conclusions they can draw from the experience in regard to personal insights, experiences of group dynamics, and new factual knowledge gained.* Everything discussed during the previous three phases is condensed and summarized. Participants begin to incorporate their experiences into their cognitive structures. Conclusions drawn are examined from different angles and attempts are made to put forward hypotheses for cause/consequence relations and legitimacies. The aim is to generalize this unique experience (e.g., identify typical behavior patterns). Participants are invited to question their current mental models, develop and/or suggest explanations of behavior and personal perceptions. They enlarge their cognitive schemas and convictions and consolidate newly gained knowledge by discussing their experiences with the group.

Phase 5: *What would have happened if . . . ?* In this phase, participants speculate about hypothetical scenarios. They reflect on what possible changes and effects on behavior in the team would have been stimulated by alternative rules and framework conditions, other decisions, and so on. The aim of this phase is to stimulate participants to further explore the essential principles and terms of the gaming simulation.

Phase 6: *How do we go on now? The last phase focuses on the purpose of committing to clear, realistic, and measurable goals for future actions of all involved.* Participants describe as concretely as possible how they want to behave (differently) in a real situation comparable to the gaming simulation experience. Plans for action steps are put in concrete terms.

Sometimes a “closing ritual” helps participants to end the gaming simulation and debriefing. The facilitator may then turn to goal-oriented action planning with participants. Experiences reflected on during the debriefing can be drawn on to design and moderate ongoing processes of change in an individual, an organization, and/or a team.

This debriefing structure not only applies to the complete reflection which should take place as the final stage after completion of a gaming simulation, it can also be used for shorter debriefings, which may take place between rounds of a longer gaming simulation activity. To make the debriefing for participants as helpful as possible, three facilitation capabilities are suggested by Kriz and Nöbauer (2002) as the following:

- **Ask questions and listen to answers.** Besides the questions mentioned previously, other questions about team processes may be asked. Wherever possible, the facilitator must avoid answering his or her own questions and must not explain what can be learned from an activity. The facilitator’s task is to sensitively support participants’ ability to draw their own conclusions. This requires use of a nondirective facilitation style.

- **Tolerate ambiguity.** In experiential learning using gaming simulations, the behavior and experiences of participants are not foreseeable, as they are, for instance, in a lecture. Facilitators must give up the need for comprehensive control. Spontaneity is more important than forcing a predetermined structure.
- **Time.** A facilitator must provide for enough debriefing time so that everybody in the group has time for detailed reflection. Breaking short a debriefing must be avoided.

A large number of specific debriefing methods have been designed to make this reflection phase as effective as possible. Some relevant examples include

- guided vs. unguided (not moderated by facilitator)
- use of media, (e.g., face to face; Internet chat; etc.)
- oral vs. written (questionnaire; letter to self; written debriefing; e.g., learning diary/journal—see below)
- group size (debriefing by individual, dialogue in pairs, small teams, whole group)
- group composition and choreography (e.g., debriefing of participants in teams with same vs. different roles in game and/or real life; where group composition changes during debriefing how are the different compositions to be debriefed?)
- whole group of participants vs. only part of the group is allowed to talk/work at the same time and others are able to listen (e.g., panel discussion, fishbowl, talk-show format)
- different vs. same debriefing tasks/aspects distributed at the same time (e.g., different debriefing groups reflect on different questions at the same time)
- use of metaphors and expressive arts (incremental scales of response, sculptures, drawing)
- use of space (sitting on chairs vs. moving around as in a market place)
- use of different perspectives (observers, circular vs. direct questions, reflecting team techniques; see below)

In practice, different methods are usually combined. Participants can—for example—first express experiences and feelings via expressive art methods (e.g., sculptures, drawings). Afterwards, individuals might reflect on relevant aspects of their experience with the help of questionnaires. Then they can move into small-group discussion focused on specific questions and later present the results to the whole group. Then the facilitator can lead a further reflection with the whole group, including video analyses, to discuss concrete changes to participants' work situations based on their experiences, and finally a concluding fishbowl might be used. The next section describes examples of special systemic debriefing methods.

Examples of Systemic-Constructivist Debriefing Methods

Debriefing with the Reflecting Team

One possible method for questioning the socially constructed reality of participants is to use the reflecting team as suggested by Andersen (1990). In this intervention technique, a therapist works with the family (client system) to identify different perspectives about the realities of the family members and therefore also different problem definitions. A reflective team, consisting of additional therapists, silently listens to this information given in conversation during the therapy meeting for a while (the reflective team is usually in the same room, however, is at some distance from the client system). These additional advisers then talk (reflect) upon the communication in the client system. They try to offer as many interpretations, ideas, and prospects as possible. The remarks of the reflecting team members are preferably at a higher level of neutrality about the client system (i.e., the conversation shall not be at the expense of one or more persons). In doing so, new interpretations of reality are offered mental models and communication patterns of the clients are analyzed and reinterpreted (reframed). It is more important to ask questions which will foster new interpretations of reality by the clients, than to offer explanations or interpretations of client behavior. This technique is effective because there is no direct communication between the reflecting team and the client system. The clients hear new interpretations of their behavior and justifications and defenses are consciously ruled out. The use of the reflecting team in the context of therapy has been transferred successfully in the past 10 years to a number of different contexts (Hargens & von Schlippe, 1998). This technique can be widely used. For example, a team represents a client system in which an adviser communicates directly with the team and several further advisers reflect the team function.

Another approach for debriefing simulation games, which can be included in the debriefing, enables a facilitator to carry out the debriefing with participants and additional facilitators from the reflecting team in the debriefing. After certain periods of time, for example, after 15 to 20 minutes of "normal" reflection activity (or after every phase of the structured debriefing-processes described above), the reflecting team reflects for 5 to 10 minutes upon the observed behaviors of the participants during the game. Next, using a meta-debriefing, they reflect upon their observations of communication processes in the debriefing (e.g., about the application of particular feedback rules, etc.). New perspectives are offered in this way. After that, the debriefing of the participants is continued.

In the course of an entire debriefing, it may be possible to include several switches between normal participant debriefing and reflecting team debriefing. Instead of forming the reflecting team with additional facilitators, it is also possible to constitute it with the assistance of participants who have only been observers during the game. This method supports handling alternative opinions and different perspectives.

Participants can also directly form the reflecting team. After an initial period of classic debriefing, the facilitator invites some members (less than half of the complete group)

to form a reflecting team, which talks about the behavior and communication in the game and in the debriefing respectively. However, the participants of the reflecting team should change the place to announce a clear context change of the reflection process. This new position can be achieved, for example, by relocating members of the reflecting team to a little circle of chairs next to the big circle of the whole group debriefing (where the majority of the team members remain). In most cases, it is highly unsuitable to position the reflecting team in the middle of the debriefing-circle since this places them in the center of the conflict. After some time in the reflecting team, members may resume their seats in the large debriefing group.

The reflecting team membership can be created according to the needs of the context (e.g., selected from those who are calm in the face of rising tensions during a debriefing) or from other specific subsystems. If it is about the processing of conflicts, sending only the representatives of one conflict party into the reflecting team should be avoided. When processing conflicts, the reflecting team should always contain representatives of all groups of interests. After the reflecting team has completed the reflection from a meta-perspective and taken a seat again in the whole debriefing group, their thought-provoking questions need to be integrated into the ongoing normal debriefing. Here, the facilitator can activate a reflection in the complete group about what has been discussed by the reflecting team (e.g., by asking of them, What was new for you when you belonged to the reflecting team? What questions were raised? Which kept you most busy? What might better have not been said in the reflecting team?—Why? etc.).

Another variation of the reflecting team, which can also be used in very large groups, consists of the use of four distinct perspectives as defined by Brandau and Schüers (1995). They describe the following four role-perspectives:

- **The fools:** They have the task of exaggerating problems from a provocative and funny perspective. They provide some kind of caricature of a problem or conflict. They introduce their point of view as actively and playfully as possible. They also have the privilege of presenting “crazy” problem solutions.
- **The wise ones:** They have the task of clothing the problem situation and its contradictions but also their proposals for solution in a story, which serves as a metaphor. In their story, they describe the connections observed by them from a position as holistic as possible, in which the interdependencies of different problems and relations between persons are expressed.
- **The guardians of justice:** They have the task of paying tribute to all persons involved. They warn of the negative results of unreflected actions and of dangers of the abuse of power. They seize party for scapegoats, for excluded and forgotten ones. In the first instance, they phrase questions to convey their point of view.
- **The good spirits of courage:** They support all persons in their strengths. They try to take an optimistic attitude and inform about suspected or observed resources of the involved persons and give ideas of solution. In their position they express themselves by means of encouraging comments.

Once introduced to the four roles, participants are then invited to take one of them on, and to use it as a lens through which to examine the game experience more precisely. In the first step, small groups are formed by participants holding the same role. These participants then reflect upon a question given by the facilitator for 20 to 30 minutes, using the point of view of their role and prepare a presentation from that perspective. Then the small groups present their answers to the complete group from their different role perspectives, for example in a verbal or scenic form, one after another.

Another mode of presentation is use of the written form. Small group texts and their commentary, as developed from the perspective of one of the four roles, are placed on the wall in the four corners of the room. Participants have time for reading before the contents of these presentations are used as the basis for reference during the further debriefing.

Debriefing with the Learning Diary

Even if not all people use a diary, almost everybody knows the “private” diary as a possible place for writing down and processing experiences and feelings. The learning diary is an instrument, which serves on one hand to record individual learning process and, on the other, experiences are exchanged with other participants of the same learning environment. Also the facilitator writes his own diary. In the context of the debriefing the learning diary helps to cling to personal experiences, individual dismay, targets, or conclusions from the experienced game or game round. An exercise book of one’s own is recommended for the entries.

Forms of the Learning Diary

We have had good experience with unstructured but also with question-based forms of the learning diary. In the unstructured variant, all ideas, inner pictures, and thoughts, which appear when recalling the simulation game situation are permissible. It is irrelevant in this first writing phase, whether it will be interesting and usable later on. For participants with less reflection experience it has also proved worthwhile to formulate some leading questions which steer the thoughts of the diary authors (some examples are given in Table 1). We distinguish between four dimensions which can be the main emphases of the reflection. Depending on the individual situation questions are more or less relevant. The diary author always answers only those questions to which they spontaneously want to respond.

Learning diaries can be an essential part of the debriefing process and for example can be worked with in the following ways: a) Individuals create entries immediately after the end of the game or game round—followed by oral exchange of entries in (small) group—and then completing the debriefing in the complete group with discussion of the learning diary entries—followed again by individual entries after the debriefing. Participants should always be informed at the beginning that an exchange of some of their journal entries are also planned. However, no one should be forced to make

Table 1. Possible reflection dimensions in the learning diary

-
1. Chronological development perspective (of the complete process)
 - What special events have characterized the simulation game?
 - Were there phases which were especially strenuous? Which one(s)? Why?
 - I have experienced the previous course (concrete examples) as . . .
 - What led to a conflict in the group?
 2. Topic-centered perspective (contents)
 - What were the main emphases of the simulation game?
 - Which topics appeared again and again?
 - Which topics were put back again and again?
 - Have there been latent topics besides the openly discussed ones? Which one?
 - Which open question arises from the contents?
 - Where do I experience inconsistencies?
 - Were there new topics/topic facets/prospects for me?
 3. Group-related perspective
 - Which roles were taken by whom?
 - How were decisions made?
 - Do I see conflicts? Were they mentioned? How do we deal with them?
 - Who cares about conflicts?
 - How is the climate in the group—listening, acceptance and dominance of each?
 - What should the group do to work better and more effectively?
 - How far did we use of the abilities of each group member?
 4. Personal centered perspective (author himself or other person/s): The center are experiences of the diary writer himself or possibly from other persons
 - Do I feel like a member of the group (how can this be marked)?
 - Which were experiences I already had/new experiences for me?
 - Which new/known roles have I adopted?
 - Was there sufficient room for my ideas?
 - What have I done to attain my goals?
 - Which roles did I take in the group?
 - If I was dissatisfied with a certain course: What did I do to cause a change?
-

their entries public. Participants have the right to keep reflections in their diary a personal and secret. Particularly essential in our experience is the fact that the facilitator provides time for writing phases explicitly within the training. The time periods for an entry should not be left to the participants or intrude into the breaks.

Debriefing with Circular Questions

If questions are asked in the debriefing, then these are usually direct questions. For example, the facilitator could ask participant Tom in phase 1 of the structured debriefing process (as above): “Tom, how did you feel in situation X?” Such a direct question asks for an explanation of behavior or demands a subjective meaning of behavior from the affected person. This question is essential because important aspects of the simulation—in this case the feelings of the other one—are mentioned. The other person will be aware that his behavior was perceived and that others are interested in him (e.g., situation X

could be a situation in which Tom was in rage). But these direct questions are only one option of the facilitator for questions in the debriefing. The constructivist question form of so-called "circular questioning" developed in the context of systemic therapy can be used in addition to bringing in a greater variety of different perspectives. Circular questioning is a method that uncovers social constructions of reality and makes them better understandable (Tomm, 1994).

From the systemic constructivist's view, all possible ways of behavior (e.g., outburst of rage) are not only an expression of a process which takes place within an individual person but are also simultaneously a social message that "says" something about the relationships among people. The communicative meaning aspect is approached more adequately with circular questions. The facilitator could ask participant Sylvia for example: "How do you think Tom has felt in situation X?" Or ask Tom, "How do you think your outburst has affected Franz?" Another typical circular question includes the interpretation of behavior by a "third person" as an expression of a communicative relation sample. For example, the facilitator could ask, "Sylvia what do you believe Franz has learnt in cooperation with Ulli today?" or asking Katharina, "Tom was furious about Sarah in situation X. Is this a typical communication and reaction pattern? How do you assess the communication between Tom and Sarah in your project team at the workplace?" The persons addressed are always present in the room. They themselves, however, are not questioned directly but at first listen to how other persons interpret their behavior again in connection with other persons present. With this question technique new meaning is brought in by interpretation alternatives. This type of the information extraction asks for patterns, not for things. Symptoms or problems are not things but processes, formed by actions and communications of different persons (Jones, 1995). These circular questions are a good addition to direct questions, and both question forms can be used in the debriefing in practice to reflect as many perspectives as possible.

Team Sculpture

This technique is not only about the feelings during a simulation game, but the (emotional) relations between participants can also be set into scene (Moskau & Mueller, 1992). At one time, one participant functions as a "sculptor" or "artist" and places the other participants into the room. In doing so, he can illustrate the social closeness or distance of the participants. In addition, the sculpture can be made in such a way that the sculptor indicates special forms of expression, such as facial expression or gestures, and so on (e.g., a concentrated fist, a persons forefingers directing to another person, etc.). Hence, broader emotionally colored relation aspects are picked out as a central theme. It is possible that the sculptor integrates himself into the sculpture at the end. The sculpture should be made the reflection topic by the facilitator for further debriefing. The way participants feel in the sculpture position should be discussed as well as what is experienced as "coherent" or "dissonant." Change suggestions can also be made (by the facilitator, by the sculptor, or also by other participants) and then be represented in a changed sculpture. Advantageously, different participants get the possibility to set

their sculpture. Thereby, several prospects and relation interpretations of the participants involved can be experienced concretely. Through this technique, all participants can work together on a sculpture or structure which represents an existing dysfunctional situation or use this method to form a new sculpture as expression of a preferred reality. The common reflection of these sculptures as visualizations of relationships supports the development of new perspectives and ideas for change.

Summary

The four examples of systemic-constructivist debriefing techniques mentioned guarantee particularly individual development and teamwork as well as a change of perspective and a deeper reflection of how social systems work. Originally, these methods were used in systemic therapy and counseling with families. In the context of a training program for the fostering of systems competence with gaming simulation (Kriz, 2003), we have integrated these methods effectively into the debriefing of simulation games. This experience is now based on 5 years of experience and scientifically successful evaluation (Kriz & Brandstätter, 2003). Through applying the systemic constructivist approach and concrete debriefing methods in simulation games, the potential of gaming simulation as problem-oriented learning environment for the acquisition of knowledge and skills were fully utilized. Participants also reported that they make further use of these techniques in the workplace (e.g., in team meetings and problem-solving situations where it is necessary to exchange and empathize in a variety of different perspectives) and to build up a shared understanding and representation of reality.

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