Supporting creativity in group sessions
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Introduction

- The need for creativity
  - Creativity is important for economical prosperity
  - Most companies have creative departments

- Supporting creativity
  - Creativity has many different aspects
  - Creativity can be supported by computers

- Creativity in groups
  - Groups are usually used for creative tasks
  - Group session important part of group work

→ Creativity tools supporting group session
Overview

1. Creativity
   - Definition
   - Operationalizing

2. Group creativity
   - Definition
   - Model

3. Creativity Support Tools (CST)
   - Methods

4. Tools supporting creativity
   - Requirements
   - Classification

5. Tools supporting creativity in group sessions
   - Examples
Creativity: Definition

What is creativity?

- Divergent thinking: the ability to produce different ideas
- Originality: the ability to produce unusual ideas
- Elaboration: the ability to create different aspects upon an idea

Extend

- Innovation: creativity is the origin of innovation; innovation result of creativity
- Idea: not all ideas are creative, creative ideas are less reproducible

Evaluation

- Individual: Creative for oneself
- External: Creative by external judgement
Creativity: The 4 Aspects

- **Person:**
  - relating to the creative person
  - Depends on: personality, intellect, behaviour, attitudes

- **Pressure:**
  - Stimuli that affect the creative person
  - Depends on: age, family background, social behaviour

- **Process:**
  - Development, life cycle of the creation
  - Depends on: motivation, learning, thinking, communication

- **Product:**
  - Outcome of the creative process
  - Depends on: novelty, value, quantity
Creativity: Operationalizing

The creative product:
- Originality: uniqueness of the idea, strength of the creativity
- Propagation: Publication of idea
- Social evaluation: Comprehension and further development
- Social acceptance: Adoption and stimuli for new ideas

Process of creativity:
- Preparation: problem identification
- Incubation: subconscious working on the problem
- Acquisition: answer in rough space
- Examination: testing, realising and propagation
Group creativity: Definition

Range:
- Individual creativity: One person, depends on situation
- Social creativity: depends on communication and interaction
- Group creativity: part of social creativity, depends furthermore on synchronisation

Group process:
- Serial: creation is successive
- Parallel: creation is side by side
- Simultaneous: creation is concurrent

Evaluation of group creativity:
- Advances: Knowledge sharing, new and more different ideas, learning from others
- Disadvances: Adaption, laziness, blocking
Group creativity: Model

**Domain-relevant skills**
- knowledge about the domain
- requisite technical skills
- special domain-relevant 'talent' or expertise

Depends on:
- the participants
- the moderator

**Creativity-relevant processes**
- appropriate cognitive style
- implicit or explicit knowledge of heuristics for generating new ideas
- conductive work style

Depends on:
- group composition
- work procedures
- the moderator

**Task motivation**
- attitudes towards the task
- precepts of one's own motivation for undertaking the task

Depends on:
- intrinsic motivation toward the task
- abilities to control extrinsic motivation factors
- the creative climate
Creativity support: Methods

General support methods
- Management and monitoring: organizing deadlines, presenting information
- Evaluation and relation: interpretation and integration
- Collection and information system: supply necessary information
- Idea-generation and creation: computers try to find solutions
- Sharing: propagate solution

Support of group session
- Create relationships
- Making all voices heard
- Enable back talk
- Create open systems
Requirements on CST

- Keep multiple ideas visible simultaneously
- Personal, sub-group and group spaces
- Levels of sharing, private and public workspaces
- Rich history keeping
- Rapid access to personal and shared designs
- Minimize inhibitors: production stopping, free riding
Overview CST

General classification:
- Communication oriented: eMail, online forums, conference tools …
- Repository oriented: Wikis, web portals, search engines, repositories …
- Problem solving oriented: decision support systems, evaluation systems …
- Artificial intelligence: neuronal networks, generical algorithms …

Task oriented classification:
- Animation: Flash
- Music editing: CuBase
- Video editing: Premiere
- Wikis: MediaWiki
- Media Sharing: YouTube
CST group session overview

- Attributes
  - Co-located
  - Simultaneous
  - Two up to ten participants

- Tools supporting creativity in group sessions
  - Caretta
  - TEAM STORM
  - Public Space Public Design
  - EDC
  - DYNAMO
  - UbiTable
  - ...
Caretta

- Developed 2004, Tokyo
- Support shared idea creation
- For different stakeholders
- Consists of:
  - Central sensing board, group space
  - physical and virtual objects
  - Idea sharing and evaluation
  - Several PDAs, personal space
  - Idea generation
  - Database Server and LCD projector
- Advantage:
  - Enables use of physical objects
- Disadvantages:
  - No sub groups
  - Data cannot be transferred from PDA to board

Quelle: ONeill
TEAM STORM

- Developed 2007, Illinois
- Sketching tool for multiple ideas
- For designers
- Consists of:
  - Large central display, group space
  - Idea sharing and evaluation
  - Shows multiple ideas at once
  - Several Tablet PCs, personal space
  - Idea sketching
  - Idea organisation
- Advances:
  - History keeping
  - Personal and public space
- Disadvances
  - No sup groups
  - Only for early prototype design sketching

Quelle: Hailpern
Public Space Public Design

- Developed 2007, University of Bath
- Supports idea generation in creative groups
- Consists of:
  - A central tabletop, group space
    - Idea sharing
    - Idea evaluation
  - Several Tablet PCs, sub group space
    - Idea creation and sharing in sub group
  - Several PDAs, personal space
    - Idea generation
- Advances:
  - Personal and public sharing
  - Group leader support
  - History keeping
- Disadvances:
  - Separation of workspaces

Quelle: O'Neill
Conclusion

- Creativity in groups can be supported in many ways
- Much work for tools supporting creativity in group sessions is needed
- There is an use of and need for creativity tools

Future tasks:
- Accelerate research and invest more money and time
- Promote more multidimensional evaluation techniques
- Rebuild user interfaces for creativity support systems