The Delft view on Creativity
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0. Introduction.

At the Delft University of Technology (DUT) creativity is taught since a very long time. In 1986 the course Creative Problem Solving was introduced. It has grown to one of the most popular courses at the Faculty of Industrial Design Engineering (IDE); the official name for the product design school in Delft. With the introduction of the three bachelor-master programs in 2003 the emphasis of the course was shifted more towards organizing and facilitating and less to just applying creativity techniques. The present course Creative Facilitation is offered twice a year to serve more than 200 master students a year. In this paper we want to describe our latest views how to stimulate creativity. The context in which we work is a design school within an university of technology. The students have an international background: about 40 % is foreign. All have at least a bachelor degree in design. The working language is English. Due to the character of a design school it is quite easy to get students to make visualisations, sketches or prototypes. It is also easy to let them do role plays in order to empathise with potential users or other stakeholders. Working in groups is more or less standard behavior, also for other courses.

1. An integrated creative problem solving process.

A lot has been written on the subject of creativity and creativity techniques. We do not have to reinvent the wheel in this paper. In 2009 we summarized most of the ideas about creative problem solving and added some new elements based on our project management experiences to them (Buijs, Smulders & Van der Meer 2009). These latest insights, we like to call them \(iCPS\) (= integrated Creative Problem Solving), are that there are four intertwined and mutually interdependent sub-processes inside \(iCPS\):

1. Project Management,
2. Content Finding,
3. Information Finding,

See figure 1
Figure 1 The iCPS overview.

*Project Management* is about organizing all the steps you are going to make in a creative session. This includes the conditions and contexts you are working in as well as the selection of the future participants. This is the prime responsibility of the facilitator. The facilitator is the organiser of the creative session and will guide the participants through the creative process. In the next paragraph we will dive deeper into the role of the facilitator. *Content Finding* is the generation of the ideas themselves. *Information Finding* is related to all actions you have to take in order to get extra outside information into the creative session. During a creative session you can only use the actual knowledge and memories of the participants. As soon as you start checking that information by looking in a book, by Googling or by phoning a specialist, that action is considered a part of *Information Finding*. *Content- and Information Finding* are the main responsibilities of the creative team. *Acceptance Finding* is about preparing for the implementation of the generated ideas to other relevant stakeholders. This is a joint responsibility of the facilitator and the problem owner. The problem owner is usually the person who feels responsible for solving the problem. He or she has hired the facilitator to do the real work.

One of the first things you do as a facilitator is to question the problem owner about his or her ideas about the problem to solve. About what kind
of people are necessary to have a good creative session. By inviting certain people into the creative team, *Acceptance Finding* has also started. If you want to know whether certain analogies can function as inspiration, you sometimes have to start an *Information Finding* to find these analogies and analogy-experts.

There is no standard sequence for these four processes, except that the facilitator always has to start with the project management process. Actually you can consider all actions that you take as a kind of a (mini)-project. Inspired by Geschka & Lantelme (2005) we have developed a basic module for all these mini-projects. This basic module consists of the “new” creative diamond of diverging, clustering and converging (Tassoul & Buijs, 2007). Which was our contribution to the standard divergence-convergence sequence. See figure 2.

![Creative Diamond Diagram](image)

**Figure 2.** The sequence divergence, clustering, convergence of the new Creative Diamond

We now have added to this new diamond in the beginning the step of *‘Task appraisal’*: what are we going to do in this mini project. At the end we supplement the step of *‘Reflection’*. In which the basic question is: are we happy with what has happened in this step, both on content as well as
on process level? You always start with thinking about what you want or have to achieve (Task appraisal) and end with a reflection on what you have delivered. Based on that last insight you can decide to go on with a next step or decide to redo this step or to redo two steps earlier. In other words, by reflecting you decide whether to pass the gate or start a next iteration. See figure 3.

Figure 3. The iCPS basic module.

The basic philosophy about the creative diamond is that divergence is crucial, because it is about generating many ideas for getting ultimately a few good ideas accepted. A research project from the mid-1980s gave empirical evidence that divergence is important for getting positive, implemented innovation results (Buijs, 1984, 1987). Effective interventions for achieving divergence are the use of standard creativity techniques like Brainstorming (Osborn 1993), the 6.3.5.-brainwriting method (Schlicksupp 1977) or Synectics-like procedures (Gordon 1961).
2. Facilitative leadership

There is a long debate among management scientists as well as in business practice about how much content knowledge a manager, a consultant or a business leader should have. Content knowledge about the business the company is in, the markets the company is active in, knowledge about products and technology, about clients, users, competition and legislation. Nobody knows everything, but is there a minimum one should know?

People are key to any creative project. Autocratic or macho leadership will kill all ideas coming up. The type of leadership that will encourage innovation, will encourage creativity, will stimulate people to take their responsibility and dare to take risks is called facilitative leadership. This type of leader is the ‘servant leader’. Although he or she is officially the ‘boss’ and will stand at the top of the hierarchical pyramid, through his or her facilitative behavior they will stand at the base of the pyramid carrying the whole creativity process.

The book that is more or less the basis for the domain of Creative Problem Solving (CPS) is *Applied Imagination; Principles and Procedures of Creative Problem Solving*, written by Alex Osborn in 1953. Osborn is the ‘inventor’ of the creativity technique *Brainstorming*. He says that ‘the panel leader [= the facilitator] should be trained in advance for his function. Ideally, he should have taken a course in creative problem-solving.’ And ‘Having become grounded in the basics of brainstorming, each panel leader should develop in advance of each session his own list of suggested solutions to the problem. Then, if the stream of ideas slows down, the leader can prime the flow by interpolating suggestions of his own.’ ‘The leader should also be prepared to suggest leads by way of certain classifications or categories. For example, a chairman [= facilitator] may say, “Let’s look for ideas on this problem in such-and-such an area.”’ And “The leader’s first job in setting up a session is to process the problem.”’ (pp. 172) (Osborn 1993). The originator of *Brainstorming* makes strong recommendations to facilitators to dive into the problem at hand, to think up solutions to solve the problem. We fully agree with Osborn that content knowledge is strongly recommended for being a good facilitative leader.

Syd Parnes was the successor of Alex Osborn at the *Center for Studies in Creativity* in Buffalo, USA and a specialist on facilitation. About the relationship between process and content he says: ‘The more a facilitator knows about the problem-area being considered, the more effective he or she can be. Although a good facilitator can operate without complete content-expertise, one can apply the creative process to finding
information and helping members of a problem-solving group do so, too’ (pp. 3) (Parnes 1985). He also gives a warning: ‘If you tend to get so absorbed in content that you forget the process yourself, you should avoid participating in the content area’ (pp. 12). Balancing process and content is really a challenge for the facilitator.

Another specialist is this field is Tudor Rickards. About the group leader role he states: ‘…someone […] preferably without any personal interest in the problem, to act as group leader. The leader should then look after the process of problem-solving without permitting his own solutions to intrude’ (Rickards 1974, pp. 12). The leader is ‘the person who conducts a group problem-solving activity’ and his or her role activity is described as ‘attention to the format of the meeting while leaving the content to the rest of the group’ (pp. 12). ‘He is process-, not content-oriented. He does not evaluate ideas nor does he spend time thinking up ideas of his own. His job is to enhance the effective operation of the group through his direction of the Synectics process.’ (pp. 82). Rickards is convinced that content knowledge is counter-productive for a good facilitator. We do not agree with him.

The inventor of the Synectics process, another creativity technique, is Bill Gordon. He describes four characteristics about session leadership:

(i) Extreme optimism: the leader should believe that anything is possible – not idiotically, but from enthusiasm about the eternal presence of possibility;
(ii) Total grasp: the leader should have had the widest experience in life and in industry so that he can best integrate and interpret all possible concepts and associations;
(iii) Synectics grasp: the leader must have understanding in depth of Synectics in general;
(iv) Psychological distance: more than other members of the group the leader must keep himself sufficiently distanced from the session process to steer it constructively. He must never become so involved as to lose distance. He is responsible for balancing the one and the many.’ (Gordon 1961, pp. 78).

Gordon suggests in (ii) that the leader should have content knowledge to integrate and interpret ideas and concepts. In (iv) he says that the facilitator should keep a distance. In (iii) he emphasizes process knowledge. This founding father also has, like us, the idea of facilitation as a balancing act between process and content.
Marc Tassoul co-author of this paper has earlier summarized facilitation in this way:
‘The facilitator can be seen as a kind of guide. He or she leads the group through a process, makes sure that everyone is looking at the same objectives and arrives at the destination at the prearranged time. The facilitator needs to be very familiar with and versed in creative processes and techniques and be able to manage people well. Some in-depth knowledge of the subject material is quite helpful as well. The task of the facilitator is to be responsible for programming, timetabling, monitoring the process, stimulating and animating content, analyze and stimulate generating ideas to keep the process going; exploiting individual contributions and make sure they are heard.
In the first place there is an understanding between the facilitator and the group (often implicit) that he or she is granted this role and the space and authority that go with it, on a temporary basis, and that the group trusts the facilitator to use this position to closely monitor the process enabling the participants to apply themselves fully to the content.
A second condition touches upon the fact that a session inherently needs to be aimed at arriving at new ideas and new approaches. If a problem owner leads the session it may be restraining for the phases where one needs to free oneself from the present situation. In some cases a facilitator worth his salt should take the group “on an excursion” to cut loose completely from the ruling patterns, in the hope that this will bear fruit in the shape of new, interesting and feasible ideas. Participants will sometimes lose their bearing completely but this is intentional (separating phase) and part of the agreed route. But even though the group may not be conscious of this, it is the facilitator who keeps an eye on the course followed and at the right moment will lead the group back to the harbor, hopefully laden with new fruit.
A third condition to be met for a well-oiled functioning of a facilitator is that he or she should be free of conflicting interests. If the facilitator is also a manager within the organization then it is difficult for participants to keep these roles apart. Anything you say and do is also heard through these other functional channels (the next reorganization, the new project still looking for a leader …) and will seriously hinder the spontaneous free contributions that are so important for these sessions. The role of the facilitator must be very clear and explicit to all. Important issues ask for hiring external facilitators, neutral people who can concentrate fully on monitoring the process.’ (Tassoul, 2007).

We all three think that both content and process knowledge are crucial for good facilitation. A simple way to avoid the process/content conflict during creative sessions is the use of analogies as the prime intervention
of the facilitator. By comparing the specific content with something else, the analogy the facilitator knows much more about, he or she can introduce ‘new’ knowledge about this analogy into the process the team is in. By using his process know-how he is able to understand when and how content knowledge is important. By introducing these content based analogy-examples the facilitator can influence the process in a certain direction. Even if the analogy is completely out of sight for the team, their negative reactions will help him to better understand the situation, and will help to let the group make progress (Buijs 2010). On the same moment every metaphor or analogy will also introduce a new tunnel vision for all participants (Thibodeau & Boroditsky 2011). That is the main reason a good facilitator should always use at least two contrasting analogies or should stimulate the group to come up with more and different metaphors or analogies.

In the French language the word animateur is used to describe the facilitator. Literally this means ‘animator’, which looks like a much more active role than that of a traditional process oriented facilitator. The authors of this paper like active facilitators. We manipulate the process of the group as much as possible to get out-of-the-box ideas. Knowing where to manipulate is based on process knowledge, knowing what to manipulate is content or analogy knowledge. Besides this personal manner one can wonder if executing the facilitator role is not also culturally biased. It originates from the humanistic philosophy of American and North-western European countries. Probably it does not work that way easily in South European, Latin American or Asian countries.

3. Teaching iCPS.

The course Creative Facilitation is an elective course open for all IDE-students. We often also accept students from other faculties, like architecture, aeronautical engineering or applied physics. Once in a while we get participants from other universities or even from companies. In general we love diversity.

The course is divided into six steps or actions:

1. Introduction by the teaching staff (Day 1).
2. Students read the accompanying book (Tassoul, 2007) during the week and make their own personal learning contract.
3. Four full days of training spread over a couple of weeks (Day 2 – 5)
4. Three full consecutive days on an outward bound location.
5. Executing at least one “external” session.
6. Writing an evaluation report.
During the introduction session on the Delft campus the course organisation and the teachers are introduced. We often show videotapes and photographs of earlier versions of the course. We introduce the CPS-domain, the standard book (Tassoul 2007, updated each year), some hero’s in the field (and their publications) and ask students to make their own personal learning contract in which they explicate what they want to achieve by participating in this course. Due to the school’s designerly way of thinking we force students not to write a learning contract, but to make a three dimensional “thingy” to demonstrate what they want to learn. Over the years we have received beautiful “products”. Like jewerly boxes, pots & pans, cardboard trees, paper planes, etc. See Figure 4.

![Figure 4. Designerly approach type of Personal Learning contracts.](image)

In the week between day 1 and day 2 they have to read the standard text book, sometimes they start reading some extra texts. The day’s 2, 3, 4 & 5 are each week one full day on campus. We offer skills trainings, we let them experiment with different tools and techniques, preferable chosen by themselves. Most of the cases they work on are either own student projects or projects the staff brings in.

During the three-day hike outside the Delft campus all students have to organize, facilitate and participate in creative sessions for outside clients. They have to interview the external problem owners, choose a relevant procedure and select tools and techniques. We suggest to work with a “buddy-system: each student facilitator has a fellow student who acts as sounding board and vice versa. This is a very intensive three-day happening. Not only creative facilitation with clients is a priority, the
organization of the three-day-and night event itself is also part of the student’s responsibilities, like catering, cooking, shopping, cleaning, etc. To get their grade all students have to organize at least one extra creative session outside the university, with a new external client, which they have to find themselves. Important is that they have to find out that participants without any CPS-experience (that is also what we mean with external = outside the CF-course context) sessions) are much more difficult to handle than their own fellow students inside the safehaven of the CF-course. Reporting about this external session is part of the overall evaluation report. In this report they not only check their achievements in relation with their original learning contracts, they also report about other relevant experiences, intriguing books and give tips and tricks for future sessions. Again as what happened with their learning contracts, most of the evaluation reports show a great eye for graphic details, colors and offer great stories to read. See Figure 5.

![Figure 5. CF Student Evaluation Reports.](image)
It is one of the most highly rewarded courses the IDE-school is offering. And for us teachers it is great fun to do.

Conclusions.

The Delft way of teaching creative problem solving is not principally different from all other types of CPS-trainings. The most obvious difference is the integration of CPS-skills training with a designerly approach. Elements of design thinking are incorporated. Iterations are normal for design students, the sequence of divergence, clustering and converging is engraved into their way of working. Physical prototypes, sketches and other ways to visualize the results of the sessions are quite normal for them. Even process remarks look quite nice. It is a real joint experiential learning exercise. Some of our graduates are so fond of facilitating creative sessions that they start their own creative facilitation firm after graduating. Most of them make a good living with organizing and facilitating creative sessions and applying creativity techniques in corporate environments.

References.

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