Promotive Activities in Face-to-Face and Technology-Enhanced Learning Environments

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Abstract

This paper aims to transfer central, influential concepts and ideas from person-centered education into the context of technology-enhanced learning. We systematically review promotive activities and humanistic educational concepts and share our experiences in introducing and actually living these activities and interpersonal attitudes in technology-enhanced environments. Students' reactions confirm the validity of our approach, which proposes to complement personal resourcefulness with Web-supported activities. Our primary goal is to make learning in today's knowledge society a growthful experience for learners as well as facilitators.

Introduction

Currently, the academic scene is characterized by intense efforts to increase the quality and effectiveness of teaching and learning and to make education more accessible to everybody. The primary vehicles to achieve these goals are to introduce technology support for teaching and learning and to accompany this organizational development step through staff development programs (Attwell, Dirckinck-Holmfeld, Fabian, Kárpáti, & Littig, 2003). In our experience of introducing learning technology into parts of our face-to-face courses, technology can contribute to enhancing learning only if instructors—or better facilitators—are resourceful persons who meet certain conditions in interpersonal behavior. They are capable of providing a learning atmosphere in which learners feel respected and understood, and communication is transparent and can freely flow between all participants. In

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fact, this finding confirms recent (Bangert, 2004) as well as earlier (Rogers, 1983) research in person-centered education (Cornelius-White, 2006; Cornelius-White, Hoey, Cornelius-White, Motschnig-Pitrik, & Figl, 2004). For example, a similar statement has been made by Carl R. Rogers, who defines significant learning in this way:

> "Significant learning combines the logical and the intuitive, the intellect and the feelings, the concept and the experience, the idea and the meaning. When we learn in that way, we are whole." (Rogers, 1983, p. 20)

He notes that,

> "We know […] that the initiation of such learning rests not upon the teaching skills of the leader, not upon scholarly knowledge of the field, not upon curricular planning, not upon use of audiovisual aids, not upon the programmed learning used, not upon lectures and presentations, not upon an abundance of books, though each of these might at one time or another be utilized as an important resource. No, the facilitation of significant learning rests upon certain attitudinal qualities that exist in the personal relationship between the facilitator and the learner." (C. R. Rogers, as cited in Kirschenbaum & Henderson, 1989, p. 305)

Clearly, attitudinal qualities take the lead and rest in persons and their relationships. But which qualities are most essential, and under what conditions can significant learning occur? The basic hypothesis underlying person-centered teaching and learning can be stated as follows:

> Human beings are constructive in nature and strive to actualize and expand their experiencing organisms. According to Rogers' *Theory of Personality and Behavior* (Rogers, 1959), this constructive tendency can unfold itself best in a climate that is characterized by three attitudinal conditions, also known as Rogers' variables. They can best be described by referring to Carl Rogers' original definitions:

- *Realness*, transparency. "I have found that the more that I can be genuine in the relationship, the more helpful it will be. […] Being genuine also involves the willingness to be and to express, in my words and my behavior, the various feelings and attitudes, which exist in me. […] It is only by providing the genuine reality which is in me, that the other person can successfully seek for the reality in him" (Rogers, 1961, p. 33). Other terms often used to characterize this attitude are: congruence, genuineness, authenticity.

- *Acceptance*, unconditional positive regard. "I find that the more acceptance and liking I feel toward this individual, the more I will be creating a relationship which he can use. By acceptance I mean a warm regard for him as a person of unconditional self-worth, of value no matter what his condition, his behavior, his feelings. It means a respect and liking for him as a separate person, a willingness for him to possess his own feelings in his own way" (Rogers, 1961, p. 34). This non-possessive caring attitude is also referred to as "acknowledgement" (Schmid, 2001).
- *Understanding*, empathy. "[…] I feel a continuing desire to understand—a sensitive empathy which each of the client's feelings and communications as they seem to him at that moment. Acceptance does not mean much until it involves understanding. It is only that I understand the feelings and thoughts which seem so horrible to you, or so weak […] – it is only as I see them as you see them and accept them and you, that you feel really free to explore […] your inner and often buried experience. […] There is implied here a freedom to explore oneself at both conscious and unconscious levels" (Rogers, 1961, p. 35). In summary, empathic understanding in a learning situation means a deep form of understanding the meanings as well as feelings of the learner.

A challenging task in teaching/learning scenarios, hence, is how such interpersonal qualities can be transformed into promotive actions in technology-enhanced environments. Tausch and Tausch (1963/1998) have identified and extensively researched a set of activities that tend to be promotive for learners or, in other words, foster significant learning. While they considered pure face-to-face settings, the primary goal of this paper is to illustrate the ways in which these and related promotive activities can be lived in technology-enhanced environments. By giving practical examples and students' reactions from courses we conducted at the University of Vienna, we hope to inspire interested readers to apply learning technology in ways that promote significant learning in both learners and facilitators.

The following section provides an overview of promotive activities that facilitate significant learning. Sections 3 to 8 consider these promotive activities and transfer them to technology-enhanced environments. The final section summarizes our findings and refers to issues of further research and development.

Promotive, Nondirective Activities

Introduction

In person-to-person interaction, promotive, nondirective activities are a direct consequence of living and holding the three personal dispositions of acceptance, realness, and empathic understanding toward the partner (Cornelius-White & Cornelius-White, 2005). Subsequently, when holding all of these dispositions, further action or activity will be promotive and nondirective for others (Tausch & Tausch, 1963/1998, p. 243-245). These three dispositions, also referred to as *Rogers' variables*, have to be held or lived by the person, and reciprocally be perceived by the other person at least to some degree (Rogers, 1959).

Characteristics of such promotive activities driven by these dispositions may be summarized as follows (Tausch & Tausch, 1963/1998, p. 244-245):

- Promoting meaningful mental processes and constructive development of personality (e.g., self-respect, openness for experience) in the other person, and to some extent even in the person who holds and transfers these dispositions.
- Aligning with the four psychosocial values of living: self-determination, respect for the person, social order, and mental as well as physical functioning.
- Being socially reversible, which means that even young persons may hold these attitudes towards adults without being disrespectful.
- Furthering the quality of interpersonal relationships.
- Facilitating self-responsible, self-initiated learning processes and creativity in learners.
- Being equally promoting for the "holder," and not only for the "recipient" of the three dispositions.

Overview and Rating of Promotive Activities

In Table 1, which is an adapted and slightly shortened version from Tausch and Tausch (1963/1998, p. 247), a general overview of promotive activities and their respective counterparts is given. While the two columns portray the extremes, a person will usually undertake promotive, less promotive and non-promotive activities. Hence, Table 1 may be used to

position a person's style on the promotiveness and non-directivity continuum.

Table 1: Promotive and Non-Promotive Person-to-Person Activities.

No promotive activities		***Many promotive activities***
Not offering opportunities and alternatives, suppressing the other, not providing informative hints.	↔	Offer opportunities and alternatives, stimulate the other, provide informative hints.
Not finding material and resources (e.g., comprehensible texts) and sources of help (e.g., tutors) for someone else and being unavailable to the other.	↔	Find material and resources (e.g., comprehensible texts) and sources of help (e.g., tutors) for someone else as well as to be available to the other.
Not providing feedback and not making agreements, arrangements, or regulations.	↔	Provide feedback; make agreements, arrangements, and regulations.
Not showing the other person promotive conditions to foster self-respect, psycho-social values, and the three interpersonal dispositions.	↔	Provide and show the other person promotive conditions to foster self-respect, psycho-social values, and the three interpersonal dispositions.
Not learning with the other, not creating a promotive learning environment, not doing activities and sharing experiences together.	↔	Learn with the other, create a promotive learning environment, do activities and share experiences together.
Not helping other people to be capable of promotive behavior toward others.	↔	Help other people to be capable of promotive behavior toward others.
Overall: Activities conflict and do not comply with the three Rogers' Variables.	↔	***Overall***: Activities comply and do not conflict with the three Rogers' Variables.

The following gives a short overview of endeavors that are particularly suited to promote nondirective and self-initiated learning processes according to Tausch and Tausch (1963/1998), complemented by Rogers (1983):

- Facilitating learning through provision of resources: Providing inspiring learning material as well as personal resources furthers autonomous, self-responsible learning.
- Endeavor to design transfer of knowledge in a comprehensible way: Adhering to the four dimensions of comprehensibility (simplicity, structure, conciseness, and stimulation) helps the students in acquiring knowledge from oral or written information resources.
- Facilitating thinking processes in class: Addressing facilitation of creative, longer-lasting, autonomous thinking processes by acting promotively and in a nondirective way.
- Furthering a beneficial working progress in class: This can be achieved by getting to know the work personally; by elaborating and inspecting subtasks; and by finalizing, exploiting and/or applying the work.
- Facilitating temporary work in small teams: This is a well-proven method of furthering self-directed learning by dividing the class into teams of 2 to 5 persons to work on well-defined tasks.
- Furthering of helpfully living together in a "good group": This may be characterized by furthering the exchange of personal feelings, personally important experiences, and autonomous interaction. Person-centered encounter groups have proved to be a potent setting to approach this goal (Barrett-Lennard, 1998, 2005; Bozarth, 2005; Motschnig-Pitrik & Nykl, 2005; Rogers, 1970).
- Learning contracts that allow students to combine self-initiated learning with responsibility (Motschnig-Pitrik, Derntl, & Mangler, 2003; Rogers, 1983, p. 149-153).

Facilitating Learning by Providing Resources

Learning takes place inside persons and cannot be forced, ordered, or fulfilled by others. Nevertheless, it is possible to further and to facilitate the learning process by providing helpful conditions and resources that are manifold, close to reality, inciting, and available for autonomous exploration and usage (Tausch & Tausch, 1963/1998, p. 288-289).

Material Learning Resources

Teachers who care for their learners in a person-centered way try to organize and provide material learning resources like books, papers, (official) documents, recordings, letters, experiments, reports, and observations. Comprehension can be improved by considering straightforward guidelines.

According to Langer, Schulz von Thun, and Tausch (2002), the comprehensibility of information depends on four basic dimensions:

- *Simplicity*: The simpler an expression is, the higher its comprehensibility. The content itself may be difficult, but the wording and phrasing can be simple or difficult.
- *Structure*: Information needs to be properly structured. There are two aspects involved: the inner structure and the outer structure.
  - The inner structure refers to the logical sequence of sentences, and that information is presented in some meaningful order.
  - The outer structure refers to the visibility of structure, including clear arrangement of text parts (e.g., headings).
- *Conciseness*: This dimension refers to the language use in relation to the informational aim. Neither extremely short explanations nor unnecessarily long presentations are promotive. Two aspects are involved in finding a compromise:
  - Superfluous content: e.g., unnecessary details, supplementary information, digression from the topic, etc.
  - Superfluous language use: e.g., long-winded explanations, repetitions, etc.
- *Stimulation*: Direct speech, examples of everyday life, humorous expression, etc., all contribute to a lively presentation that stimulates the reader's or listener's interest. A medium level of liveliness is appropriate since both a complete lack of liveliness and long-winded stimulation seem disadvantageous.

Besides paying attention to the basic dimensions of comprehensibility, some techniques related to the provision of material resources support learners in their striving for solutions (Tausch & Tausch, 1963/1998, p. 290-291):

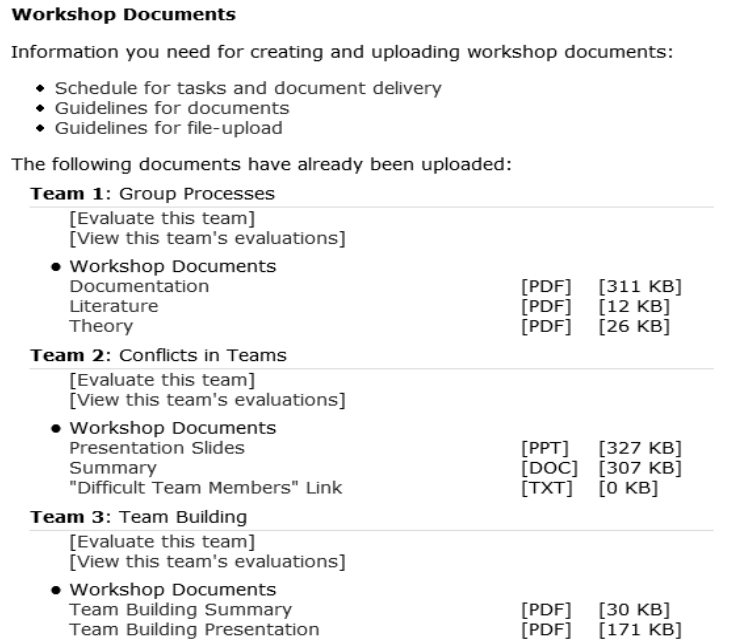
- *Economic learning methods* are capable of supporting students in their learning processes by providing them with options of assessing or training themselves (e.g., self-training, self-examination, or self-evaluation), while freeing the instructor of some overhead.
- *Making goals transparent* significantly alleviates work and learning for students. These working goals, learning goals, and examination goals are visible and transparent to everyone and, thus, help students to adhere to requirements, to meet deadlines, and to monitor their progress.

Considering material resources, the Web offers versatile and almost unlimited options. With this broad, fast, and free source of material, care must be taken to monitor and assess the quality of information found. Careful inspection and comparison with trusted sources appear necessary to ensure quality. Nevertheless, searching, comparing, and critically assessing material found on the Internet encompass valuable thought processes. One of the most widely used and easiest ways to employ technology for teaching and learning is to put lecture notes and presentations online. This allows for a flexible assembly of material for each learning unit. Moreover, video clips and other stimulating material such as useful links, examples, and case studies can easily be supplied. In our experience, it has turned out to be useful to publish some guidelines that support students in their self-initiated work. For example, for courses in which students are expected to document the results of their projects, comprehension criteria (like those mentioned above) to be respected are supplied in the form of brief guidelines, and reference to respective literature is given.

Besides putting educator-supplied material online, learners themselves can elaborate tasks and documents and provide their solutions to their peers in an uncomplicated way (for example, see Figure 1). Thereby a high degree of sharing is achieved, and students do not only learn from their own subtasks, but equally from their peers' elaborations.

Persons as* Learning *Resources

Besides learning material, the instructor tends to be the main professional as well as personal learning resource for students. Although this holds true in the vast majority of settings, research has shown that ways exist to additionally leverage motivation and learning success, namely when students have more advanced peers available as learning resources. These *tutors* not only provide valuable learning aids and coaching for their less experienced peers, but also draw substantial personal benefits: Tutors tend to be furthered in their own personal developments, especially with respect to self-esteem and the positive valuing of their personality by others (Tausch & Tausch, 1963/1998, p. 292-293).



Workshop Documents

Information you need for creating and uploading workshop documents:

- Schedule for tasks and document delivery
- Guidelines for documents
- Guidelines for file-upload

The following documents have already been uploaded:

Team 1: Group Processes

[Evaluate this team]
[View this team's evaluations]

- Workshop Documents

Documentation	[PDF]	[311 KB]
Literature	[PDF]	[12 KB]
Theory	[PDF]	[26 KB]

Team 2: Conflicts in Teams

[Evaluate this team]
[View this team's evaluations]

- Workshop Documents

Presentation Slides	[PPT]	[327 KB]
Summary	[DOC]	[307 KB]
"Difficult Team Members" Link	[TXT]	[0 KB]

Team 3: Team Building

[Evaluate this team]
[View this team's evaluations]

- Workshop Documents

Team Building Summary	[PDF]	[30 KB]
Team Building Presentation	[PDF]	[171 KB]

Figure 1: Learner-supplied resources on the website for the course on "Project Management."

If lecture notes and additional material are offered online in a transparent and well structured form, educators can reallocate some time from the presentation of material to talking about projects, inviting experts for discussion, or freely consulting teams of students regarding their special projects or interests. Issues raised in face-to-face discussions can proceed in online forums, and teams of students can be made responsible to relate these discussions to theories found in literature. For example, in a course like project management, soft skills, or organizational development, discussions about work motivation can be associated with motivation theories. Issues that participants come up with that are not explained by any theory can be used for critically assessing the values of theories on complex phenomena like motivation or for initiating discussion on the complementation of theories. In these and similar ways, personal resources from all participants can be exploited.

One student wrote in his online reaction sheet: "I found the elaboration on the topic of motivation very exciting. There are two reasons for that. Firstly, one does not often ask the question: 'Who or what motivates

me?' I rarely, if ever, think about who or what motivates me. I found it highly useful to spend some time with directing our thoughts on that and to acquire some consciousness about this essential issue. Secondly, the way my colleagues responded is an interesting means to learn more about one another. Also, the team working on team building can use the results for suggesting how team members can be motivated to cooperate."

Another student commented: "I was really surprised how much we elaborated cooperatively. In particular, I liked Berndt's point on 'trust,' it would never have occurred to me on my own. Also, the fact that motivation can be caused by negative experience was a totally new aspect for me, since I associated only positive issues with that term. So far I had often heard about Maslow and Herzberg, but to associate our own terms with these theories allows for a good connection to the theories."

In technology-enhanced environments, interactive Web spaces can be used to store and share students' presentations on projects. On the click of a mouse button, students can share the results of subtasks with the group and receive feedback. In a similar scenario, students prepare material to be provided on the Web and moderate face-to-face units resulting in highly interactive processes in which everybody can learn from both the strong and weak features experienced in each setting.

Online support also makes it easier to organize courses with international instructors or experts from industry. The central face-to-face meeting can be prepared by preceding online phases and/or followed up by consolidating phases and publishing results or comments online (Motschnig-Pitrik & Santos, submitted). Tutors can help with Web support and online communications. For example, forums can be used for cooperative problem solving at times of independent, self-organized work. For instance, the following reaction sheet was submitted online by a student after an encounter group session that was co-facilitated by an external person-centered facilitator: "The last unit was a very pleasant and interesting one for me as I have learnt that much from Livia in terms of speaking and gesticulating. But next to this very positive experience, again I can say that the team works were very productive and inspiring as I have seen other points of view in terms of what active listening is and how I can get a better understanding of this subject. I am looking forward to the next unit."

Interestingly, previous research (Motschnig-Pitrik & Mallich, 2004) indicates that students' motivation to participate in technology-enhanced courses with a high degree of interaction and project work increases if facilitators are perceived as open, respectful, and understanding. We conclude that personal resourcefulness of facilitators is a key factor in fully exploiting

the benefits offered by open, flexible, technology-enhanced learning environments.

Thinking Processes

Tausch and Tausch (1963/1998, p. 297) observed that thinking processes, such as the combination of facts, abstraction, or creative problem solving, are rare phenomena in traditional class settings. In order to allow readers to understand better the nature of thinking processes, they propose the following characteristics (p. 298-307):

- Thinking processes occur during the examination of complex problems with non-obvious solutions. Learned/trained knowledge and experience are used.
- Thinking processes are non-linear, unpredictable, and highly different among persons even for similar problems.
- Talking and thinking are related. Talking often makes thinking easier. However, thinking advances can occur without becoming aware linguistically.
- Thinking processes are particularly furthered when problems and solutions of personal interest are tackled. In particular, longer-lasting and autonomous thinking processes are furthered by tackling complex situations and problems.
- Combining and structuring are main aspects of thinking processes.
- Comparison, restructuring, and abstraction are thinking processes prevalent in evaluating and valuing of decisions and actions.

Thinking processes go beyond short-term rote memorization and further the re-application and adaptation of knowledge to novel situations. Tausch and Tausch (1963/1998, p. 300-303) provide examples for thinking processes in class:

- comparing phenomena to match similarities or differences,
- creating new ideas and finding problem solutions,
- combining and restructuring facts or phenomena,
- reorganizing and classifying facts, objects, phenomena or experiences,
- planning and organizing a thinking process or a problem-solving process,
- asking personally important questions,
- making presumptions,
- recognizing rules and structures,
- abstracting common similarities and characteristics,

- searching for examples, and
- judging.

In person-centered courses, student and facilitator goals and expectations are typically discussed in the beginning of the course. To make these transparent, we found it very beneficial to collect each person's goals, expectations and reservations in an online sequence and to make this collection available to the group on a platform. This written account of the group direction can be revisited and potentially revised throughout the course, and each participant can take care of following his or her personal targets. This supports the final self-evaluation process, aimed at evoking reflection processes in participants and, optimally, also in facilitators. Table 2 illustrates the results of a team-based discussion about learning targets and reservations in a basic course on *Project Management*.

Table 2: Top eight expectations and individual fears in the course on project management.

Expectations	***Nominations***
Learning planning and management tools	10
Project planning / project management	9
Team management / work / ability / composition / motivation	9
Estimate on effort (time, budget, man hours)	8
Risk management / risk assessment	7
Crisis management	7
Gain practical experience / realize project	6
Change management / change request	5
Fears and reservations	***Nominations***
Too much programming	2
Only lecture format	2
Having little / no relation to practice	1
Too much documentation work	1
Tight schedule	1
Concurrent use of two different learning platforms	1

Another instance of promoting thinking is, as we experienced, the formulation of project visions by teams. Typically, a list of potential project themes (e.g., in the courses on Web Engineering, Project Management, Person-Centered Communication, etc.) is assembled by the facilitator and put online. This list tends to contain an item "or any other topic to be discussed with the facilitator." Frequently, students suggest their own topics or adopt existing ones, driven by their particular interests.

Besides goals, expectations, and vision statements, brainstorming sessions are well supported by computerized services. After initial and subsequent discussion of ideas and targets in face-to-face meetings, participants can raise their issues independently without being influenced by their peers. Moreover, information about the frequency of topics or ideas mentioned online can be used as a hint on students' perceived importance and can serve as a guide for further, group-oriented action.

Particularly rewarding was a recent experience in a Ph.D. seminar, where all students wished to broaden their views on the topic of their dissertations. We collectively elaborated the overlaps, and the facilitator drew a mind map on a flipchart. Subsequently, students presented their main themes as well as questions on the interactive Web space, engaged in forum discussions, and shared resources and links they found useful. In a follow-up meeting, we collectively created topics to be elaborated based on the participants' expertise, topics, and interests. After brief presentations and substantial discussion, contributions were self- and peer-evaluated, giving the facilitator wellfounded sources for assigning grades. One student posted the following reaction at the end of the seminar: "I liked using the learning platform very much, because I had the opportunity to gain deeper insight into the topics elaborated by the other participants than in conventional seminars. The idea to have short presentations and long discussions turned out to be very effective: Because of the exchange of viewpoints in the discussions following the presentations everyone could get more into the other topics, contrary to the one-way communication predominant at long presentation sessions."

Summarizing, shared resources, supporting Web services, and students' workspaces are convenient means of capturing results and reflections from thought processes proceeding in and outside class. Thus, they are capable of extending learning that proceeds in promotive, person-centered face-to-face settings.

Furthering a Beneficial Working Process in Class

Considering appropriate structuring conditions, teachers and facilitators may further self-directed learning, involving expertise and personal attitudes. Tausch and Tausch (1963/1998, p. 307) mention some activities that may positively affect the working progress in education. They subsume these activities under three headings:

1. Learning to know the task personally
2. Professional elaboration and investigation of subtasks
3. Finalizing, exploiting, and/or applying the work.

Learning to Know the Task Personally

Confrontation with the task. A new topic may be introduced by the teacher, a student, the curriculum itself, or an event. Tausch and Tausch (1963/1998, p. 308) suggest openly showing the educational goals in the learning area and motivating the importance of the realness and concreteness of professional problems and tasks.

In the field of business informatics, communication and gathering of information as well as cooperation via the Internet is an immanent part of everyday work. Consequently, tasks involving the Internet will represent an environment students will find themselves in when working after their studies. Therefore, we assume that when involving this kind of environment, students will perceive the tasks as meaningful and, thus, it will facilitate their learning.

Spontaneous expression of personal thoughts and perceptions. Students are encouraged to deal with the subject as well as their personal perceptions, feelings, and opinions (Tausch & Tausch, 1963/1998, p. 308). Both positive and negative feelings are equally accepted and responded to.

While spontaneity seems better furthered in classroom settings, we found the submission of reaction sheets very promotive for the expression of thoughts and perceptions. At their own pace, students express their perceptions in written reaction sheets, which they submit online. This verbalization leads to an intense dealing with one's own feelings and perceptions. As Walther (1996, p. 26) points out, one may plan, contemplate and compose one's comments more mindfully and deliberately in asynchronous settings than one is able to do spontaneously. Furthermore, people tend to render more qualitatively different interpersonal impressions than they might convey in synchronous communication (Walther, 1992, p. 81).

Students' intuitive approaches to a problem. According to Tausch and Tausch (1963/1998, p. 309), self-dependent giving a try, intuitive thinking, and trial-and-error learning seem to be meaningful processes that are highly significant for everyday life. Hence, it is necessary that facilitators at least initially hold back their own knowledge and views and motivate students to express their assumptions and approaches to a certain problem.

Professional Elaboration and Investigation of Subtasks

According to Tausch and Tausch (1963/1998, p. 311), students and facilitators commit themselves to certain subtasks and targets. This learning phase is characterized by self-dependent elaboration in small teams by making use of the learning material provided. Usually, the self-dependent phase is followed by interaction of the whole class where information is summarized, structured and supplemented with professional points of view by facilitators and students.

Access to information sources. According to Tausch and Tausch (1963/1998, p. 311), it is promotive when students elaborate information mainly autonomously and self-dependently. Students can contribute to searching for material and providing for the whole class. We found that making the material (notes, reading lists, links, etc.) available electronically is very helpful, because the material can be updated whenever it seems necessary. This explorative, open learning, which we adopt in our courses, is particularly suited to the person-centered approach since students are free to explore the Web and learn how to deal with various sources (Motschnig-Pitrik & Derntl, 2002, p. 4-5).

Discussions in small teams. Tausch and Tausch (1963/1998, p. 311-312) suggest work in small teams of 2 to 4 persons as promotive. Consequently, it is necessary to divide learning targets and content into subtasks and subtargets in order to make these amenable for work in small teams.

Discussions in small teams are not only possible during the presence times of courses, but also as tie between presence phases. Team members may meet for discussions, engage in online collaboration, or even combine both. We had positive experiences with students working in self-assigned teams in various courses. With additional deployment of electronic communication, we found that thinking processes are extended and deepened.

Help and professional support for work in small teams or individual work. Facilitators encourage students to work independently. They may give individual help or hints to all teams for better managing their tasks and for avoiding difficulties (Tausch & Tausch, 1963/1998, p. 312-313). The crucial point is that the facilitator is available for support and is willing to provide it.

Finalizing, Exploiting and/or Applying Work

Occasionally a task will be closed leaving some problems open. Studies revealed that people deal with open problems more often than with closed ones. Artificially closing a problem by "completing," summarizing, or giving final comments may result to the misleading impression that the field is indeed finished, whereas time by time almost every field calls for learning, development, and progress (Tausch & Tausch, 1963/1998, p. 313).

Technology-enhanced learning environments offer versatile options for structuring learning processes and organizing knowledge. For example, Web templates can be provided in which students can upload documents needed to fulfill individual project milestones. This results in a transparent project structure, from which parts can be presented and discussed with the group. Furthermore, the students' freedom to inspect solutions of other students augments simply learning from their own examples.

We schedule tutorials that can be held by instructors or more advanced students to help students acquire practical skills. By providing additional examples and respective tools online, students can have hands-on experience and test their skills based on their own pace. Alternating between self-guided online phases and face-to-face meetings has proved most effective in settings where students conduct projects that require practical skills, such as modeling, performing surveys, programming, Web design, etc. In more theoretical settings, the cooperative construction of a hyperlinked knowledge base on the Web to be reused for subsequent courses offers motivation as well as structure to further thought processes.

A particularly simple and simultaneously powerful online element is the provision of transparent reaction sheets. After each major course unit, students are asked to publish their reactions (likes, dislikes, observations, learnings, suggestions, feelings, criticism, etc.) such that the facilitator and all peers of a course can read them. The first 10 to 30 minutes (depending on the length of the units and the quality of reactions) of the following face-to-face meeting are then devoted to discussing students' reactions and deriving potential consequences on the following units. If students feel that their feelings and meanings are respected, they are highly motivated in providing

feedback. This source of perspectives often turns out to be extremely promotive. For example, students and the facilitator see that one and the same role-play can be perceived anywhere between "totally useless" and "extremely helpful" by individual students. At other times, open questions are raised or alternatives are mentioned that give way to follow-up discussion based on students' perceptions. It is needless to mention that students' attention when getting a response to their reaction is different from an offer of inputs based solely on the facilitator's perceptions. Besides furthering the working progress in class, reaction sheets allow educators to adopt their practice materials and tools based on a rich source of students' minds. Note that online reaction sheets have a quality that cannot be achieved in face-to-face settings. In face-to-face settings, what has been said influences successive statements. Also, thoughtful but rather shy students tend to hold back their viewpoints. Online, all participants have the same chance to think about and voice their concerns, and facilitators can reflect on the feedback before talking to students. If taken seriously, reaction sheets are highly effective means of furthering the group process.

Working in Teams

Work in small teams is a proven method for furthering self-directed learning and for a constructive personality development (Tausch & Tausch, 1963/1998, p. 253). In the context of higher education, it can be employed for solving complex problems/projects as well as for writing seminar and/or research reports (Tausch & Tausch, 1963/1998, p. 258).

When using this approach, teams…

- work and think on their own,
- learn to discuss,
- develop their own results,
- learn about different points of view,
- improve their skills by receiving and offering help as well as by discussions,
- work also if the teacher is not present (Tausch & Tausch, 1963/1998, p. 260).

Team members are in close contact with each other, learn how to organize and make decisions in a team, and learn about the consequences of their own actions (Tausch & Tausch, 1963/1998, p. 260). The instructors prepare and provide relevant content and working resources, coach teams,

and make themselves available to the students on demand (Tausch & Tausch, 1963/1998, p. 259).

Tausch and Tausch (1963/1998, p. 261-262) mention a number of features that are characteristic in team-based learning:

- Interactive information exchange and collective elaboration, where 200 to 300 times as many questions are asked compared to frontal lecturing;
- Supportive behavior within the team, including discussion of both personal and context-specific questions;
- Interactive motivation, in which the team members promote each other to reach a higher level;
- "Loud thinking," where team members speak about 15 times as many sentences compared to frontal lecturing;
- Socially and emotionally satisfying contact with other people.

In small teams, members tend to learn more contentedly because they can act on behalf of their own and be more creative. Furthermore, they learn more contentedly through social interaction, learn to express their feelings, and are less strained but rather motivated. In contrast, the traditional approach does not offer any positive emotional experiences to the group members. They are far less motivated, do not have social interaction, and often feel dissatisfied (Tausch & Tausch, 1963/1998, p. 253, 261).

For students, teamwork has many positive and facilitative effects (Tausch & Tausch, 1963/1998, p. 260-261):

- they think and work individually as well as collaboratively,
- they train their communication skills,
- they learn how to cope with different opinions and conflicts,
- they take responsibility for decisions made in teams,
- they learn to organize themselves when working with peers,
- they have more motivation and joy in working and learning.

Tausch and Tausch (1963/1998, p. 258) conclude that personal exchange is the key to personal stability.

Work in teams can be supported by corresponding online tools. Amongst others, the following tools proved very useful in our courses:

Web-supported team building. Students can assign themselves to teams, just by clicking on the respective names in the participants' pool. We found

this very simple and easy to use tool (Figure 2) very supportive (Mangler, 2005).

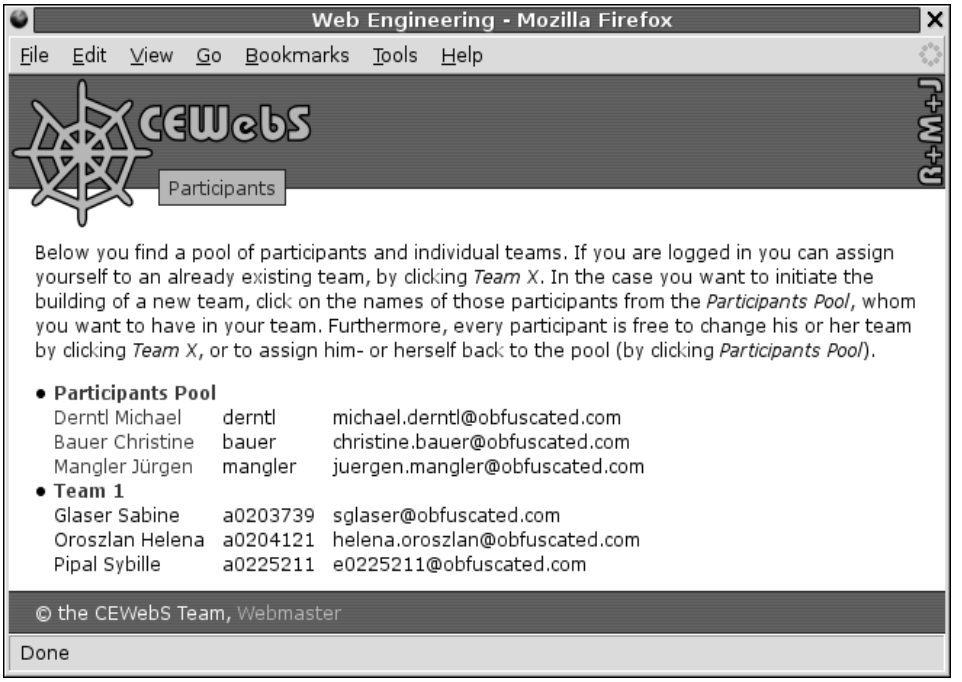


Figure 2: Web-supported team building.

Workspace for teams. Besides providing workspaces for individual students, learning platforms can provide support for small teams, such that team members can upload and revise material in their space. They can be allowed to read but not overwrite material in other teams' workspaces. This supports cooperative work and responsibility for tasks. In the context of projects in our Web Engineering courses, we tried to let small teams assign themselves to partner teams that were responsible for reviewing milestones and consulting teams to improve their results. Most teams found this experience with taking on different perspectives helpful and supplied constructive comments from which selected ones were taken up by the originating teams.

Contracts

Learning contracts have long been recognized for being effective means of combining freedom with responsibility and promoting self-initiated learning (Rogers, 1983). Facilitator and learner(s) specify project goals, resources, and activities that lead to the achievement of these goals, and sign a contract that can be used in the final grading. Since it is time consuming, this pedagogically highly effective means, however, appears to be applicable for a limited number of students only. With online support for learning contracts, in our experience, the number of student teams who work on learning contracts can be increased due to the organizational and administrative support provided by Web services, specifically managing learning contracts as well as peer- and self-evaluation.

For instance, in a course on Web Engineering (held in the year 2003) with 355 participants, we offered students the option to work in small teams of 2 to 4 persons on the elaboration of material that we might find helpful in the context of our studies ("Web Engineering Learning License," WELL) *instead* of taking a conventional exam. Students should propose a topic, fill out and sign the agreement (which is outlined in Table 3), find resources, plan the table of contents and the date for an intermediate version to be checked by the facilitator, elaborate their project, and finally upload their contribution onto our e-learning platform to make it available to be read by peers. 299 of the 355 students (84%) decided to engage in this kind of constructive work rather than taking the written exam.

Table 3: Structure of WELL contracts.

Group / team number:
Instructor:
Team members with e-mail address:
Topic:
Goals:
Activities and documents:
Significant changes and their dates:
Intermediate version accepted on:
Final version due:
Signature team representative:
Signature instructor:

In the evaluation phase, each team had to submit a self-evaluation of their work with suggested grades for each team member. The self-evaluations

were visible for the facilitators only. Furthermore, each student taking part in the WELL project had to peer-review at least three contributions of teams other than his or her own. In a final session, students discussed their contributions with the facilitator, and he or she was expected to check their understanding of the subject matter.

To collect quantitative data, we asked all Web Engineering participants to complete an online questionnaire at the end of the course. Of the 355 participants, 160 completed this questionnaire. Of these 160 students, N = 136 had engaged in the WELL project and formed the basis for our analysis (Motschnig-Pitrik et al., 2003), which confirmed that 72.8% of the WELL project participants valued their long-term learning effect as higher (41.9% much higher and 30.9% somewhat higher) when compared to taking a conventional exam. Additionally, 64% of the WELL participants considered the engagement in the WELL project as more time intensive. Similar, not to say almost equal, results were obtained in a study in 2004, when the WELL project was repeated, however, with fewer participants than the year before (183 participants total; 102 completed questionnaires, of which N = 60 engaged in the WELL project): 78.3% of the WELL participants valued the learning effect as higher (45% much higher and 33.3% somewhat higher) and 65% considered the required time investment as higher.

We claim that without Web support, an analogous learning/assessment scenario with more than 350 students would have practically been infeasible due to administrative overhead. The combined qualitative and empirical analyses reveal that our courses' students were motivated to put more effort into their project work than they would have invested in learning for an exam and, furthermore, felt that their learning effect was deeper and superior when compared with learning for conventional exams.

Living Together in a "Good Group"

Last but not least, a good working climate significantly contributes to the effectiveness of learning. In our own experience, students consider the provision of a positive working atmosphere as one of the top motivational factors. This has been repeatedly confirmed in various courses, irrespective of the courses' subject matter.

For instance, let us look at the individual factors contributing to the course style cluster. The expected and perceived values of the course-style factors in one of our Project Management courses (held in the year 2003) are given in Figure 3, illustrating the importance of providing a constructive

learning climate. In fact, the positive atmosphere was perceived as highest (mean value M = 4.67 on a 5-point Likert scale) among all motivational factors in the course, followed by the collegial cooperation among peers (M = 4.53)! The largest difference in motivation (between a typical course with M = 2.27 and our Project Management course with M = 4.33), however, was achieved in the factor "active participation of students," followed by "allowing time for discussion."

Tausch and Tausch (1963/1998) and Rogers (1983) agree that the development towards a "good group" proceeds by furthering the exchange of personal feelings, allowing personally important experiences, and allowing for autonomous interaction. This is facilitated and comes naturally in an atmosphere characterized by transparency and appropriate openness, in which learners feel respected and empathically understood.

According to Rogers (1983, p. 158), "A very important example of a development that fosters a climate for significant learning is the encounter group. This approach is of help in educating not only students, but teachers and administrators, for the newer goals in education. [...] In general, when the experience is a fruitful one, it is a deeply personal experience resulting in more direct person-to-person communication, sharply increased self-understanding, more realness and independence in the individual, and an increased understanding and acceptance of others."

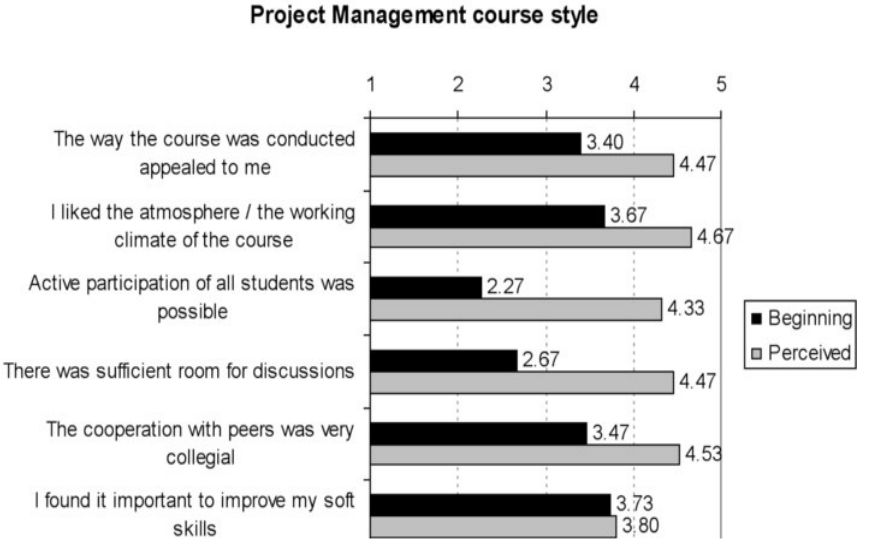


Figure 3: Motivational orientation due to various factors regarding the course style for a typical course ("Beginning") compared with the course on Project Management ("Perceived"); N = 15.

Particularly in settings in which learning resources can be acquired from the Web, personal encounters are essential for communication and the creation of meaning. We have experimented with conducting encounter groups after a series of structured workshops and in a course on Person-Centered Communication. The vast majority of students find this course a unique experience they would not want to have missed and find the accompanying work on team projects that are published and peer-evaluated online truly promotive. In a related setting, we have asked students to submit reaction sheets between encounter group sessions. This has been appreciated by our students and, in the personal view of one of the authors, has contributed to accelerating the early phases of the group process as described by (Rogers, 1961). However, more research and experience is necessary to explore the effects on an online interconnectedness of group members between encounter sessions.

For example, one student, among others, wrote the following after the first 1.5-day encounter group: "[…] In the larger group I have hardly ever experienced such intensive sharing like yesterday in the small groups. It may have been the topic, the atmosphere, the fact that everybody was willing to share, or any combination of these factors that contributed to the vivid and exciting sharing. Also Austin's 'reports' from his home country significantly contributed to this intense experience. In general, the last two units let me realize that the absence of certain participants had subtle and versatile effects on the themes and the whole group."

Another student notes: "Even though it was quieter in the beginning on Monday – this might have been due to the perfect weather – a very interesting theme, in my view more in the flavor of a discussion, evolved. Unfortunately, I could not participate on Tuesday, but I wish to let you know that in my thought I was repeatedly with the group and I felt that I was missing something important."

Occasionally, yet rather rarely, statements from the reaction sheets are taken up in the following encounter groups. In the most recent group, one student mentioned that he would wish to know participants by their names and suggested that we write our names on pieces of paper and put these in front of our chairs. Another student brought that into the group session, and after a brief discussion on alternatives, we followed the initial proposal. In the end of the group, participants unanimously agreed that this had been a perfect idea and we repeated it during the next session. Fortunately, between encounter sessions so far we did not have any accusing online reactions which might cause flaming, as it is known in conventional

online communities. This may be the consequence of preceding workshops in which basic mindsets develop, but definitely utmost care must be taken in experimenting with such powerful social concepts like encounter groups.

Conclusions

In this paper we have considered a versatile range of activities that can be lived in any class in order to promote significant learning, or, in other words, mental processes combined with constructive personal development. Our major contribution was to view promotive activities in the context of technology-enhanced environments, and to show in which ways a sensitive use of technology can add value and effectiveness to learning processes. In the spirit of action research, students' reactions and facilitators' experiences have been included in order to allow the reader to gain some impression of immediate effects of a constructive learning climate in the age of the Internet. Note, however, that learning is the essence of life and words appear to be limited indeed to capture the whole range of rich experiences present in any promotive educational activity. It is only the inadequacy of written communication that makes it necessary to capture that living experience, or some fraction of it, in words and figures. If the article succeeds in inspiring readers to live the experiences shared in this paper and causes them to explore more deeply their own promotive activities, it will have accomplished its purpose. Readers interested in concepts and programs of staff development for—and in the spirit of—person-centered education are referred to (Natiello, 2001; Rogers, 1983). Further theoretical as well as experiential inputs can be gained (e.g., Barrett-Lennard, 2003; Kunze, 2003; Motschnig-Pitrik & Nykl, 2005; Nykl, 2005a, 2005b; Teml, 1999).

Further research is directed in finding regularities in personal experience and technology support of promoting significant learning in various settings and fields of study at our faculty, university, and beyond. At the time of publication, our web service environment called "CEWebS" is in the process of being introduced to support promotive educational scenarios at the faculty of computer science at the Masaryk University in Brno, Czech Republic, and in the realm of counseling education in the German GWG-academy (Gesellschaft für wissenschaftliche Gesprächspsychotherapie und Beratung).

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