

Learning at three levels: Web-support and experiential learning in project management

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Abstract:

Student-Centered Teaching or experiential, whole-person learning addresses the learner at three levels: his or her intellect, social skills, and personality including feelings, values, and meanings. In our courses we aim to enrich Student-Centered Teaching, as developed by Carl Rogers, with elements of eLearning, resulting in an approach we call Student-Centered eLearning (SCeL). In the paper we discuss the corresponding didactic baseline, illustrate its realization in the context of an advanced course on project management, present the results of a detailed evaluation and derive some practical hints in the form of a first version of a catalogue of Student-Centered eLearning practices.

1 Introduction

Ideally, learning should address the whole person at the three levels of learner's intellect, his/her social skills, and personality, as depicted in Figure 1. If this is achieved, learning is known to be most effective in terms of being best integrated with the experience of the particular person and hence more persistent than purely intellectual information [19, 20, 22, 13, 15]. This paper aims to approach experiential, whole-person learning by proposing to combine Student-Centered Teaching, as developed by the American psychologist Carl Rogers (1902-1987), with elements of eLearning, resulting in an approach we call Student-Centered eLearning (SCeL) [16]. The primary benefits of SCeL follow, among others, from providing increased room for social and personal processes and deeper learning experiences. We will argue and illustrate that this can be achieved in the case that significant parts of the transfer of intellectual knowledge are allocated to the computer and the instructor takes on the role of a facilitator who creates a constructive learning climate based on values like transparency, respect and understanding. Typically, learners elaborate selected topics in small groups, real or virtual, and bring together the individual perspectives in meetings of the larger group, resulting in conversations and transcripts that enrich existing expert knowledge with personal- and group perspectives. In a nutshell, SCeL courses offer a versatile range of possibilities for students to contribute and hence result in students (and facilitators) being remarkably more active than in traditional courses [1, 2, 20]. Besides cognitive gains, SCeL emphasizes social as well as personal or emotional learning and growth that, as will be argued, cannot be achieved purely cognitively but requires being experienced in a proper atmosphere [19, 17].

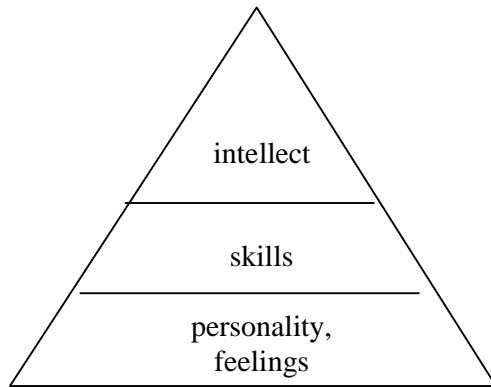


Figure 1: Three levels of learning or personal growth

In the next Section we briefly present the didactic concept and some hypotheses that underlie our applications and case-studies of SCEL. For a more detailed description on SCEL the reader is referred to [14, 16] and [15] in this volume. The third Section presents a case study of the situated application of SCEL within an advanced course on IT project management. We describe and motivate the course design, the allocation of face-to-face and eLearning elements, present concrete examples on our way of combining the three levels, and report on our experience in conducting the course, which is a compulsory part of the curriculum on business informatics at the University of Vienna. In Section 4 we discuss the results of the questionnaires and reaction sheets that have been collected throughout the course and present the statistical evaluation of our case study. Section 5 then gives the first version of a catalogue on SCEL practices and Section 6 discusses further research and concludes the paper.

2 Student-Centered eLearning (SCEL) – concept and hypotheses

Student-Centered Teaching has been developed by the famous American psychologist Carl Rogers as a radically new approach to education that is applicable to learners of all age groups independent of their social background [20, 1]. The theory underlying Student-Centered Teaching is derived from Rogers' life-long experience in counseling and psychotherapy, where he worked extensively with children as well as adults, as well as from his own experience in teaching at several universities. In his well-known book "Freedom to Learn" Rogers and his colleagues describe, besides the concept and research foundation, several applications of Student-Centered Teaching in various contexts and subjects (such as French, Physics, Neuroscience, etc.) that appear highly illustrative and useful for the practitioner.

Our research at the University of Vienna, Department of Computer Science and Business Informatics focuses on integrating Rogers' Theory and Experience with modern technology [15, 16]. In other words, we aim to enrich Student-Centered Teaching with the use of New Media in order to make the whole approach more effective in primarily two respects. The first concerns a still further improvement of learning processes by exploiting new technology and results from the human sciences such as psychology, sociology, and pedagogy [10, 9, 23]. The second, and in our time increasingly important issue, deals with efficiency. From experience we know that Student-Centered Teaching is more demanding on facilitator's time than conventional courses that can be prepared once and reused several times. Regarding efficiency, we conjecture, hope, and, to some degree experience that New Media, in particular the Internet, can be employed to reduce some of the overhead caused by the Student-Centered style. This is because the provision and distribution of material, including artifacts produced by students, is easier with information and communication technology (ICT). Also

communication, in particular concerning organizational aspects, can be handled more efficiently.

The basic hypothesis underlying Student-Centered Teaching can be stated as follows:

Human beings are constructive in nature and strive to actualize and expand their experiencing organism. According to Rogers' Theory of Personality and Behavior [18] the constructive tendency can unfold itself best in a climate that is characterized by three attitudinal conditions, known as Rogers' variables:

- *Realness*, with synonyms such as congruence, transparency, genuineness, authenticity;
- *Acceptance*, else referred to as respect, unconditional positive regard, caring attitude, concern for the individual;
- *Empathic understanding*, a deep form of understanding of the meanings as well as feelings of the learner.

These must be held or lived by the facilitator and communicated to the learners such that they actually can perceive them. Aspy [1, 2] argues that a Student-Centered style of teaching is effective only, if the instructor's or facilitators' level of all three attitudinal conditions lies above a threshold of 3 defined by specific formulations in a questionnaire with 5 levels for each of the variables. The results of the evaluation on the basis of an adapted questionnaire will be given in Section 4.

In typical learning situations such as those appearing in university courses¹ it is further essential that students can solve authentic problems in which they are interested personally [11, 5, 6]. In more recent terminology this principle has been called anchored instruction and/or situated cognition [3, 4, 11, 5], whereby we'd wish to extend the latter term to be situated learning involving cognition, skills as well as personal growth.

While it may seem that Rogers' approach appears not to be compatible with conventional curricula, our own experiences in advanced courses are quite contrary. Given a certain degree of space in the respective curriculum we have found in a number of cases [13, 15] that Student-Centered Teaching, combined with the use of New Media, is a truly effective and rewarding approach we chose to refer to as SCeL (Student-Centered eLearning). In the following, let us see what particular benefits characterize this combination and on what fundamental hypothesis SCeL has been developed.

The first hypothesis can be stated as follows:

“In the case that the computer can take over significant parts of the transfer of intellectual (e.g. factual, procedural, semantic, expert) knowledge, more room will be left for social and personal learning. “

If pure knowledge transfer is no longer the focal point in face-to-face phases, they can be used to anchor knowledge to existing experiences of the learners, to the exchange of learners' viewpoints and/or materials, to discussions of expert meanings, to applications, etc. In this way learners will be more active personally and will be able to experience working/learning in teams that construct knowledge. Later, this knowledge can be compared with expert meanings and overlaps and deviations provide valuable sources for discussion and sharing.

¹ Note that while Student-Centered Teaching has been applied to several different learning situations, Rogers himself [19] found it most effective in advanced courses with not too many students.

Figure 2 aims to illustrate this conception of SCeL by comparing it with conventional learning. The vertical arrows indicate the primary focus regarding the individual levels. Whereas conventional teaching addresses first of all the intellect, and the instructor is the one who sets targets and engages in the transfer of information, SCeL transcends to all three levels. Thereby, in our vision, the computer, initially supported by other resources, may dominate on the intellectual level by striving to optimally support the cognitive, time-based, and location-based requirements of the individual learner [9]. Although, at the social level, learning communities and social knowledge construction can be supported by ICT [24, 12], we allocate learning on this level more strongly to the presence phases, as far as traditional university courses that are enriched by eLearning elements are concerned. In such courses, various face-to-face settings can be conceived, for example team meetings, group discussions, presentations of students or the facilitator, meetings with experts, etc. In any case, we still see personal growth processes facilitated primarily by personal relationships in a constructive atmosphere, as characterized by the three Rogers variables.

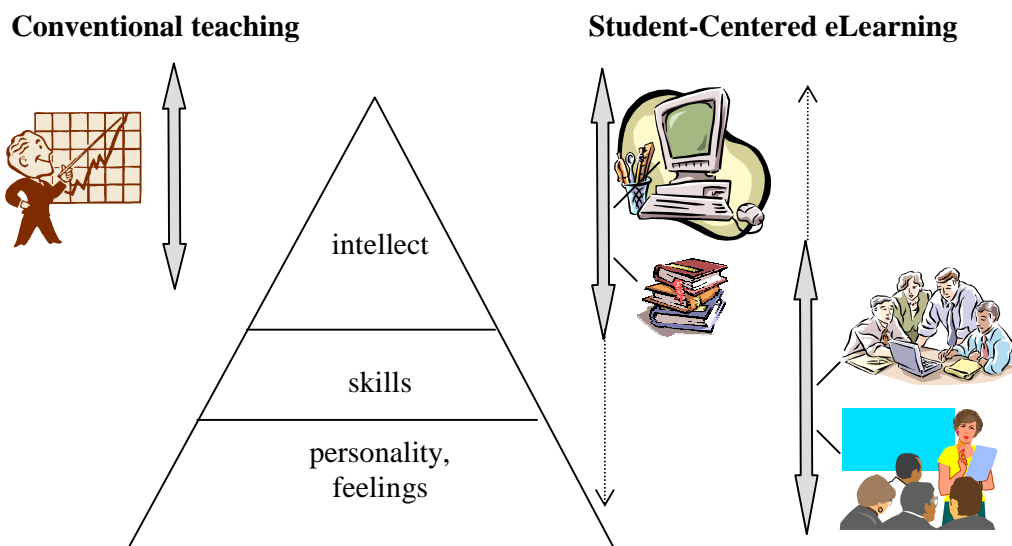


Figure 2: The three levels of learning and their primary support by facilitators and computers

The second hypothesis says:

“The more intellectual knowledge is available in electronic, well organized, structured, and searchable form, the more effective SCeL will become.”

This hypothesis is easy to explain. The strongly individual and open style of the Student-Centered Approach requires a broad repertoire of material to be most effective. Currently, students heavily depend on the facilitator’s support regarding the provision of various materials, primarily books and articles. Since this tends to be quite time consuming, we believe that broader availability of material would ease the facilitator’s task and give the (advanced) student still more opportunities to find sources that suit his or her style.

The third hypothesis deals with personal attitudes and skills of facilitators:

“The better facilitators are in holding and communicating to the learners the attitudes of realness, acceptance, and understanding, the deeper will be the learning processes at all three levels and the better will be the total results.”

Clearly, SCeL requires qualifications of facilitators that essentially deviate from those of good instructors [20, 8]. Besides skills for motivating students and delivering understandable lectures, facilitators need a high degree of inner flexibility to be able to react to individual situations in the here and now. They need to be able to respect individuals as well as the tendency of the whole group. They must be able to moderate discussions and visualize results. Most importantly, they must, in coalition with the learners, be able to find the right compromise between personal-, social-, and curriculum requirements. Personally, the author has found the support of learning environments very helpful with respect to the latter!

After these theoretical and general considerations, we invite the reader to pass to the next Section to see how SCeL may work in an advanced lab-course on project management.

3 SCeL as experienced in courses on soft-skills in project management

For students in business informatics (“Wirtschaftsinformatik”) at the University of Vienna the compulsory education in the area of project management is allocated to the second half of their masters studies and comprises two 2-hour lectures and two 1-hour practical (or lab) courses (“Übungen”) that are distributed over two semesters. Whereas the focus in the winter term is on tools and technical issues such as planning, cost-estimation, functional-, and institutional project management, the summer term emphasizes quality management and soft skills in project work. It is the latter topic and the 1-hour practical course that build the context of this case study.

During the first unit of the practical course about 80 students gathered to be informed about the course structure and final allocation of students to four large groups. As the instructor or better facilitator, I (= first author) explained my view on good learning (as discussed above) and suggested a workshop structure consisting of three workshops lasting three hours that I considered best suited to implement SCeL in the particular practical course. Then I asked the students whether they would be willing to try the innovative approach or would rather stay with a conventional format. Quite surprisingly, nobody raised his or her hand to participate at a conventional course. This meant that there would be four groups each having a series of three workshops in SCeL format. This also meant a perfect source for experience in “teaching” the same SCeL course to different groups with the same background, in other words a must for a case-study.

Although the basic structure, thematic context (“Communication, motivation, leadership, and cooperation in project management”), and the gross goals have been predefined by the facilitator, the emphasis and individual learning targets, topics, and processes - not surprisingly in light of SCeL philosophy - turned out to be different in all four groups.

Starting with the commonalities, my gross goal of the whole project management course context can be stated as: “Participants should be better qualified to accomplish effective project work in teams”. This general goal can be decomposed into sub goals situated on the three levels. On the intellectual level, students should learn strategies and techniques for managing projects, including communication with people [23]. On the level of social skills, participants should experience working with various colleagues in teams of various size, and improve their communication and presentation skills. On the personal or intuitive level, students should observe and perceive Person-Centered attitudes in action and derive their own experience.

Since in the beginning of the term an eLearning platform has not yet been available, all information and scripts were provided via the homepage of the respective courses. Later, we moved part of the material and the discussions to the TeleWIFI Communities platform².

The first task was the same for all groups³. Each student had to specify his or her own learning targets. Thereafter students were advised to form small groups of about three persons and discuss their learning targets in the small group. The results then were shared with the large group and every learning goal mentioned was acceptingly written on wall paper in the form of a list of the group's learning targets to be complemented whenever a relevant issue arose and turned to form time to time, mainly in the beginning of workshops. The list was also uploaded onto the eLearning platform. A sample catalogue of learning targets is given in Figure 3. Interestingly, students tended to skip thinking about their goals individually and many confessed that they worked them out in the small team having interesting discussions about what exactly a learning target might be.

Experience group behavior
Leadership – insights
Conflicts – avoidance, coping with, learning from
Using body language
Behavioral patterns
Manipulation, effect, influence
Posing questions, response behavior
Extend knowledge
Teamwork ability, behavior, observation
Communication with persons of different status
Motivation – of peers, stimulation, provision of impulses
Effect of sub consciousness
To prevail
Personality

Figure 3: Sample list of students' learning targets

One exercise appreciated by almost all students was to practice “active listening”. After a brief introduction on how to accompany a talker by listening actively, students formed triads⁴ such that one student talked about one of his or her experiences, another student accompanied him/her, and the third student observed the dialogue. In the next cycle the roles shifted and the former observer had to retell the story, while the former talker accompanied him/her, etc. This exercise seemed to have left the deepest impression on the students, since they became aware how difficult it is to listen and to recall a talk without bringing in own interpretations. Vivid discussions evolved around the question on what place active listening has its place in discussions where everybody should be able to bring in his/her opinion.

Another task that fits all groups' wish list of activities was to prepare a convincing five-minute-presentation on a topic that would fit the wish list. The presentation should proceed without beamer and overhead projector and be elaborated between two workshops. In the large group we put together a list of issues to be observed during the presentation phases. This resulted in more active commentary phases after the brief presentations and students really

² For experiences with the TeleWIFI platform see the article on SCeL by Motschnig-Pitrik and Derntl in the volume.

³ Groups finally came to have 13 – 17 students.

⁴ Students were advised to form triads with students they did not know well such as to be able to establish contacts with many colleagues during the course.

valued constructive and genuine feedback of their peers. The material for the topics of the brief presentations has either been supplied by the facilitator, or could be self-organized. Surprisingly, despite the provision of a detailed reading list on the eLearning platform, more than two thirds of the teams chose their own sources! Some of the feedback given after the presentations proved useful for the teams in further elaborating their topic to a full Powerpoint™ presentation with written comments. Due to time constraints, this longer presentation has not been given personally but was just put on the eLearning platform, where, at the end of the course, it was self-evaluated by each team and peer-evaluated by all other teams. This helped the facilitator in grading the course, since the students were reassured that no grading would be done on the basis of what students said in the workshops. There, the presence in at least two workshops was a necessary requirement for passing the course.

Due to different students' interests, various activities differed from group to group. Examples are team work on the topic "What motivates me?" or "What sources of conflict do we know?", or "What do I expect from a perfect boss?" or "How can I avoid being manipulated? What makes me convincing?" Reading material on the individual topics was either self-organized or supplied by the facilitator, who also put together brief outlines of relevant theories and provided these on the eLearning platform. Besides working in teams and reporting about the results, students engaged in active discussion with the facilitator, accompanied one another in talking about personal goals, and talked about their impressions in the end of each workshop.

A typical workshop structure showed a brief opening dialogue and a consecutive opening cycle where we sat in a circle and everybody shared his or her opinion, meanings, feelings, etc. Then, teamwork on one of the focal topics was done and presented to the larger group to be shared, discussed, and occasionally complemented by expert opinion, either by the facilitator or a team that was prepared for this task. The eLearning platform, in this course, served mainly to supply intellectual and organizational information, as well as to provide a repository for students' projects as well as the results of what we elaborated in the presence phases and what could be used for the teams' project work.

In order to make it possible to learn from the students' experience on this quite novel course format, every student had to hand in a reaction sheet after each workshop. The format was essentially free, although a catalogue of sample issues of interest was provided by the Internet for those who wished some guidance. In the final group, all reactions have been published via the eLearning platform, although in an anonymous form. In the end of the last workshop, students were also asked to work out some questionnaires such as the Student-Centered questionnaire or the official evaluation sheet of the University of Vienna.

4 Course evaluation and students' reactions

In the tradition of Student-Centered Teaching, a questionnaire, adopted from [1] and given in [13] addressed the levels of Person-Centered attitudes (known as Rogers variables [19, 20]) of realness, acceptance, and understanding, along with a question on the general quality of the instructor's responses. The results that clearly lie above the threshold value of three being required for Student-Centered Teaching are listed in Table 1. Students of all four course-groups valued the instructor's acceptance highly with 4.79 of five points. In addition a One-Way-Anova showed the consistency of the students' answers. This means, there were no statistical significant differences between the students' opinions in the four work groups of the instructor's replies.

<i>Response quality and 3 Rogers Variables</i>	<i>mean</i>	<i>F</i>	<i>p</i>
general response quality	4.29	$F_{(3,55)} = 2.60$.06
realness	4.68	$F_{(3,55)} = .25$.86
acceptance	4.79	$F_{(3,55)} = .20$.90
understanding	4.41	$F_{(3,55)} = .20$.90

Table 1: Means and significances for instructor's response quality. 5 means best, 1 means worst. N = 56. A result is significant if $p \leq .05$.

To get an objective picture on the particular realization of SCeL in the context of the practical course on soft skills in project management, all reaction sheets of the 56 participating students (note that there were actually four concurrent courses) were evaluated. On the average, each student delivered 10.49 comments or statements. The individual statements were graded with three grades, with 1 denoting "I liked it/ it was positive", 2 saying "neutral, could be improved or modified" and 3 standing for "I didn't like it/ it was negative". The results of the most frequent statements are sketched in Table 2. The most frequently mentioned comments referred to the multitude of practical exercises which were stated 75 times during the three workshop units with a score of 1.13 from three possible points. Also very frequent (48 times) positively valued (1.05 points) was the new and innovative manner of the course and the pleasant and relaxed atmosphere which was mentioned 39 times and scored with 1.16 points. Information about structure and processing of the workshop was rated 34 times relatively good with 1.63 points. Between 28 and 30 times students stated the active inclusion and co-operation of their colleagues very positively, and also the interesting discussions, the phases of feedback and the initial presentation of each other at the beginning of the workshop. This introduction contributed to the easy atmosphere of the courses and stimulated a great co-operation between students themselves and the instructor. The only problem that reoccurred during the workshops in two groups concerned a discussion of recording the lessons on a cassette recorder. Since this problem was mentioned in every workshop unit of the respective group, in sum by 23 students, it was scored worst with 2.38 points. Apparently, the dissenting opinions regarding the recording marked a small but real conflict in the group that the facilitators wanted to resolve. Clearly, recording was not the course's topic and only few students sensed they could "learn" from the situation. In our view, the situation can best be illustrated by including some of the respective reactions, translated by the authors from the students' reaction sheets:

One student writes:

"I found the time spent for discussing the issue of recording a bit too long. Relatively much time went lost on this. The recording bothered just two persons, since all others either said nothing or mentioned, like myself, that they don't mind it. ... Should I get into a similar situation again, I will say right from the beginning that I am in favor of the recording, in order to avoid such long discussions "

Another student mentions briefly:

"For me, the situation with the cassette recorder came quite surprisingly, but it did not disturb me. I just find that the discussion about that this issue took too much time."

Yet a third opinion, this time from the student who objected the recording:.

"In particular I liked the fact that I was the cause of a discussion that we talked about quite long and in much detail. Here I am addressing the conflicting case of the recording. From this, quite valuable conversation evolved and there were proponents and opponents. Clearly, it must be mentioned that Prof. Nykl challenged this in a certain way."

Finally, one more reaction showing the real diversity of opinions:

“In the beginning, I did not even realize the issue with the recording and anyway, I did not really mind it. ... Finally, it even was a real situation that nicely fit the topic “conflicts and their resolution!”

Apart from that, all frequent students’ comments were valued generally positive. In our view, it remains an open issue, whether situations like the one with the recorder improve or deteriorate the quality of a course. The response may depend on the amount of such situations, the quality or sensitivity regarding the way they are handled by the facilitators, and the students’ personalities.

Regarding the official evaluation sheet provided by the University of Vienna, the course ranked within the first 30% of evaluated courses. Thereby the result was heterogeneous which means that most students liked the course very well and some not at all. On a range where 1 means best and 6 is worst, only three of the 16 aspects were graded worse than 2. This was the issue “The course is well structured”, with a grading of 2.31, the issue “Importance for the study is well explained” that got a grade of 2.29, and “Different approaches have been presented” graded with 2.19. The three issues that were ranked best were “Instructor can motivate for the topic”, graded with 1.33, “The instructor respects the students and acts on students’ contributions”, graded with 1.46, and “The instructor is well prepared”, that got a grade of 1.5.

Personal communication revealed that having all information and resources on the Internet or eLearning platform was highly appreciated. Consequently, during the next term where an eLearning platform will be available from the first beginning of the courses we definitely intend to intensify its use and encourage knowledge construction in learning communities as well as intensive sharing, e.g. of students reactions on the web.

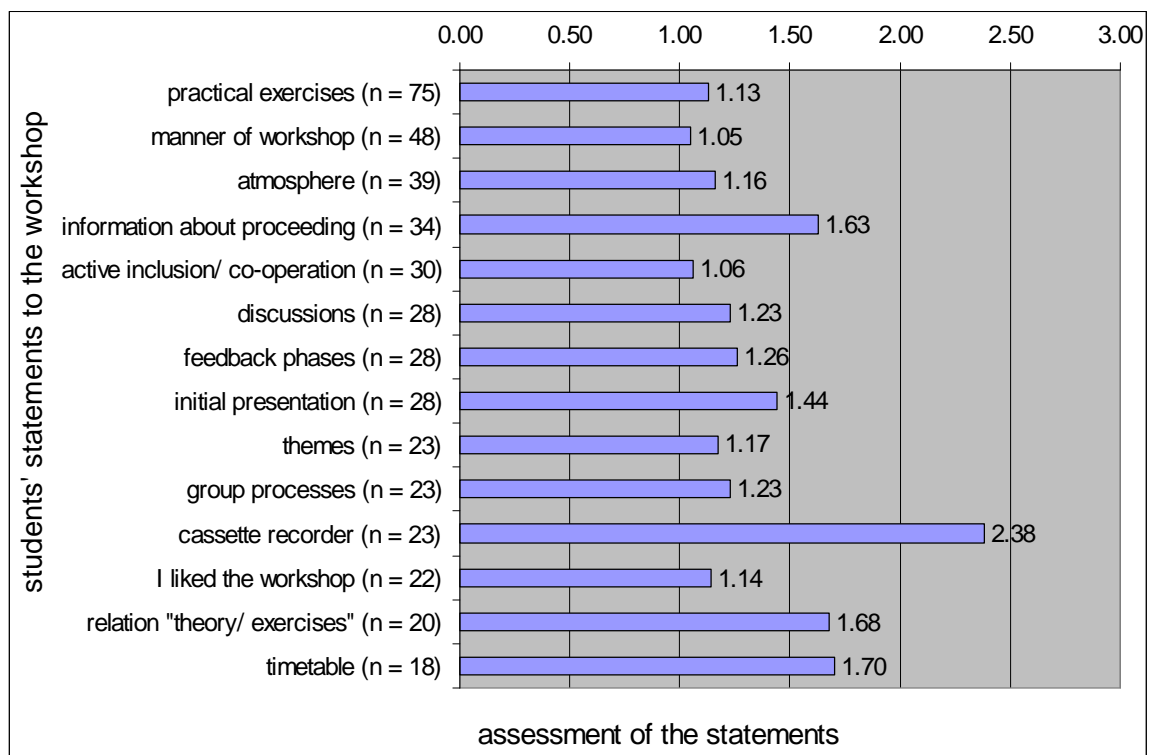


Table 2: Most frequent statements and their evaluation

5 Toward a handbook of SCeL practices

In this section we list some SCeL practices that worked well for us with the hope to provide some inspiration for the reader to try his or her own adaptations of them. It is by no means guaranteed, that the “techniques” listed will work well for the reader, nor are they meant to dictate any expert strategies. It is our conviction that SCeL requires to be adapted to the facilitator’s and students’ individual styles to be most effective. Nevertheless, sharing of experience is believed to enrich individual repertoires of elements and this exactly is the motivation of sharing our experience here.

Let the students choose the approach.

If you are not 100% sure that this is the only style that works for you, give the students a choice. Explain the variants, discuss pros and cons and let the students participate in selecting the style of their course. They tend to be a lot more acceptant in harder phases than if you dictated the innovative approach on them.

Prepare a questionnaire to be filled out in the beginning.

Distributing a questionnaire at the beginning is a good idea if you want to get information on special issues, such as prior knowledge, previous practice, expectations, personal interests, etc. Students tend to feel received if asked in case the results are taken into account later.

Allow for mistakes and occasional confusion.

SCeL style is not as structured and well organized as some first-class courses – and from its spirit it even cannot be since this would totally reduce students’ participation and freedom to learn. Accept mistakes and learn from them and openly show students your satisfaction as well as dissatisfaction. You may be surprised by their reaction and learning.

Show understanding for those who dislike the style.

Students typically are not used to take responsibility for their own learning. Some may be confused. If somehow possible, give them more guidance and such that they will not feel lost. It always proved helpful to think about a way to complete the course for students who want to be guided. In our view, this is perfectly compatible with true Student-Centeredness.

State your expectations in the beginning (e.g. involvement of the group in presentations).

Students need to know transparently what you expect from them and on what basis they will be evaluated.

Offer loose choices; don’t dictate tasks and yet don’t let students get lost in freedom.

Often it is a good idea to offer a list of choices, e.g. for topics to be elaborated, instead of saying “just anything that suits the topic XY. The list can contain the point “or any other issue related to XY to be discussed with the facilitator”.

Let students document their activities and learnings in a project-handbook.

In particular, in the case that students shall evaluate themselves as part of the final evaluation, let them write down for you what they actually did and how time they spent. You may be surprised by the results.

Put projects including all intermediate milestones and versions on the platform.

If also the instructor’s comments are associated with the document, students typically can learn from more than one example.

Provide frame for the content of the course but leave some open space for students' preferences.

Students tend to attend lectures if they participated at choosing some aspects of the content.

Direct the process rather than the content.

It is a good idea to keep in mind (or even better on disk or paper) your goals and a gross structure of the major processes and steps of the course. Even if students participate in choosing directions you may feel safer to know where you are heading from your intent and goals.

Let students experience discussions and decision processes in small groups and in the large group.

Students tend to like good exercises in small groups where they can be highly active and then share experiences in the larger group.

Try to evaluate the course in the form of a mixture of self-, peer-, and instructor's evaluation.

This may seem complicated, but it need not be if an eLearning platform and tutors can help with the organization. In all cases, where students produce documents, the latter can be uploaded on the eLearning platform and commented upon/graded by all participants. Finally, this mixed mode seems to have a high degree of fairness since everybody is heard.

Let students participate in those aspects of learning in which freedom is acceptable for you.

Clearly predefine those aspects and constraints that seem important to you. For example, in the workshops described above we depended on students' being in time. Thus, in the first meeting the instructor stated that being late largely hinders all kinds of processes.

Introduce SCeL in an incremental, stepwise fashion.

Be careful about providing freedom, in any case don't take it away later (this is an experience taken from [20]).

Ask students for their reactions [21].

An effective way to learn how your course is received is to ask students to submit reaction sheets in regular intervals. The best results stem from a totally free format, where students write about what think and feel. For those who like some inspiration about what to write we provided a questionnaire (in electronic form) encompassing issues we'd like to learn about. Surprisingly, in general, we found the students' free style comments a lot more helpful! Although students tended not to like that their reactions be published with their name, most agree to make the comments public in an anonymous form and were highly interested in reading their colleagues' reactions!

Acquire skills in moderating and visualizing group discussions and participate at encounter groups, or at least read some of Rogers' theory [8].

This article definitely cannot serve as a substitute for one's own highly personal experience!

6 Conclusions and further work

In this paper we gave our view on Student-Centered eLearning (SCeL) that heavily relies on Carl Rogers' Student-Centered Teaching, but adapts this style to the requirements of conventional curricula, and, most importantly, extends it by the use of New Media. In the paper we have argued that this combination has the potential to bring together the particular benefits of two worlds: the field of humanistic education and that of modern technology. In a

nutshell, the SCeL style aims to enrich traditional courses by addressing learners at three levels: intellect, social skills, and personality and intuitions. Thereby, technology is employed to take over a significant part of knowledge transfer at the level of intellect, thereby providing room for addressing the social and personal levels during face-to-face phases.

From the pragmatic point of view, we have illustrated how SCeL can be implemented in an advanced, practical course on project management. We have also shown in which ways this course has been evaluated and presented some of the evaluation results. Furthermore, building on our experience with SCeL in various contexts we have provided an initial catalogue of what we believe to be generally applicable SCeL elements.

Further research will take several directions. Firstly, we are conceptually modeling some of the general SCeL elements – we call the SCeL patterns [7] -- and typical compositions thereof with the goal to support them with appropriate web-design elements. With this we aim to provide general web-templates that further support and simplify the organization, communication and evaluation of SCeL courses. Secondly, we proceed in making case studies of courses we facilitate in SCeL style, whereby most experimentation lies in the degree of using on-line elements [14, 16]. Thirdly, we are in the process of establishing a virtual community of people interested in the Student-Centered Approach in higher education in order to have a medium to share experiences and coordinate research. The initial community comprises the participants of the Higher Education Section in the Carl Rogers 100th Anniversary Conference held at the University of San Diego in July 2002 and everybody interested to take part is invited to send email to Renate Motschnig. Last but definitely not least is the whole complex of teacher education in the spirit of humanistic psychology and the use of new media that appear essential in order to get the best out of SCeL.

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