INVESTIGATIVE REPORT

Is Story-based Blended Learning a Promising Avenue for Skin and Sexual Health Education? Results from the PAEDIMED Project

Christian J. APFELBACHER[1]*, Erika DEIMLING[1]*, Britta WULFHORST[2], Frederic ADLER[3], Thomas L. DIEPGEN[1], Dennis LINDER[4], Holger BLENK[5], Nikolaus STOSIEK[6] and GABI REINMANN[3]

[1]Department of Clinical Social Medicine, University Hospital Heidelberg, Heidelberg, [2]Dermatology, Environmental Medicine and Health Theory, University of Osnabrueck, Osnabrueck, [3]Institute for Media and Education Technology, University of Augsburg, Augsburg, Germany, [4]Centro Studi Gised, Ospedali Riuniti, Bergamo, Italy, [5]Department of Microbiology, University of Oradea, Oradea, Romania/EuromedClinic, Nuremberg/Fuerth, [6]Berufsverband Deutscher Dermatologen e.V., Landesverband Bayern, Regensburg, Germany
*The first two authors contributed equally to this paper and should be considered as first authors.

The PAEDIMED study group developed a learning and teaching scenario for school health education in the area of skin and sexual health in Italy, Romania and Germany, combining web-based and traditional learning ("blended learning"). A questionnaire-based needs assessment and context analysis were conducted, based on which an education scenario was designed. Particular emphasis was put on emotional and motivational aspects, using narrative components in the didactic concept. The design process occupied a central role in the project (design-based research). Evaluation was both formative and summative. Continuous feedback was obtained from relevant stakeholders. Following a prototypical implementation, the scenario was evaluated using questionnaires. The results revealed a high level of acceptance of the education scenario as well as an increase in students' knowledge concerning skin and sexual health. Evaluation also suggested that health education is highly influenced by cultural background and habits as well as diverse contextual and personal conditions. *Key words: adolescent health; health promotion; school health; sexual health.*

Based on Antonovsky's salutogenesis model (1, 2) and the Ottawa Charter of the World Health Organization (WHO) (3), health promotion endeavours to strengthen resources and skills. The WHO Ottawa Charter states that „health promotion is the process of enabling people to increase control over, and to improve, their health" (3). Health is seen as a resource for life, not the objective of living. Health is seen as a dynamic, life-long process. The concept of salutogenesis has become an established theoretical framework for health promotion. Within this framework, the focus is on people's resources rather than on risk factors for disease. Key elements are an orientation towards problem solving and a focus on the capacity to use available resources.

As a setting, schools occupy a central place in health promotion activities (4). It is hoped that socialization with respect to positive health-related behaviours will lead to sustainable health awareness and a generation dedicated to maintaining the general well-being of their society (5). However, research attempts to understand why health promotion programmes are effective, are often very disappointing (6).

Despite substantially changed information and communication patterns among young people (7–9), little work has yet been devoted to the use of information and communication technologies (ICTs) for school health promotion, especially in the areas of skin health and sexual health. The use of ICTs in health education has the potential to create more flexible, diverse and motivating ways of learning. It is therefore a favourable way to impact on students' health knowledge, attitudes and beliefs.

However, impact can only be expected if health education programmes are designed carefully, according to students' needs and the respective contextual conditions (10), and if the teachers' competencies for delivering health education are developed (11).

It was the aim of the PAEDIMED project to develop, implement and test a "blended learning scenario" for sexual and skin health promotion in European schools.

MATERIALS AND METHODS

The PAEDIMED project was carried out according to the steps depicted in Fig. 1. The design of the health promotion scenario itself occupied a central role in the project (12) and involved experts with professional backgrounds in medicine, health sciences and (media) education. It was both inductive, using information obtained in needs assessment and context analysis, and deductive, taking into account theoretical and empirical knowledge from (health) education research and the learning sciences (13, 14).

Within the design-based research (DBR) approach, development and research take place through continuous cycles of design, enactment, analysis (or evaluation) and redesign (15, 16). DBR is differentiated from experimental and evaluative research and considered to be more capable than other forms of research of creating sustained innovation in the practice of education.
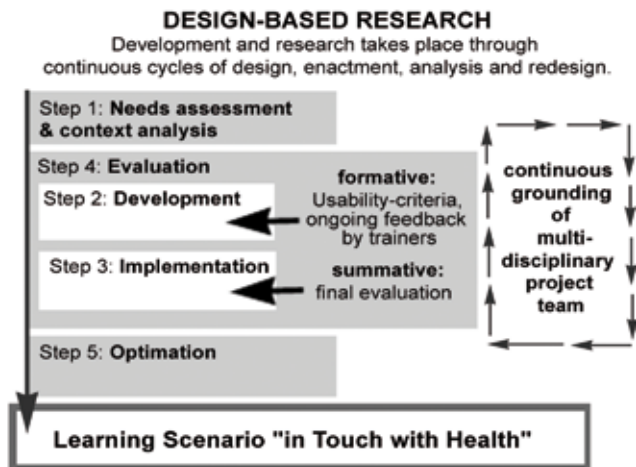
DESIGN-BASED RESEARCH
Development and research takes place through
continuous cycles of design, enactment, analysis and redesign.

Fig. 1. Overview of project methods.

Step 1: Needs assessment/context analysis

A needs assessment and context analysis were conducted, to ensure that the development appropriately took into account particularities of the target groups as well as the different contexts within which the implementation would take place. The needs assessment was carried out using questionnaires for both students and potential trainers and a criteria list. Due to organizational reasons, the needs assessment in Italy was performed with a student group that differed from the students who took part when the learning scenario was implemented.

Step 2: Development

Since the scenario was supposed to offer a high degree of flexibility for learning and teaching, the following didactic criteria were chosen to guide the development process: modular and elaborated structure, blended learning (which means to combine face-to-face learning with media-based learning) and situated learning using multimedia and narrative elements.

Learning materials and methods were structured in a modular way, allowing users to decide which topic to concentrate on.

Based on the elaboration theory, an instructional design model (17), medical content was organized in increasing order of complexity, "zooming" from easy and general information to complex and specific content.

The combination of classroom and virtual learning (blended learning) allows for various learning and training possibilities taking into account personal needs of students and trainers as well as contextual learning and teaching conditions (18).

According to the theory of situated learning, learning is embedded within activity, (schooling) context and culture (19). Acquisition of problem-solving skills takes place associated with acting or participating in authentic situations. Those may be generated via anchor stories ("anchored instruction" by Cognition and Technology Group at Vanderbilt (20)). Such stories provide realistic problem contexts, presented in a multimedia and narrative way, that enable students to identify the utility of knowledge and to understand the conditions for its use. They also foster the integration of new knowledge into prior knowledge and relevant situations and serve as motivators for learning. Some principles of "anchored instruction" were applied when the learning scenario "in Touch with Health" was developed (without realizing the whole approach).

Step 3: Implementation

"In touch with health" was implemented in four European schools in close co-operation with the teachers and health professionals involved in the local schools who formed health education teams specifically for the PAEDIMED project.

As implementation was conducted in a European context characterized by differing educational landscapes the prototype was implemented in the schools in different ways (Table I). Differences arose mainly with respect to integration in curriculum and schools' lessons, mode of participation (voluntary vs. obligatory), amount of time for students' preparation and study, engagement and didactic preparation of trainers, applied learning and teaching methods, technical issues and acceptance of the scenario.

Step 4: Evaluation

Formative evaluation was carried out by continuous feedback from the trainers throughout the development phase. In addition,

Table I. *Overview of implementation procedure*

	Italy Secondary school	Romania Secondary school	Germany Vocational school	Germany Secondary school
Participants				
Students	14 (1 class)	29	31 (2 classes)	43 (2 classes)
Trainers	3	3	3	3
Students mean age (years)	17.4	17.2	18.1	14.3
Participation	Obligatory	Volontary	Obligatory	Obligatory
Integration in curriculum	Integrated in regular biology lessons	Run as autonomous project	Integrated in regular health education lessons	Integrated in lessons in a cross-disciplinary way (biology, physics, chemistry, German, and social learning and learning via internet)
Duration	9 h	Self study + 9 h	8 h	9 h
Implemented modules	Acne, sun, dermatitis, STI	Acne, sun, dermatitis, STI	Acne, sun, dermatitis, STI	Acne, sun, dermatitis, STI
Mode of implementation	Self-study in school (each student worked on every module), group discussions and diverse activities of the suggested training methods	Self-study at home (each student worked on every module), group discussions and diverse activities of the suggested training methods in school	Self-study in school (groups of students worked on every module), teamwork on each module (based on suggested training methods) and presentation of team results in class	Self-study in school (one student group worked on one module/4 groups per class), teamwork on each module (based on suggested training methods) and presentation of team results in class

STI: sexually transmitted infections.

development took place in accordance with existing usability criteria (structure, accessibility, navigation and user guidance, presentation of information/content).

The (summative) evaluation was carried out using questionnaires. A questionnaire was administered to the students and trainers who took part in the project, inquiring about the following aspects:

- narrative elements (students and trainers);
- interactive exercises (students and trainers);
- information/learning texts (students and trainers);
- didactic proposals (trainers);
- user interface and technical issues (students and trainers);
- embedding in classroom teaching or school projects (students and trainers);
- support (trainers);
- learning success (students and trainers).

In addition, the questionnaires included blank space for students and trainers to state what they were missing.

RESULTS

Needs assessment/context analysis

Both needs assessment and context analysis revealed considerable heterogeneity, with respect to:

- experiences with, knowledge of and attitudes towards health education/promotion, both among the health education teams and the students in the respective schools;
- knowledge of skin-related health issues among students;
- contextual conditions (e.g. ICT equipment) in the respective schools and countries;
- projected implementation scenarios (integration in existing curricula, project days, project weeks).

Overall, however, the analysis showed that students were interested in skin and sexual health topics (Table II). The tendency was that they expressed more interest in sexually transmitted diseases than in general dermatological diseases. The data also showed that the students wished to receive learning material. Although they mostly liked movies, they also expressed interest in an internet platform and in projects requiring active problem-solving.

Development

The main result of the PAEDIMED project was the prototype of the learning environment called "In Touch with Health", which was developed in German, English, Romanian, and Italian versions.

It comprises three main parts. Within the "learning" area students obtain learning materials presented in four seperate learning modules to be used at home or in school, for self-regulated or co-operative learning. Each module starts with an "anchor story" provided in audio format combined with illustrated text, which introduces

Table II. *Context and needs analysis – students' needs concerning knowledge and learning material*

	VocS DE		SecS DE		IT		RO	
	n^a	n^b	n^a	n^b	n^a	n^b	n^a	n^b
About which disease would you like to increase your knowledge?								
Eczema	33	28	38	32	19	12	32	29
Dermatitis	33	29	38	27	19	11	32	29
Acne	33	25	38	31	19	12	32	30
HIV/AIDS	33	29	38	34	19	17	32	31
Hepatitis B	33	31	38	31	19	15	32	32
Gonorrhoea ("clap")	33	32	38	32	19	17	32	30
Syphilis (lues)	33	31	38	32	19	17	32	30
Genital and anal warts	33	28	38	29	19	17	32	30
Chlamydia	33	30	38	31	17	17	32	30
Herpes	32	28	38	31	19	15	32	31
What kind of learning material would you like to receive from your school?								
Texts	33	16	37	16	19	13	32	25
Movies	33	31	37	29	19	14	32	29
Internet platform	33	17	38	25	19	11	32	24
Projects involving active problem-solving	32	20	37	21	19	13	32	27

VocS: vocational school; SecS: secondary school; DE: Germany; IT: Italy; RO: Romania
[a]Total number of students.
[b]Number of students endorsing positive answers to the relevant questions.

students to the topic and fosters situated learning and the aquisition of problem-solving skills. Interactive applications enable students to actively perform different activities. The medical content is offered on different levels of complexity (from short and easy overviews to detailed and complex information).

The "teaching" area is very much characterized by the criterion of blended learning. It offers relevant training materials and numerous didactic suggestions for learning activities, including relevant material for health promotion helping trainers to plan their lessons (Appendix I). Those activities range from short (i.e. experiments, web searches, story writing) to very extensive projects (i.e. own multimedia campaigns, roleplays, health surveys). Most activities are not strictly bound to a school subject, but are cross-disciplinary to optimize the integration of health education in the curriculum, which often does not include the subject "health education" as such.

The scenario also offers applications for web-based communication and co-operation, such as forums, chats and videoconferencing. Upon request, more applications, such as blogs or wikis, may be installed. All communication and cooperation applications are for registered use only.

Evaluation

Although acceptance data do not tell us much about the effects of a learning environment, they are essential to estimate the likelihood of implemevntation. We were especially interested in the acceptance of those elements of the learning environment that are integrated to foster motivation and engagement.

The majority of the Romanian and the German vocational school students liked the stories very much (Table III). Results referring to the multimedia presentation of the stories are more homogeneous: all four groups preferred a multimedia presentation of the "anchor stories" by radio play, illustration and text (as opposed to "just text"; "text, illustration"; "radio play"; "radio play, illustration").

The results for the practical effect of the stories revealed that most students in all schools stated that the stories made it easy to get in touch with the topics health, skin and sexuality and that they remembered the health problems mentioned in the stories as displayed in Figs 2 and 3.

Results relating to the learning success of the scenario are mixed (Table IV). The acne module showed good learning effects in the Italian secondary school and in the German secondary school. This was also true for the sexually transmitted infections (STI) module. The Romanian students reported good results with respect to the sun protection module, and partly with respect to the STI module, with 80% reporting that they could correct erroneous assumptions in the STI area. The dermatitis module was consistently rated worst.

DISCUSSION

In order to meet the challenge imposed by innovative health promotion projects, the project team was composed of experts from medicine, the health sciences and (media) education (21). Thus, the often-separated sectors "health" and "education" were thematically linked and existing competencies and deficits of the health and education professionals were compensated for.

From the beginning, when the context and needed analysis was conducted, it was evident that a learning environment for the different contexts needs to be very flexible due to differences in the available technical infrastructure and e-competences.

We tried to adopt a story-based approach, taking into account the importance of emotion and motivation as essential factors for learning success (22).

Evaluating programmes aiming at the development of competencies for students and teachers represents a model of good practice as proposed by the European Network of Health Promoting Schools (http://www. euro.who.int/ENHPS).The evaluation took into account
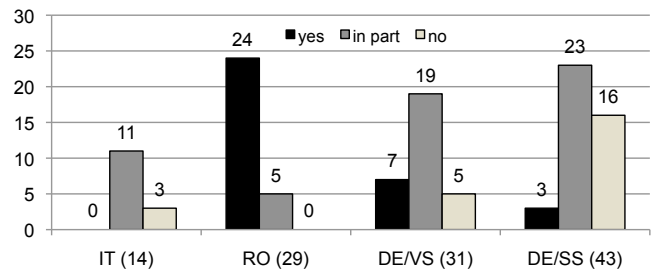

Fig. 2. "The stories made it easy to get in touch with the topics health, skin and sexuality". VS: vocational school, SS: secondary school.

standards set by the WHO European Working Group on health promotion evaluation (23).

Importantly, we did not only perform an evaluation following the implementation of the scenario, but also during its development. This was in accordance with the research paradigm and ensured the early participation of those who were later involved in implementing the programme. Early teacher participation is seen as a key to initiating organizational development processes, which are important in school health projects (24).

Since there were pronounced differences in the way the implementation was conducted (Table I) and because the samples were small, the evaluation represents a composition of four case studies rather than an analysis of the total dataset. This means that the data should be viewed in a descriptive manner and are not meant to be generalizable to all students in the respective age group and country. As such, the evaluation represents one step within the design-based research cycle.

The overall picture across the four cases was that the students liked the narrative frame of the scenario. It seemed that they were able to connect the stories, and hence the health issues, embedded in the stories to their social contexts and lifestyles through emotional involvement. We cannot rule out, however, that a degree of social desirability bias might have occurred in the questionnaire evaluation. The German secondary school was an exception, since a comparatively low number of students said they liked the stories. This might be due to high expectations in terms of the multimedia presentation of learning materials, but might also reflect gender differences.
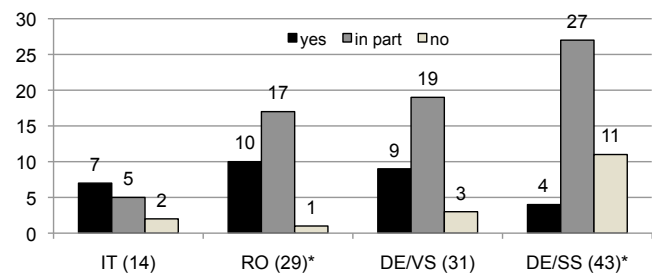
Table III. *Acceptance of the stories in the different schools*

	Liked it very much	Liked it much	Did not really like it	Did not like it	Missing
Italy (*n*=14)	0	3	8	2	1
Romania (*n*=29)	6	20	2	1	2
Germany (secondary school) (*n*=43)	3	13	23	2	2
Germany (vocational school) (*n*=31)	5	21	5	0	0

Fig. 3. "I can still remember the health problems mentioned in the story". VS: vocational school, SS: secondary school. *Missing values for 1 person.

Table IV. *Learning success, stratified according to school and topic*

	Italy	Romania	Germany (vocational school)	Germany (secondary school)
Acne	*n*=13	*n*=21	*n*=31	*n*=12
I have a good overview now	10	5	21	10
I was able to correct erroneous assumptions	6	5	12	6
I could advise a friend now	7	5	10	10
I have more open questions than before	–	1	1	1
I have thought comparatively much about this topic.	3	1	6	4
Although I have worked on this module, I could not say anything any more about this topic.	1	13	4	1
Sun protection	*n*=9	*n*=21	*n*=28	*n*=10
I have a good overview now	7	18	17	9
I was able to correct erroneous assumptions	2	–	11	2
I could advise a friend now	6	18	13	8
I have more open questions than before	1	2	5	1
I have thought comparatively much about this.	4	15	10	2
Although I have worked on this module, I could not say anything any more about this topic.	1	1	3	2
Dermatitis	*n*=5	*n*=16	*n*=29	*n*=11
I have a good overview now	4	2	10	7
I was able to correct erroneous assumptions	–	3	12	3
I could advise a friend now	2	–	10	6
I have more open questions than before	3	4	9	1
I have thought comparatively much about this.	1	3	4	4
Although I have worked on this module, I could not say anything any more about this topic.	3	1	9	6
Sexually transmitted infections	*n*=6	*n*=20	*n*=28	*n*=10
I have a good overview now	6	7	20	9
I was able to correct erroneous assumptions	3	16	6	4
I could advise a friend now	6	11	15	5
I have more open questions than before	–	18	3	2
I have thought comparatively much about this.	2	9	13	4
Although I have worked on this module, I could not say anything any more about this topic.	–	–	2	3

In order to be able to interpret these results, we asked the students why they liked or disliked the stories (data not shown). In the German vocational school, the multimedia presentation as well as the story plot itself were important reasons why the students liked the stories. In the German secondary school, the story plot was considered less important, and the Italian students who did not like the stories also did not like the story plot. The Romanian students who liked the stories stated that this was due to the general idea and the story plot, which made it easy for them to identify with the protagonists.

The differing ratings are probably based on different country- and school-specific characteristics. It might be that an even more target-group-specific and culturally sensitive content and story plot development is necessary (25). All in all, the designer of such learning environments faces some kind of dilemma: on the one hand narrative design principles can help to foster motivation, engagement and understanding, but on the other hand storytelling in an intercultural context seems to be a very challenging task due to intercultural differences in the reception of the stories.

As a consequence, it is important to design learning environments that can be adapted to different contexts and customs. Innovations in the context of school health promotion need to be gradual and sensitive if the aim is to reach beyond pilot status.

The evaluation data suggest that the implementation of the learning scenario led to learning effects. To varying degrees, students in the different schools stated that they now had a good overview, that they were able to advise a friend, and that they were able to correct erroneous assumptions. The learning success not only differed between countries, but was also dependent on the topic. The dermatitis module showed the least positive learning effects, perhaps because this topic was not as relevant to the students as the other topics.

Deschesnes et al. have proposed four conditions how to achieve broader implementation of comprehensive, integrated approaches to health promotion (26): (*i*) negotiated planning and co-ordination; (*ii*) intersectoral action; (*iii*) political and financial support; and (*iv*) evaluation. The PAEDIMED project met these four conditions, thus laying the ground for a sustainability strategy.

All project results were disseminated amongst relevant stakeholders in science, politics and practice by a selective and intersectoral public relations campaign. To foster the enduring and broad use and implementation of the project in schools the scenario as well as the learning and training materials were integrated into approved and frequently used databases of educational material. In addition, further follow-up projects are planned to understand more about the use of ICT in health education, focusing on blended learning and narrative/game-based learning scenarios.

Conclusion

Designing a modular and blended learning programme for sexual and skin health proved to be challenging within the PAEDIMED project. Interdisciplinary learning was an important step in the design process. Heterogeneity was dealt with by designing a modular programme. Emotional and motivational participation of those involved (students, health education teams) in implementing the programme is decisive. The learning scenario "In Touch with Health" seems to be an acceptable and attractive tool for health promotion and seems to be capable of generating learning success. Blended learning proved to be a favourable way of using one single environment for multiple demands without constraining country- or school-specific characteristics. The modular structure allowed the use of different elements in varying depth.

More research needs to be done concerning the sustained implementation of such a programme in school environments and to what extent the learning effects and increase in knowledge actually result in behavioural change.

ACKNOWLEDGEMENTS

REFERENCES

1. Lindström B, Eriksson M. Salutogenesis. J Epidemiol Community Health 2005; 59: 440–442.
2. Antonovsky A. Unraveling the mystery of health. How people manage stress and stay well. San Francisco: Jossey-Bass, 1987.
3. WHO. The Ottawa Charter. Geneva: WHO, 1986.
4. Waggie F, Gordon N, Brijlal P. The school, a viable educational site for interdisciplinary health promotion. Educ Health (Abingdon) 2004; 17: 303–312.
5. Simpson K, Freeman R. Critical health promotion and education – a new research challenge. Health Educ Res 2004; 19: 340–348.
6. Brouse CH. Contrasts between didactic and Deweyan approaches to health education. Health Education 2005; 105: 467–476.
7. Klinger W. Jugendliche und ihre Mediennutzung 1998 bis 2008. Eine Analyse auf Basis der Studienreihe Jugend, Information und (Multi-)Media/JIM. Media Perspektiven 2008; 12: 625–634.
8. Morrone A, Zannella L. IT and Mass Media Use Among Italian Youth. IT&Society 2004; 1: 59–67.
9. Ministry of Communications and Information Technology, Romania: eReadiness Assessment of Romania (http://pdc.ceu.hu/archive/00002937/), 2003.
10. Brown SL, Teufel JA, Birch DA. Early adolescents perceptions of health and health literacy. J Sch Health 2007; 77: 7–15.
11. Peterson FL, Cooper RJ, Laird JM. Enhancing teacher health literacy in school health promotion: a vision for the new millennium. J Sch Health 2001; 71: 138–144.
12. Reinmann G. Innovation without Research? Arguments for design-based research in educational research. Unterrichtswissenschaft 2005; 33: 52–69.
13. Ader M, Berensson K, Carlsson P, Granath M, Urwitz V. Quality indicators for health promotion programmes. Health Promot Int 2001; 16: 187–195.
14. Glanz K, Rimer BK, Lewis FM, editors. Health behavior and health education. 3rd edn. San Francisco: Jossey-Bass, 2002.
15. Kelly AE, Lesh RA, Baek JY. Handbook of design research methods in education. Innovations in science, technology, engineering, and mathematics learning and teaching. New York: Routledge, 2008.
16. Thurston WE, Potvin L. Evaluability assessment: a tool for incorporating evaluation in social change programmes. Evaluation 2003; 9: 453–469.
17. Reigeluth CM. Instructional design theories and models: a new paradigm of instructional theory. Mahwah NJ: Erlbaum Associates, 1999.
18. Bersin J. The blended learning book: best practices, proven methodologies, and lessons learned. San Francisco: Wiley & Sons, 2004.
19. Lave J, Wenger E. Situated learning. Legitimate peripheral participation. Cambridge: Cambridge University Press, 1991.
20. Cognition and Technology Group at Vanderbilt (CTGV). Anchored instruction and situated cognition revisited. Educ Technol 1993; 33: 52–70.
21. Bunton R, Macdonald G. Health promotion: disciplines and diversity. London: Routledge, 1992.
22. O'Regan K. Emotion and E-Learning. Journal of Asynchronous Learning Networks 2003; 7: 78–92.
23. Rootman I, Goodstadt M, Potvin L, Springett J. A framework for health promotion evaluation. In: Rootman I, Goodstadt M, Hyndman B, McQueen DV, Potvin L, Springett J, et al., editors. Evaluation in health promotion: Principles and Perspectives 2001: 7–40.
24. Schumacher L, Nieskens B, Brauer H, Sieland B. Nachhaltige Gesundheitsförderung durch Organisationsentwicklung - Ein Modellprojekt für Berufsschullehrkräfte. Gesundheitswesen 2005; 67: 141–144.
25. Cullen KW, Baranowski T, Baranowski J, Hebert D, deMoor C, Hearn MD, et al. Influence of school organizational characteristics on the outcomes of a school health promotion program. J Sch Health 1999; 69: 376–380.
26. Deschesnes M, Martin C, Hill AJ. Comprehensive approaches to school health promotion: how to achieve broader implementation? Health Promot Int 2003; 18: 387–396.

Appendix I: *Didactic proposals for trainers/teachers. K: Knowledge; A: Attitudes; P: Problem-solving*

	Learning goals			Subjects	Media	Time (h)	Communication & co-operation
	K	A	P				
Acne							
Story Telling: "Acne Horror Story"	☐	⊠	⊠	Biology Language training Computer literacy Arts Theatre	Paper & pencil Text processing Internet/wiki Photo, audio, video equipment	1–4	Face-to-face Chat Forum Video conference Electronic wiki
Internet "driver's license": Home remedies against acne in the internet – top or flop?	⊠	⊠	⊠	Biology Language training Computer literacy	Worksheet Internet	1–4	Face-to-face Chat Forum Video conference
Interview: Acne – how was that for you?	⊠	⊠	⊠	Biology Language training Computer literacy	Paper & pencil Audio, video equipment Internet	1–4	Face-to-face Chat Forum Video conference Electronic wiki
Analysing pH	⊠	☐	⊠	Biology Chemistry	pH analysing equipment	1	Face-to-face
Sunlight							
Role play: "Tanned or not tanned – this is the question!"	⊠	⊠	☐	Biology Language training Computer literacy Arts Theatre	Worksheet Internet/wiki Costumes & requisites (make up, etc.) Video, photo equipment	1–8 (depending on media use)	Face-to-face Chat Forum Video conference Electronic wiki
The Sun Health Check: Test your "sun behaviour"	⊠	☐	⊠	Biology	Worksheet	1	Face-to-face
Skin Type Test: What is my skin type?	⊠	☐	☐	Biology	Worksheet	1	Face-to-face
Story Telling: Perfect Sun Protection or Total Disaster?	⊠	⊠	⊠	Biology Language training Computer literacy Arts Theatre	Paper & pencil Text processing Internet/wiki Photo, video equipment	1–4	Face-to-face Chat Forum Video conference Electronic wiki
Poster: Helpful hints for summer vacation!	⊠	⊠	⊠	Biology Language training Computer literacy Arts Theatre	Paper & pencil Text processing Photo equipment	1–4	Face-to-face Chat Forum Video conference Electronic wiki
Dermatitis							
Practical investigation: Dermatitis in our school	⊠	⊠	⊠	Biology Maths Computer literacy Social studies	Worksheet Text processing	6–12	Face-to-face Chat Forum Video conference
Case report: Tracing dermatitis triggers	⊠	⊠	⊠	Biology Language training Computer literacy Arts Theatre	Paper & pencil Text processing Internet/wiki Photo, video equipment	1–4	Face-to-face Chat Forum Video conference Electronic wiki
Experiments: Skin-irritating substances vs. skin protection measures	⊠	☐	⊠	Biology Chemistry	Experimental material	1	Face-to-face
Sexually transmitted infections (STI)							
Research exercise: STI campaign	⊠	⊠	⊠	Biology Language training Computer literacy Social studies	Brochures Internet	1	Face-to-face Chat Forum Video conference Filesharing
Evaluation: STI campaigns	⊠	⊠	⊠	Biology Language training Computer literacy Social studies	Brochures Paper & pencil Text processing Internet/wiki	1–2	Face-to-face Chat Forum Video conference Electronic wiki Filesharing
Our own STI campaign	⊠	⊠	⊠	Biology Language training Computer literacy Arts Theatre Social studies	Brochures Paper & pencil Text processing Internet/wiki Audio, video, photo equipment	1–4 (8)	Face-to-face Chat Forum Video conference Electronic wiki
Safer Sex – Do it the right way!	⊠	☐	⊠	Biology Social studies	Internet/wiki Sex education equipment	1	Face-to-face
Serial story: Talk to each other!?	⊠	⊠	⊠	Biology Language training Computer literacy Arts Theatre Social studies	Paper & pencil Text processing Internet/wiki Audio, video, photo equipment	1–4	Face-to-face Chat Forum Video conference Electronic wiki