Summary

Background: The transfer of practical knowledge and skills is the focus of modern medical teaching (master plan medical studies 2020). The aim of the teaching project is to provide medical students with important dermatological learning goals and contents by using innovative methods.

Methods: As part of a teaching project funded by the Federal Ministry of Education and Research (BMBF) at the Department of Dermatology, University Hospital Schleswig-Holstein in Kiel, various new, partly media-supported teaching modules were developed in addition to curricular teaching and optimized by regular acceptance evaluations during the development process.

Results: (1.) Professionally created instructional movies present essential techniques for diagnosis and therapy: standardized dermatological whole-body examination, wound smear sampling, performing of biopsies, curettages and excisions as well as skin suturing techniques on exercise material and on patients. (2.) Tutor-based courses offer students the ability to practice these techniques independently. (3.) Seminar lectures show different clinical pictures in university medicine and doctor’s offices as well as the important interaction between clinic and doctor’s practice in patient care. (4.) One-day internships in a teaching practice convey the activity in this setting. (5.) Seminars on psychodermatology provide insight into the stress caused by the skin disease using the “bio-psychosocial disease model”. So far, 282 students have participated in the modules. In 88–100 % of the evaluations, there was a desire for further expansion of the new courses and integration into curricular teaching.

Conclusions: Our innovative teaching modules resulted in great acceptance by the students. The freely available instructional films were successfully used by other university locations due to networking in the Academic Teaching Forum. One perspective is the supra-regional and sustainable use of our teaching modules and the transfer of the concept to other departments and faculties.

Introduction

New challenges for medical teaching

The Medical Studies 2020 Masterplan calls for practice-oriented teaching and emphasizes the importance of early teaching of physician-related competence [1]. Special attention should be given to the outpatient sector and the cooperation between medical universities and doctors’ offices. In addition to acquisition of knowledge, competence-oriented training should provide the students with skills, capabilities, and attitudes. This new direction is already addressed
in state examinations of the USA, Canada, and Switzerland [2]. Currently, the German National Competency-based Catalog of Learning Objectives in Medicine (NKLM) and the Subjects Catalog (GK) for medical examination questions are being redeveloped in parallel and combined. In future, the focus will be on the diseases of an organ (here, the skin, its appendices and mucosal membranes) instead of discipline-related teaching. In this context, there will be changes in the curriculum of dermatology [3]. The first draft of a new Medical Licensure Act that will define this direction was presented at the end of 2019 [4].

Current teaching situation

Currently, dermatology, allergology and venereology are usually taught by lectures and practical examination courses or block training with individual concepts employed in the various university locations [5]. Interested students can supplement the mandatory courses with clinical electives in hospitals or doctors’ practices. The teaching content is based on the subjects catalog of the Institute for Medical and Pharmaceutical Examination Questions (IMPP). Dependent on the location, knowledge acquisition is evaluated according to the Medical Licensure Act by written or oral examinations at the end of term [6]. Since late 2013, the Academic Teaching Forum of the German Dermatological Society (DDG) has been trying to promote the exchange of lecturers. Apart from a survey of the “status quo” at the faculties and collegial consultation, this forum has developed a catalog of learning objectives in dermatology that was consented by all ordinary professors [7].

New focus: media-supported courses

Especially in context of the current corona pandemic, all lecturers have been forced to change their teaching to online courses and media-based teaching techniques [8–10]. These provide, in particular, the option of flexible use and may be employed by lecturers and students in a supra-regional manner.

Objective of the teaching project “From the (skin) doctor’s office to the lecture hall”

The initiative for the present project emerged against the background of the described developments and requirements for modern teaching concepts. Another goal is the support of motivated students. In addition to the teaching of useful practice-oriented dermatological skills, the focus is also on demonstrating the important cooperation between (university) hospital and practice, given that a high percentage of medical graduates aspire to establish a doctor’s practice later in life [11]. One objective of the new teaching modules is to heighten the understanding for primary care with its different diagnoses, manifestations of clinical pictures, and therapeutic approaches in office and clinic. This will also present the students with important aspects that reach beyond the field of dermatology.

The opportunity of a voluntary one-day office internship in a teaching practice aims at providing deeper insight into the activities of a dermatological office before deciding on a clinical elective. Supplementary courses on psychosomatic dermatology and stress management are other topics integrated in our concept. They are part of a comprehensive training and important to maintain one’s own health. Moreover, they often receive insufficient attention in a curriculum that concentrates on purely medical aspects [12].

Another aim of the described project was to identify the wishes of students with respect to an attractive curriculum and to implement, carry out and evaluate the content of the corresponding measures. Through the early acquisition of important practical techniques by media-supported teaching, motivation and enthusiasm for dermatology should be awakened, even if a different specialty is later pursued.

Methods

Catalog of learning objectives in dermatology of the DDG

In 2016, an expert panel presented 111 learning objectives in dermatological teaching in the JDDG and emphasized the importance of this discipline for other medical fields [7]. In this work, the wide range of diagnoses and techniques in dermatology were divided into the categories “heard”, “seen” and “done” – dependent on frequency and relevance. Our teaching modules, developed in accordance with this catalog, draws upon years of experience in project management in university medicine and practice as well as additional discussions with colleagues and the Professional Association of German Dermatologists (BVDD).

Development of new teaching modules with involvement of students

Within the framework of the PerLe fund (Project for Successful Teaching and Learning), a fund for innovation in teaching at the Christian Albrecht University (CAU) of Kiel that is supported by the Federal Ministry for Education and Research (BMBF), funding for projects at the Department of Dermatology has been secured since October 2018 (grant code 01PL17068).

Before the start of the project, the students (n = 155) were asked for their wishes concerning potential teaching modules in the 2018 summer term and 2018/19 winter term.
Several options to supplement curricular teaching were offered by dual choice (yes/no) (Figure 1). In addition, students could contribute their own ideas and proposals. Beginning with the 2019 summer term, the new courses (practical skills and psychodermatology), seminars and internships were offered regularly to 7th semester dermatology students on a voluntary basis, in parallel to curricular teaching. The entire project was guided by instructors with years of clinical and/or practical experience and student tutors. Competent pedagogical support was also available.

Criteria for good teaching are specified in the “Frankfurt Model of Framework Conditions for Assurance of Teaching and Learning Quality”. This includes orientation towards participants, situation-specific use of a large repertoire of methods, consideration of innovative forms of teaching and learning, continuous revision of own forms of teaching and regular use of self-reflection and (peer) feedback [13]. In the development of our teaching modules, these criteria were given special consideration through regular acceptance evaluations with subsequent optimization of the modules by instructors and tutors, taking into account the learning objectives pursued.

**Creation of professional instructional movies**

The video modules on relevant examination and therapy techniques in dermatology were created during the 2019 summer term in cooperation with the media team of the Young Dermatologists working group in the BVDD (JuDerm). For each movie, a script was prepared and the respective patients recruited in advance. All filmed persons gave permission for the use and publication of content on the web-based teaching platform OpenOLAT, on YouTube and the JuDerm website. To ensure optimal quality, sound recordings were made in the recording studio of the CAU computer center.
Acceptance evaluations

Following each module, the participants evaluated the respective event with standardized questions concerning further development and optimization:

1. Did the event meet your expectations?
2. Did the event convey information and skills that will be useful to you as a student/physician in the future?
3. Should this module be expanded further?
4. Should this module be integrated into curricular teaching of dermatology in the future?
5. Would you recommend this module to others?

This survey was performed with polar questions (yes/no). In addition, the students were asked to express criticism and formulate their own proposals in free text. The evaluation forms were distributed or sent by e-mail after the events in the 2018/19 winter term, the 2019 summer term and the 2019/20 winter term. The evaluation in the 2020 summer term was performed by means of an online questionnaire with information given on a Likert scale and an assignment of school marks [14].

Results

Pre-questioning at project start

Of the 155 students in the 2018 summer term and the 2018/19 winter term, 96 % were interested in practice-oriented teaching. This desire for diverse practical content was specified: 96 % wanted more case studies, 82 % experience reports from dermatologists with years of practical experience, 65 % instructional videos, and 45 % opportunities for an practice internship (Figure 1).

Instructional videos for teaching with public access

After appropriate advance planning with respect to content and implementation, instructional videos on important practical skills in dermatology were created in spring 2019. The topics of these movies were selected based on the various techniques and instruments commonly used by dermatologists in clinic and practice and usually shown to students in examination courses or during clinical electives. Figure 2 depicts the various movie contents with access to individual videos with the corresponding Quick Response (QR) codes:

- standardized whole-body examination in the framework of skin cancer screening,
- curettage, biopsy, superficial scissor excision, and excision of skin lesions in a patient,
- standardized wound smear sampling according to the “Essener Kreisel” rotary technique.

The movies were integrated into the new courses (seminar lectures and course “practical skills” as well as within the “toolkit” module during dermatology theme days). In addition, all movies were published on the JuDerm website and are freely available on YouTube [15]. This allows sharing of the movies with interested students, colleagues, and where applicable, patients as well.

Practical training courses

Tutor-based courses in small groups in the form of afternoon sessions (2 hours each) provided the students with useful dermatological skills. Under supervision, they familiarized themselves with curettage, biopsy and suturing techniques, standardized wound swabs according to the “Essener Kreisel” rotary technique, use of an epinephrine autoinjector as well as Bite away® (sting and bite soothing) and Herpo-therm®. The participants could practice with citrus fruits. Special suture pads were also provided (Figures 3). The courses were supplemented by instructional videos about the respective techniques. During the 2019 summer term and the 2019/20 winter term, 82 students participated in the voluntary courses.

Seminar lectures

Interactive seminar lectures provided case-related insight in the various clinical pictures in dermatology offices and university medicine. They illustrated the important interaction and cooperation between office and clinic in the care of dermatology patients. The topics included different diagnoses in clinic and practice that commonly also differ in severity. While the three most important diagnoses in the clinic are non-melanocytic skin tumors, skin infections and melanoma, in the office these are benign tumors, eczemas and fungal diseases (M. Augustin, personal communication). In addition, the seminar lectures included important diagnostic and therapeutic techniques (by means of instructional videos), examples of interdisciplinary patient care and interviews (chronically ill patients, expert interviews). Two seminar lectures of 45 minutes each were held in both the 2019 summer term and the 2019/20 winter term; 129 students evaluated the events.

Practice work shadowing

One-time half-day or full-day work shadowing opportunities were offered in three teaching practices in Kiel and were used
Figure 2  Content of the instructional films with QR codes for direct public access via YouTube. The standardized whole-body examination during screening for skin cancer (a). Diagnostic and therapeutic skin excision (b). Subcutaneous vertical and complete, multi-layer-spanning simple interrupted suture shown on a practice-pad (c). Superficial scissor excision (d). Sample biopsy of the skin (e). Sample biopsy of an orange (f). Curettage of the skin (g). Curettage of an orange (h). The “Essener Kreisel” swab technique for a wound (i).
by a total of 26 students in the 2018/19 winter term, the 2019 summer term, and the 2019/20 winter term.

Psychodermatology

Seminars on psychodermatology in cooperation with a specialist of psychosomatic medicine and patients with chronic skin diseases provided insight into the patients’ burden caused by disease and various explanatory and treatment approaches. In the 2019 summer term and the 2019/20 winter term, 25 students in small groups participated in these seminars (2 hours each). The seminar started with introductory comments on the field of psychodermatology. One goal was to observe the patient in a multidimensional manner, beyond a merely biological, organ-medical focus. This was achieved by use of the biopsychosocial model and a patient suffering from a chronic skin disease. During an interactive personal conversation with the affected patient, the interrelation between dermatological, psychological, and social processes were demonstrated on flip charts, and the individual effects during course and management of the disease were illustrated [16]. Given their potential interdisciplinary use, practical use and interpretation of screening instruments for the assessment of depression (Patient Health Questionnaire; PHQ-9) and the Dermatology Life Quality Index (DLQI) were presented [17, 18].

Table 1 presents the chronological sequence of project activities with their objectives and results. Overall, 282 students participated in our voluntary courses from the 2018/19 winter term to the 2020 summer term. 129 students attended the seminar lectures, 82 participated in practical training courses, 26 enrolled in shadow working in a teaching practice, 25 attended the psychodermatology module, and 20 completed the theme day. Figure 4 illustrates the distribution of participants across the different teaching modules including the “Dermatology Up Close” theme day in the 2020 summer term.

Acceptance evaluation of the voluntary teaching modules

The evaluation of the completed teaching modules showed that a high percentage of students felt that the transfer of knowledge and practical skills was successful and expressed an interest in the further expansion of the modules and in their integration into curricular teaching (Table 2). Given that not all participants (n = 18 of 282) completed the evaluation forms, there are differences between the number of participants and the number of evaluations. Although the courses were offered on a voluntary basis, the number of participants increased.

Theme day “Dermatology Up Close”

Within the current 2020 funding period, a dermatology theme day with approximately 80 students was scheduled for the spring, but had to be cancelled due to the COVID-19 pandemic. After implementing a hygiene plan and reducing the number of participants and lecturers, the project was approved by the Dean’s Office of Studies as an attendance event after the lockdown. Twenty students, in small groups of five, participated sequentially in four different workshops offered in parallel by four instructors on Saturday, June 20, 2020:

1. “Toolkit dermatology with specialists from clinic and practice”: A workshop that provided, for example, the exact description of skin lesions and standardized dermatological whole-body examination as well as demonstrated and provided training in common techniques with tools from professional routine (dermographism,
scratching phenomena in psoriasis, Nikolsky’s sign and Darier’s sign, diascopy, dermatoscopy, and others).
2. Seminar “Stress management for physicians”: In this workshop, participants learned to recognize their own stress patterns. The aim was to develop strategies and techniques to deal with these patterns adequately in everyday university and clinical life.
3. Training course “Practical skills”: See above for a description.
4. Psychodermatology: See above for a description.

Table 1  Chronological sequence of project activities with a brief overview of aims and results from the 2018 summer term to the 2020 summer term.

| Project activity                        | Objective                                                                 | Result                                                                                                                                 |
|----------------------------------------|---------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|
| Review top 101 teaching goals           | Matching of central catalog of learning objectives with own teaching course objectives | Relevant contents coordinated                                                                                                                                                                    |
| Survey of students (summer term 2018 and winter term 2018/19) | Identification of interests | Consideration during planning                                                                                                                                                                    |
| Instructional videos                   | Movies for self-study and for the use in attendance-based and digital teaching | Professional instructional movies created:  - dermatological whole-body examination  - punch biopsy  - curettage  - skin excision  - skin suturing techniques  - superficial excision with scissors  - wound swabs in the style of “Essener Kreisel” |
| Seminar lectures                       | Differences of diagnoses, clinical pictures, and activities in clinic and office | Characteristics of activities in clinic and office were introduced, the relevance of cooperation and examples of interdisciplinary work was illustrated |
| Practical training courses             | Promote active learning and motivation as well as communicating action competence | Confident execution of:  - curettage and punch biopsy  - skin suturing techniques  - use of important instruments (such as swab, epinephrine autoinjector) |
| Office internship                      | Insight into everyday practice, decision support prior to clinical electives | Feedback showed high acceptance of this option with increased motivation for the discipline                                                                                                                                                                    |
| Psychodermatology                      | Presentation of an often neglected aspect | Expanding the perception of psychosomatic aspects in dermatology/medicine                                                                                                                        |
| Theme day “Dermatology Up Close”       | Provide insight into the diversity of dermatology with interdisciplinary application option:  - toolkit dermatology  - practical training course  - psychodermatology  - stress management | Four different workshops resulted in comprehensive transfer of knowledge and skills as well as increased motivation for the discipline as a new concept of interactive teaching even during the “corona-ridden” summer term |

Figure 5a shows the group of lecturers and students in front of the Haus der Lehre (House of Teaching) in Kiel, and Figure 5b shows the participants of a course module. The theme day “Dermatology Up Close” was given an overall grade of 1.1 by the students (n = 20).

In the 2020 summer term, a total of five students participated in the newly designed “Tele dermatology Teaching Module”. The aim was to experience, under supervision, the opportunities of digital diagnosis and patient communication within the framework of a 30-minute video consultation.
Telemedicine is becoming increasingly important [19], and its use during the corona pandemic has led to a reduction in patient numbers in (dermatology) practices while still ensuring the provision of health care [20]. Given the low number of participants and the one-time offer, this module was not considered in the evaluation.

Figure 6a provides examples of students’ comments on the various courses, seminars and lectures. Figure 6b shows excerpts of constructive comments that resulted in further development of the individual modules.

Discussion

Desire for practice-oriented training

Especially during the clinical phase of their studies, students are often unmotivated and feel subjected to high levels of stress, although they are very enthusiastic at the beginning of their training. Largely theoretical teaching, high course workload and limited contact with patients are among the reasons discussed [21]. The approaches planned in the new medical licensure law (for example, the “system of vertical integration”, which begins already in the preclinical phase and links theoretical and practical content) and the items presented here could counteract these issues. Application of theory in practice will give the students a better sense of the

Table 2 Results of the evaluation of all teaching modules in the 2018/19 winter term, 2019 summer term and 2019/20 winter term by means of polar questions (yes/no; yes in percent, n = 244).

| Question                                      | Training courses (n = 80) | Seminar lectures (n = 129) | Office internships (n = 13) | Psychodermatology (n = 22) |
|-----------------------------------------------|--------------------------|---------------------------|-----------------------------|-----------------------------|
| Have you been given useful information?       | 100 %                    | 89 %                      | 92 %                        | 100 %                       |
| Further expansion of the module?              | 70 %                     | 60 %                      | 69 %                        | 91 %                        |
| Would you recommend this teaching module?     | 100 %                    | 85 %                      | 100 %                       | 100 %                       |
| Integration of the project into curricular teaching? | 89 %                    | 78 %                      | 69 %                        | 82 %                        |
**Figure 6** Representative comments from student evaluations of course offerings (a). Representative comments/criticisms on further development of the modules (b).

| Theme day evaluation, summer term 2020 | Winter term 18/19 |
|---------------------------------------|-------------------|
| **a**                                 | **b**             |
| I think such courses should be offered much more often and in many more disciplines, because this is an extraordinarily important opportunity! | No further expansion of the office internships module, because it now has exactly the correct duration to allow for high flexibility. |
| Thank you very much for these additional courses! I am very glad for the increased number of options for medical students. I believe that psychosomatics, in particular, is an exciting and important topic. | Good pictures! Good teaching and a lot of enthusiasm! ‘Not just’ exam knowledge. |
| The theme day was really a lot of fun. It was prepared on a very high level and had a common theme throughout. In addition, the variety between clinical and psychological topics was well-conceived. Many thanks to everyone who made this possible, and I would be happy if there could be similar activities on other topics! | Duration gladly longer. In particular, there should be a stronger focus on suturing techniques. |
| Good to see how much effort the Derma is making; it is, so far, the discipline with the highest quality and it is fun, even if one doesn’t want to become a dermatologist. | I would like to intensify the suturing section; due to the current situation, it was of course impossible to see a patient, but this would have enriched the course very much. |
| Very instructive and practical content! Training course evaluation, winter term 19/20 | The seminar lectures should be further expanded by more videos on various techniques for students, but also for patients. |
| I have enjoyed it extremely and will recommend it, because I can understand/remember disease pictures much better on the patient compared to the textbook. | Seminar lecture evaluation, winter term 19/20 |
| Office internship evaluation, winter term 18/19 | An office internship was evaluated by the students. |
| I liked the course very much. The skills learned are well adaptable to other fields and I am very happy that I have gained them already now. | Seminar lecture evaluation, winter term 19/20 |
| I think the module is a perfect supplement to the normal courses, because these focus in particular on visual diagnoses (which is what I like so much). Therefore, I believe that a course that demonstrates the importance of asking a few questions more is good to expand our understanding. | Seminar lecture evaluation, winter term 19/20 |
| Psychodermatology evaluation, winter term 19/20 | Seminar lecture evaluation, winter term 19/20 |
meaning of what they have learned, which will also facilitate comprehension[22]. In surveys, students indicated interest in practical sessions with patient contact at an earlier time in their studies. This would stimulate early interest in a specialty, motivate them during their studies, and result in improved learning outcomes and more mature clinical skills [23].

According to a survey of over 4,000 students by the Hartmann Association, 27 % saw themselves working in a private practice after completion of medical school, while 22 % envisioned employment as a physician in a doctor’s office or a health care center [11]. 85 % of the students could envision starting their own practice after a certain time in a clinic [24]. This high percentage of students with a desire to set up their own practice later in life should also be taken into account in the corresponding content of academic teaching.

The factors resulting in recruitment of new talent in dermatology were revealed in an online survey of the Academic Teaching Forum of the DDG. 115 assistants in specialist training were asked for their reasons for choosing dermatology as specialty [25]. In particular, the practical sessions during medical school and clinical electives were decisive for the final choice. According to recent surveys, 90 % of all assistants in specialist dermatology training were interested in later employment in an office and 76 % of the currently practicing dermatologists worked in an office in 2018 (personal communication A. Bueno, JuDerm in BVDD). This demonstrates the great value of practice-oriented education not only in medical school but also in specialist training of physicians.

Creation of digital media and further development

In recent years, digital media have been employed increasingly in teaching and advanced training. It has been shown that virtual training may contribute to a better understanding of certain diseases and to an improved internal clinical management. For example, pediatricians were able to expand their knowledge of atopic dermatitis in an online course [26]. Other dermatological diseases, such as cutaneous manifestations of vasculitis and autoimmune diseases have also been successfully taught through an online curriculum. This approach is useful because the patient population involved is small and tends to be located in university hospitals [27]. In a project at the Technical University of Munich, interactive e-learning improved diagnostic and therapeutic thinking and, consequently, clinical skills [28]. However, there are also studies and meta-analyses showing no benefit of online teaching; it is indisputable that some skills can only be conveyed adequately through attendance-based teaching [29]. For example, only an attendance-based event can provide a platform for lively discussions between lecturers and students and allow for interactive contact with, and examination of, patients during a course [30].

Due to the COVID-19 pandemic, digital teaching methods had to be employed at all university hospitals as an alternative to attendance-based teaching during the 2020 summer term. Especially in these times, the need for qualified physicians is particularly high. For this reason, education and training have an even higher priority and need to be advanced by digital concepts and a transition to online formats [31]. By networking and exchange of lecturers in the Academic Teaching Forum, movies and modules already created at other locations could also be used in dermatology teaching at other locations [9].

Small modular teaching units in the form of reusable learning objects (RLO) are an important instrument in teaching [32]. Our instructional videos, for example, have already been incorporated in the curriculum of dermatology departments of several universities in the 2020 summer term. The steadily increasing views of the movies demonstrate the high benefit (for example, the instructional video “Dermatological Whole-body Examination” was a favorite with 24,773 views on October 15th, 2020).

Evaluation and development of the teaching modules

The pre-questionings and evaluations of dermatology students in Kiel over currently five terms (summer term 2018 to summer term 2020) demonstrate a sustained desire for practice-oriented and professionally relevant training. This is also called for in the 2020 Medical Studies Masterplan, as studies suggest that innovative teaching concepts can improve student motivation and clinical skills [22, 23]. Accordingly, the presented additional voluntary training opportunities were received by the students with great interest and commitment.

The conveyed skills and abilities (such as standardized examination techniques, description of findings, handling of instruments, insight into patient perspectives) are useful for many disciplines beyond dermatology and have therefore been well received in every term so far. Teaching of the various examination techniques, small surgical interventions, and the application of, for example, an epinephrine autoinjector are also relevant for general medicine, pediatrics, internal medicine, surgery, and other fields. Content on psychosomatic medicine and stress management are not only important in fields of neuropsychiatry, but interact also with many other medical disciplines. Accordingly, our comprehensive practice-oriented teaching concept can be used for other disciplines; this will also result in opportunities for intensified interdisciplinary teaching activities.
Integration of the teaching modules into curricular teaching

In the 2019/20 winter term, students in Kiel were able for the first time to compensate for a (missed) event in the examination course by participating in a voluntary teaching module. Since students in the 7th semester have a heavy workload of university-related lectures and courses (in addition to dermatology, six other disciplines are taught in this term), only one afternoon per week was available as an option for additional courses. Therefore, there was a limit as to the number of students that could make use of our voluntary modules. This was especially the case for internships. The desire to integrate new, practice-oriented teaching content into the curricular teaching is therefore understandable. However, teaching projects in this form depend on financial support for training material and tutors, require time commitment and motivation on the part of the lecturers, and suitable facilities and organizational infrastructure. Here, faculty and hospitals should determine to what extent such teaching can be offered.

Outlook

A transfer of individual aspects of our teaching modules (such as practical courses, office internships, integration of psychosomatic medicine) and the use of instructional movies at other institutions is immediately feasible. If required, they can be incorporated into already existing teaching concepts. The created instructional videos may also be useful at the beginning of clinical electives and the start of specialization in dermatology and other disciplines. The presented activities should be an incentive to develop and implement practice-oriented and media-based teaching concepts to improve teaching and foster motivated students.

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Practice-oriented media-based teaching in dermatology

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