Primary Care Compact- transferring theoretical knowledge into practice

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Abstract

Introduction
As in many medical disciplines all over the world, primary care medicine in Germany is facing a substantial lack of successors. Enhancing the attractiveness of that discipline might be achieved by inspiring learning formats for undergraduate students.

Methods
A new course combining several approaches to enhance learning outcomes was established and conducted at the University of Münster. Those approaches were tailored to an all new facility constructed to enhance competency-based learning formats called "LIMETTE". Strategies used were adjusted to established undergraduate and postgraduate training models.

Results
The course "primary care compact" was very well evaluated by the attending students. Especially the transfer of theoretically acquired knowledge into practice was highly appreciated. The elaborated preparation material was acknowledged as being very helpful in repeating and preparing topics of interest for that course, too.

Discussion
Developing established concepts and combining them into a new course seems to pay off in terms of perceived attractiveness of that course and the conducting discipline.

Conclusion
Sophisticated learning formats can help to understand and experience some of the core-elements of a discipline and might this way increase the reputation of a discipline and may help to ease successor issues in the future.

Keywords: primary care undergraduate training, competency-training, flipped classroom, electronic documentation-
review, formative assessment

Introduction

As primary care physicians play a vital role in nearly every health care system worldwide to provide a low-threshold, convenient care to all patients, the undergraduate training in that field is an essential cornerstone of undergraduate medical education. This is of major importance since there is a lack of successors in that field mirrored by decreasing primary care services especially in rural areas throughout Germany (KBV, 2015).

The learning objectives for primary care and family medicine undergraduate education are broad. More emphasis has to be put on practical training of undergraduate students in Germany to improve the competencies of graduating students. For this reason the new competency based learning objectives catalogue, which was certified by the Medical Faculty Council of Germany (MFT Medizinischer Fakultätentag der Bundesrepublik Deutschland e. V., GMA Gesellschaft für Medizinische Ausbildung, & Vereinigung der Hochschullehrer für Zahn-, Mund und Kieferheilkunde, 2015), has been established at many universities throughout Germany. The undergraduate training in primary care and family medicine at our faculty used to be widespread across the medical studies. That led to a fractured, yet sometimes isolated point of contact between students and primary care issues. Moreover, as the curriculum structure at the University of Münster follows a modulated pattern, the contents of the primary care lectures and seminars with its to date predominantly employed formats were sometimes redundant to the contents of the specialized subjects offered in that period. To foster the transfer of theoretical acquired knowledge to practical use and to avoid redundancies, we constructed a new course according to the conceptual frameworks of Kern and Kirkpatrick (Kern, Thomas, & Hughes, 2009; Kirkpatrick, 2009). The name of this blended learning course, which yields different features of learning opportunities (Ausburn, 2004; Hamdy, 2015), is "Primary Care Compact". It is the only point of contact between the students and primary care contents throughout one semester. The course was piloted in 2014 and introduced in the 2nd clinical semester (3rd year of studies) in July 2016.

Methods

The course was developed according to the six step approach for curriculum development and implementation described by D. E. Kern et al. (Kern et al., 2009).

For the Needs Assessment we referred to actual publications and research on the topic of primary care undergraduate training demands, actual successor issues in that postgraduate specialty (KBV, 2015), the international medical education literature and current tendencies in the medical education development in Germany ("Empfehlungen zur Weiterentwicklung des Medizinstudiums in Deutschland auf Grundlage einer Bestandsaufnahme der humanmedizinischen Modellstudiengänge," n.d.; "MFT - Info-Center," n.d.).

The basic idea of the course was to help the students to transfer their theoretical knowledge, acquired during the lecture program throughout the past semester, into practice addressing the targeted learners’ needs assessment.

As primary care is a subject that comprises contents of many different sub-specialties it was to our minds predestined for conducting such a course. Through making the students transfer their knowledge into practice we foster confirmation of the learned contents and visualize the meaning of the covered learning objectives. Nevertheless, we were clear that a distinct repetition of the essentials of the underlying contents had to take place before the course. Thus, preparation material was created especially for that course and an inverted classroom...
The concept was installed. The course itself was invented entirely new as the learning setting (e.g. environment, specific computer programs) and the format had not been used at our faculty before. The construction of the facility, where the course takes place, the so-called "LIMETTE" (learning center for individual medical procedural skill training and development), was finished in 2016. Many of the technical features of that facility were not in place when the first curricular course started (e.g. the video system). That is why the pilot-course took place in another facility with a reduced number of participants and scenes just to test the underlying strategy for practicability.

Nevertheless, we saw the necessity to prepare the students prior to the course in a kind of tutorial comprising the contents of the course and some technical preparation for the computer programs to be used during the course. That material was available to the students 4 weeks before the course started and announced by e-mail to make sure everyone had the chance to prepare. This way a flipped classroom concept (Bergmann & Sams, 2012) was realized. This paper reports on two consecutive cohorts obtaining the course. Between these two cohorts the preparation material was advanced in terms of addressing more different learning preferences of the students. While for the first cohort the content related material referred to the presentation-slides used in former lectures on that topic, the successor cohort was offered a newly prepared educational book. That book was prepared with the help of the "iBooks Author"-application but printed as a pdf-file both, for compatibility-and license reasons. The technical elaboration of that preparation-material was inspired by experiences one author obtained during a visitation at the University of California, San Francisco (UCSF) in 2015.

The presence-phase of the course is divided into two major parts: The first part is the interaction of the students in five different situations with professional actors especially trained to perform scripted patient-roles (standardized patients) and one situation where a paper case has to be solved. The duration for an encounter is 15 minutes including the changeover-time for each situation (1.5 hours at total). A lead-in seminar is held to inform the students about the technical process and to clarify existing questions. During the session, the students have to document their proceedings via a computer program called "MedForGe" (medical-form-generator). The data obtained there are individually available as a pdf-form for every student and anonymously summarized in a "Learning Dashboard" called "PRISMA" that is used and visualized in the following seminar. This way some kind of a chart-review- or documentation-review process, especially known from postgraduate training, is installed. Additionally, the students are observed by a supervisor who leads the seminar afterwards. Furthermore, feedback from the SPs is obtained and individually available for the students.

The structure of the course is as follows (figure 1):

The different sources reporting on the performance of each student are (figure 2):
Furthermore, the students are able to assess their own, individualized documentation during the lead-out seminar with the help of tablet-PCs. That way they are able to check within in the seminar whether or not they were right during their performance.

The debriefing-seminar lasts 90 minutes and focuses on the observed and documented performance. Difficulties that emerged during the interactions are addressed primarily instead of repeating underlying content. All collected data concerning the student’s performance has to date been used in a formative manner.

The student’s evaluation of the course is conducted in detail via 3 different evaluation-tools, two of which used to be paper based in the beginning (one focusing on the course, its content and conduction (I) and one focusing on the used IT-solution (II)) that were distributed and filled out directly after the course. Meanwhile, the evaluation part I has become digital and is conducted as an online survey with the help of tablet-PCs at the end of the seminar. The third evaluation (III) in use is an electronically established evaluation via the so called "Evaluna"-tool, that is established at our faculty for every course and lecture. The "Evaluna"-evaluation faces some shortcomings as, for example, that it is not timely connected to the course. It is mostly done before taking the exams at the end of the semester. Furthermore, an evaluation of the partaking staff and the actors is conducted and respected in the further development of the course.

This project was exempt from institutional ethics approval because it was within the guidelines for routine course evaluation.
**Results**

222 out of the total of partaking students (n=260) have evaluated the course with the content focused evaluation tool (I) since its initiation in June 2016. That is an evaluation rate of 85.4%. 113 of those had been prepared with the slides of the former lectures and took part on June 22nd or on July 6th.

109 out of the 222 evaluating students had been prepared with the more sophisticated learning material (slides, textbook-style learning material, instructional videos and additional web-resources) respecting different learning styles (Franzoni, Assar, Defude, & Rojas, 2008) and addressing different learning channels and participated on December 21st or on January 11th 2017.

The overall evaluation (III, Evaluna) showed a strong acceptance of the students with that course. The global rating of that course upon a scale from "1" to "100", where "1" indicates the best and "100" the worst rating of a learning format, showed a median of 13.0 (SD 18.0, n=137, June/July 2016) and 8.0 (SD 10.7, n=111, December 2016/January 2017), respectively. The latter result of 8.0 marked the best seminar-evaluation of the entire Medical Faculty in Münster in that semester. Individual statements of students show that the aims of that course have been met. The experienced transfer of theoretical acquired knowledge into a patient encounter is very much valued by the students just as the preparation material and the entire concept of that course (e. g. "best course of that semester", "great preparation material to repeat the essentials", "very instructive course" and so on). Nevertheless, that free-text-feedback is not statistically analyzable but encouraging.

**Discussion**

Preparing a new course carefully and elaborating more sophisticated handout-material could massively improve a learning session and the experiences of learners. Although the printing as pdf-file removes some of the features of an "iBooks Author"-file, the design and attractiveness stays. Addressing different learning channels of the students seems to pay off in terms of preparation-willingness. The prepared content-material was announced as being presupposed and students were told before that the teachers would not come back to that during the seminar. Surprisingly, nearly every student anonymously admitted to have read the material before the course as it was recommended. Furthermore, the instructors reported no discovery of bigger knowledge-deficits concerning the covered content of the preparation-material during the seminars.

As one supervisor has to observe 12 students the observation is somewhat random. However, observing a student part-time during 5 different encounters (one paper case station does not need to be observed) allows the supervisor in our mind to get a sufficient impression of the performance-level of the particular student.

The multi-source feedback has so far been used formatively. It could be used as summative feedback as well. The authors would prefer some kind of pass/fail summative feedback in that behalf instead of grading. That means that cut-off criteria need to be defined and explicitly made transparent beforehand. This way the stated recommendation for more practical assessments could be addressed. As stated above, the multi-source feedback on student’s performance allows both: a global, anonymous feedback within a group as well as an individualized feedback of the performance of a particular student. To date, the present feedback stays formative.

Summarizing all these data, at least the third level of Kirkpatricks’ (Browning, 1970; Kirkpatrick, 2009) evaluation model could be reached for some aspects.
Conclusion

The results show that mixing different learning strategies within one course seems to be beneficial. Mixing strategies established in undergraduate and postgraduate trainings enhanced the attractiveness of the reported course. Besides, it fosters the linkage between those two training-sections as it is recommended in the latest recommendations for the development of undergraduate medical training in Germany ("Masterplan Medizinstudium 2020", ("170331_Masterplan_Beschlusstext.pdf," n.d.) .

Especially primary care medicine, as it comprises lots of interdisciplinary contents, is predestined for setting up a course like this. The practical link between knowledge and hands-on performance helps increasing the prestige of this discipline. Further research needs to be conducted to prove long-term efficacy of such learning-formats in terms of increased and durable knowledge acquisition as well as in terms of increasing decisions for primary care medicine as postgraduate training choice.

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Take Home Messages

- Mixing different learning strategies within one course seems to be beneficial.
- Taking efforts in the preparation of learning material under respectation of different learning-styles is of value for students.
- Established learning formats for undergraduate and postgraduate training may inform each other and foster linkage between those training-sections.
- Assessing the ability to integrate theoretical knowledge in complex (simulated-) patient-encounters seems to be of value for medical students.

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Appendices

Declaration of Interest

The author has declared that there are no conflicts of interest.