Nomy Dickman
Barbara Schuster *Editors*

Active Education for Future Doctors

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ISBN 978-3-030-41779-6 ISBN 978-3-030-41780-2 (eBook)
https://doi.org/10.1007/978-3-030-41780-2

This Springer imprint is published by the registered company Springer Nature Switzerland AG
The registered company address is: Gewerbestrasse 11, 6330 Cham, Switzerland

Dedicated to Michael Weingarten, MA, MB BCh, physician, scholar, teacher, and mentor whose vision and energy inspired the next generation of physicians.

Acknowledgements

The editors and authors would like to acknowledge the support and encouragement of the Founding Dean of the Azrieli Faculty of Medicine, Bar-Ilan University, Professor Ran Tur-Kaspa and the current Dean, Professor Karl Skorecki. Under their leadership, the medical faculty have been able to enthusiastically and creatively approach the challenge of developing a curriculum with active learning as the predominant pedagogic approach.

Reshaping medical curricula requires a majority of faculty willing to accept the challenge of changing the educational process. Much appreciation and kudos go to the faculty members who have contributed examples of active learning that they have implemented in their classrooms and are discussed in Chap. 4. Professor Jacob Bornstein, Professor Jean Soustiel, Professor Lea Even, Dr. Meir Shamay, Professor Izhar Ben-Shlomo, Dr. Yuri Perlitz, Dr. Claudio Simsolo, and Dr. Sophia Eilat-Tsanani are commended for their contributions. Thanks also to Yakir Lidani, a medical student, who assisted Professor Izhar Ben-Shlomo, Dr. Yuri Perlitz, and Dr. Nomy Dickman in case development.

The authors of Chap. 10 specially thank Alon Barash, PhD, and Shmuel Reis, MD, MHPE, for their assistance with the Anatomy Near-Peer teacher course. They are grateful to Mr. Basem Hijazi for calculating annual statistics, Dr. Eyla Maoz for clerical support, and to the late Prof. M. Weingarten for his inspiration.

Technical and research assistance is essential for the success of manuscript completion. Thus, the editors recognize two very special people, Dr. Mark Shlapobersky and Ms. Annette Phelabaum, who quickly responded to all requests. Both voluntarily contributed their skills in support of improving patient care through active education of future physicians.

The editors are especially grateful for the support from ERASMUS+, the European Union's program to support education, training, youth, and sport in Europe. Bar-Ilan University, including the medical faculty in Safed, have an active relationship with colleagues in Europe. This project has been supported with funds from the European Commission within the framework of the Lifelong Learning in Applied Fields' (LLAF) project. This publication, however, only reflects the views

of the authors and the Commission cannot be held responsible for any use which may be made of the information contained therein.

Major projects require personal support by those who can lift one's spirit when frustrated, help shape disorganized thoughts, and provide difficult but necessary feedback with a gentle touch. Thus, the editors have been blessed with the support and love of two special husbands, Harry Dickman and Richard Schuster. Without them, this project would not have been completed.

All the authors wish to recognize Professor Michael Weingarten, for whom this book is dedicated, who passed away before the completion of the book after authoring the final chapter. It was his wisdom as a clinical physician, his passion for the education of future physicians, and his care for humankind that underpinned his vision for medical education in the Galilee. We hope he would have been pleased not only with the book but with the advances that have continued in the education of medical learners because of his mentorship of those who now walk in his footsteps.

Contents

About the Editors

Miriam Ethel Bentwich, PhD is an Senior Lecturer of bioethics and medical ethics, with a rich background in political philosophy, along with a proven expertise in empirical ethics and normative philosophically based ethics. She leads the Medical Ethics and Humanities program at the Azrieli Faculty of Medicine, Bar-Ilan University, Israel, and was responsible for this program's unique and innovative design as well as its successful application. This mandatory longitudinal program is distinctively interwoven into and embedded within core preclinical courses, while extensively using active learning methods.

Dr. Bentwich, a PhD graduate of the Hebrew University, Israel, is engaged with a broad range of innovative issues in biomedical ethics as well as medical humanities and medical ethics education. Her research topics include: coping and evasive strategies in small group learning of medical ethics; teaching art as a source for enhancement of empathy and tolerance to ambiguity among medical student; the use of debates in medical ethics education, perceptions of multicultural caregivers on human dignity, and autonomy of patients with dementia; physicians' perspectives on enemy patients; vulnerability, integrity, and undermining the justification for funding of IVF; what is wrong with the nudging approach forms the perspective of the capabilities approach? Her academic publications include a book (*Reclaiming Liberty*) and articles in leading academic journals (e.g., *Nature Biotechnology, American Journal of Bioethics, American Journal of Public Health, Ethnicity and Health, Journal of Medical Ethics, Nursing Ethics, BMC Medical Education,* etc.).

Bishara Bisharat, MD, MPH, FAAFP is a specialist professor (Health Sciences) at Max Stern Yezreel Valley College and senior lecturer at the Azrieli Faculty of Medicine, Bar-Ilan University, Israel. He received his MD from the Hebrew University/Hadassah Faculty of Medicine, Israel, and his MPH from the Harvard School of Public Health, USA.

A specialist in Family Medicine, Professor Bisharat served as a Family Physician for many years in different communities, both Jewish and Arab, rural and urban, seeing patients and teaching Family Medicine with students and residents. In 1995, he became the Medical Director of the North District of Clalit Health Services (the

largest national HMO in Israel) and in 2007, he was appointed Head of Nazareth Hospital in Nazareth, Israel.

Since 2011, Professor Bisharat has participated on the team appointed by the Ministry of Health to adapt and train hospital staff to engage diversity and cultural sensitivity. He lectures in hospitals and at national conferences on equity in health and cultural sensitivities in healthcare.

Dr. Bisharat was the founder of the Society for Promotion of the Arab Community in Israel, and he is the elected Chairman of the Society. During his career, he was the general secretary of the Israel Association of Family Physicians, a member of the National Council of Community Health, and on the Directorate of the National Institute for Health Policy Research.

Nomy Dickman, PhD received her PhD from the Technion, Faculty of Education in Science and Technology. In 2012, she joined the Azrieli Faculty of Medicine, Bar-Ilan University, Israel, as Head of the Unit for Development and Evaluation of Education. Her areas of expertise include enhancing faculty teaching skills, professionalizing faculty assessments of students, developing and administering teaching surveys, and developing workshops and courses in medical education. She advanced the implementation of active learning teaching methods in the preclinical program and during the clinical clerkships. Dr. Dickman is co-developer and co-coordinator of the Near-Peer Teaching program in anatomy.

Dr. Dickman is also involved in various international educational initiatives as part of the Erasmus+ Program and hosts many international educators who come to Bar-Ilan University to share knowledge in education. In 2018, Dr. Dickman was appointed the representative of the European Team-Based Learning Community in Israel and the European Representative on the Global Membership Committee of the Team-Based Learning Collaborative.

Prior to joining the Azrieli Faculty of Medicine, she worked for numerous years in institutions of higher education as a lecturer, training teachers and teacher educators in areas of didactics, evaluation, and research.

Sophia Eilat-Tsanani, MD is the head of Family Medicine for the Northern district of Clalit Health Services, Israel, and for the Azrieli Faculty of Medicine, Bar-Ilan University, Israel. She graduated from the Sackler School of Medicine at Tel Aviv University, Israel, and completed her postgraduate education in Family medicine at the Clalit Health Services. Dr. Eilat-Tsanani is an active family doctor in a small practice in Kibbutz Alonim. She has major interests in medical education and management of chronic diseases. Presently, her research focuses on the use of health services and care of the diverse populations in Israel.

Jumanah Essa-Hadad, PhD completed a BSc in Health and Exercise Science from Furman University, South Carolina, USA, and a Master's degree in Community Health and Nutrition from the Virginia Polytechnic Institute (Virginia Tech) and State University, Virginia, USA. She received her doctorate in Public Health from the University of Haifa, Israel, with an emphasis on health promotion.

In 2012, Dr. Essa-Hadad joined the Azrieli Faculty of Medicine, Bar-Ilan University, Israel to work as a Research Associate with Prof. Mary Rudolf, head of the Department of Population Health. Her research interests include lifestyle medicine, medical education, child injury prevention, web-based health education, and health of minority and disadvantaged populations. Currently, she is working on a Faculty-wide initiative to develop a health promoting faculty of medicine and evaluating its implementation on staff and students. She is also involved in teaching the population health curriculum for medical students. Dr. Essa-Hadad has considerable experience working with civil society organizations and NGOs at the grassroots level to promote public health programs.

Peter Gilbey, MD received his medical degree from the Sackler School of Medicine at Tel Aviv University, Israel, and completed his residency in Otolaryngology at the Western Galilee Medical Center in Nahariya, Israel. He was Chair of Otolaryngology, Head and Neck Surgery at the Ziv Medical Center in Safed, Israel (2007–2017).

Dr. Gilbey is a clinical associate professor at the Bar-Ilan University Azrieli Faculty of Medicine, Israel. He has been head of the student mentoring program, chairman of the faculty teaching committee, and head of the faculty development unit. Dr. Gilbey has also been a Feldman family visiting professor at the Stanford University School of Medicine, California, USA, and is currently completing a Master's degree in medical education at the University of Dundee, Scotland. Dr. Gilbey has received several awards for teaching in the faculty of medicine and Bar-Ilan University. Dr. Gilbey is currently chair of the department of research and innovation in medical education and a member of the faculty management forum.

David Karasik, PhD obtained his PhD degree from the Department of Anatomy and Anthropology, Tel Aviv University, Israel. He was among the founding members of the Azrieli Faculty of Medicine, Bar-Ilan University, Safed, Israel, where he established an Anatomy Program, by co-organizing and teaching the inaugural Human Anatomy course and the near-peer teacher program in Anatomy.

Professor Karasik's research focuses on genetic mechanisms of aging-related diseases, such as osteoporotic fractures, metabolic syndrome, and muscle loss (sarcopenia), studying both human populations and animal models. His Musculoskeletal Genetics Lab was established in 2011. He actively participates in international consortia including CHARGE, GEFOS (GEnetic Factors for OSteoporosis Consortium), and most recently, COST (European Cooperation in Science and Technology). His research contributions to the field have been recognized through service on editorial boards for leading specialty journals, including *Journal of Bone & Mineral Research* and *Bone*, and as Guest Editor for *Frontiers in Endocrinology* and *Current Osteoporosis Reports*.

Anthony Luder, MBBS, BSc, MRCP, DCH is the Head of Pediatrics at the Ziv Medical Center (ZMC), Safed, Israel, and Special Projects Advisor to the Dean of the Azrieli Faculty of Medicine of Bar-Ilan University. He was the former Vice-Dean of Preclinical Education.

Professor Luder is a graduate of the University College London, England, and completed his postgraduate education in London at the Toronto Hospital for Sick Children, the Colorado University Health Sciences Center, Denver, USA, and the Carmel Medical Center, Haifa, Israel. He has specialty qualifications in pediatrics, medical genetics, and inborn errors of metabolism. Professor Luder has headed the research ethics Institutional Review (Helsinki) Committee at ZMC for over 20 years and in recent years has become active in medical education.

Mary Rudolf, MBBS, BSc, DCH, FRCPCH, FAAP the founding Head of the Division of Health Sciences at the Azrieli Faculty of Medicine, Bar-Ilan University, Israel, received her medical degree at the University of London, England, and trained as a pediatrician at Yale and Brown Universities, USA. She was Professor of Child Health in Leeds in the North of England for 20 years specializing in the area of child nutrition and growth.

Her interest in medical education developed in Leeds, where she set up the MSc program in Child Health as required training for pediatric residents in the Yorkshire Region. She had a prominent role in medical education at the UK Royal College of Pediatrics and Child Health, where she ran Educating the Educator courses in the Middle East and co-developed a pediatric Diploma Course for primary care physicians in the West Bank. She was the founding head of studies for the *Social Determinants of Health* and *Lifestyle* curricula at the Azrieli School of Medicine. She has authored two pediatric textbooks published by Wiley-Blackwell, which have been translated into ten languages and are now in their fourth edition.

Professor Rudolf has a National Health Service Clinical Excellence Award for her pediatric work in the UK and has authored over 100 academic publications.

Barbara Schuster, MD, MS, MACP, FRCP (Edin.) is currently a Clinical Professor in the College of Pharmacy at the University of Georgia, Georgia, USA. She completed a BA in Biology and an MS in Education at the University of Pennsylvania, Philadelphia, Pennsylvania. She received her MD at the University of Rochester, Rochester, NY, where she completed her Primary Care Internal Medicine residency.

Professor Schuster was the Founding Campus Dean of the Augusta University/University of Georgia Medical Partnership. Prior to her position as Campus Dean, she served as Chair of the Department of Internal Medicine, Boonshoft School of Medicine, Wright State University, Dayton, Ohio, after being the residency director of the Primary Care Program in Internal Medicine and the combined Internal Medicine/Pediatrics Program in Rochester, NY. Since leaving the position of campus dean, she has been involved in teaching and mentoring undergraduate students interested in a health care career, advising medical students, residents, and junior faculty and supervising in a clinic for the medically uninsured.

Throughout her career, Professor Schuster has been extremely active in US national medical organizations with leadership positions in the American College of Physicians, the Association of American Medical Colleges, the Association of Program Directors in Internal Medicine, and the Association of Professors of Medicine. Medical education has been her passion.

Eric Shinwell, LRCP, MRCS, FRCP (Edin.) is Director of Neonatology at Ziv Medical Center, Safed, Israel, and Dean of Medical Education at the Azrieli Faculty of Medicine, Bar-Ilan University, Israel. He trained at King's College Hospital, London, Soroka Medical Center, Beer Sheva, Israel, and the University of Rochester, NY, USA. He is a recognized researcher who for more than two decades has focused mainly on the pathophysiology and management of bronchopulmonary dysplasia, the severe chronic lung disease of preterm infants. In addition, he has published studies on ethical issues in neonatal care. He has published over 150 peer-reviewed articles, together with numerous chapters, reviews, and other articles. In his current role as Dean of Medical Education, he is leading a broad review of both curriculum and teaching methods, with a focus on increased active learning and peer-to-peer involvement.

Sivan Spitzer-Shohat, PhD an organizational sociologist, is head of population health education and principal investigator of HEAL-Health Equity Advancement Lab at the Azrieli Faculty of Medicine, Bar-Ilan University, Israel. She received her PhD from the University of Haifa, Israel completed her post-doctoral training at the Center Health and Social Sciences (CHeSS), University of Chicago, USA, and completed fellowships in Implementation Science and Disparities Research at the National Institutes of Health, Washington, DC, USA.

Dr. Spitzer-Shohat's research centers on evaluating and understanding complex interventions aimed at reducing health and health care inequities through the prism of organizational change. Using the principles and tools of Implementation Science, her ongoing research examines the organizational translation mechanisms required for moving equity from value to action in organization-wide interventions in both the USA and Israel. Within the context of medical education, Dr. Spitzer-Shohat harnesses her sociological background to impact traditional biomedical thinking and medical education training to develop new curriculum for medical students focused on the interplay between medicine and society.

Michael A. Weingarten, MA, BM, BCh was the founding Dean for Education at the Azrieli Faculty of Medicine, Bar-Ilan University, Israel. Following undergraduate studies at Oxford University, England, he received his medical degree from the University of London, England. After moving to Israel, he completed his postgraduate studies in Family Medicine and then joined the Sackler Faculty of Medicine at Tel Aviv University. His extensive medical career included expertise as a practicing family physician, medical administrator, advocate for primary care, and outstanding teacher and mentor.

Professor Weingarten served as the Director of the Rosh HaAyin Family Medicine Clinic, the Chair of Family Medicine at the Rabin Medical Center, and Chair of the Departments of Family Medicine and Behavior Sciences at the Sackler Faculty of Medicine prior to accepting the challenge of developing the medical education program in Safed. He was a leader in WONCA, the World Organization of Family Doctors, a former president of the Israel Association of Family Physicians, Chair of Israel's Family Medicine Research Network, and Founding Editor of the Israel Journal of Family Medicine. His major research emphasis was in bioethics, publishing and speaking widely on a broad number of related issues. Mentoring and caring for his colleagues and family until the end, Professor Weingarten passed away in February 2018.

Doron Cohn-Schwartz, MD, PhD After completion of his BMedSc studies with honors, Dr. Cohn-Schwartz pursued a PhD at the Hebrew University, Jerusalem, Israel focusing on regenerative medicine and stem cell biology. Fascinated by the potential of stem cell-based therapeutic strategies, Doron completed his MD studies at the Azrieli Faculty of Medicine, Bar-Ilan University. He is currently a medical intern at the Rambam Health Care Campus, Haifa, Israel.

Doron has been involved in teaching since the very beginning of his career. He served as a team leader in the combat officers' school, and he completed the "near-peer teacher" course offered by the Azrieli Faculty of Medicine. He has instructed in the anatomy, neuroanatomy, and evidenced-based medicine courses. Doron believes that the current teaching approaches should be revised to effectively meet the learning expectations of the current generation of students and is proud to help foster the search for a more engaging education.

Chapter 1
Back to the Future: Changing the Education of Medical Students

Nomy Dickman and Barbara Schuster

Tell me and I forget
Teach me and I may remember
Involve me and I learn

Benjamin Franklin [1]

"On the pedagogic side, modern medicine, like all scientific teaching, is characterized by activity. The student no longer merely watches, listens, memorizes; he does. His own activities in the laboratory and in the clinic are the main factors in his instruction and discipline. An education in medicine nowadays involves both learning and learning how; the student cannot effectively know, unless he knows how."

Abraham Flexner, PhD 1910 [2]

Active learning is not a new idea. From Socrates to Osler, the great teachers of medicine advocated involvement of students through active questioning, dissection of the human body, and caring for patients alongside graduate physicians with teaching at the bedside. Abraham Flexner, who in 1910 endorsed more consistency in medical education, insisted that the student "does not need to be a passive learner, just because it is too early for him to be an original explorer. He can actively master and securely fix scientific technique and method in the process of acquiring the already known." [2]

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N. Dickman, B. Schuster (eds.), *Active Education for Future Doctors*,
https://doi.org/10.1007/978-3-030-41780-2_1

What Is Active Learning?

Active learning is a learner-centered approach in which the student is involved in the process beyond passive listening. In addition to active participation, the student is expected to reflect on the meaning of what has been learned and to evaluate the new learning in relation to what the student already knows. The student continuously adds to their previous scaffold of knowledge consistent with the constructivist's understanding of learning [3]. Listening to a lecture, whether in person or online, is considered passive. Class discussion, debate, teaching others, analysis of a case, and experiences in the community would all be considered active learning. Reading, whether online or by holding a paper textbook or journal, is not passive. Put more succinctly, in active learning, the student does not "just sit there, he does something."

Why Active Learning?

Marylou Kelly Streznewski, in her book *Gifted Grownups*, describes the characteristics of adult giftedness and discusses the "job needs" of gifted adults. An IQ score of 130, an objective numerical standard used to "diagnosis" academic giftedness, is not used for admission to medical school. However, given the rigor of academic achievement required for medical school admission, it can be presumed that the overwhelming majority of medical students, if tested, would achieve a score >130 or two standard deviations above the mean and, thus, would be included in the definition of "gifted grown-ups." Ms. Streznewski presents three "job needs" of gifted adults: "a day-to-day level of stimulation which provides challenge and newness; to be able to communicate new ideas and to push ahead to new areas of work and learning as soon as the current area is exhausted; and to design his or her own environment, so that the first two needs can be satisfied." [4] She continues, stating that "We mean 'new' in the sense of something new for the brain to work on, some new learning experience in which present knowledge comes into play, is placed over against the new situation; the gap between the two is crossed, and a synthesis takes place. This dynamic quality of the work is essential." [5] Not only do the above statements challenge the faculty to develop a curriculum that comes close to fulfilling the work expectations of gifted students; they also speak about the "job needs" of the faculty members, who, no doubt, are also academically "gifted."

Are the Outcomes of Active Learners Different?

Naysayers are concerned that removal of the expert delivering the essential information to be learned by the students will decrease their learning. The opposite has been documented in a meta-analysis of active learning in science, engineering, and

mathematics in college students. The outcome of the study demonstrated that active learning strategies significantly increased learning evaluated by examinations and content inventories and decreased failures. The increases in achievement occurred in all class sizes, course types, and course levels. Small classes (<50 students) demonstrated the greatest positive impact, as did the concept inventories. Content outcome evaluations also demonstrated positive outcomes with active learning but with less dramatic effect [6]. Similar results, higher scores, have been demonstrated with USMLE 1 outcomes in medical schools that have implemented active learning strategies as a significant teaching process in the preclinical curriculum [7, 8]. On review of the University of Missouri students' performance at the end of their first year of postgraduate studies, data demonstrated higher scores from residency program directors on 12 of 17 elements important in caring for patients, including general fund of knowledge, physical diagnosis and history taking, quality of presentations, and ability to teach medical students when compared to students from traditional curricula [8].

Time to Restructure Medical Education

What happened to the "active education" suggested by Abraham Flexner and William Osler? The expansion of medical school class size, the economic drivers requiring clinical educators to deliver patient care to support their salaries, and the expectation that researchers' salaries would be grant supported decreased the professional energy to commit to teaching. Lectures became "cost and time effective" for delivering the expanding knowledge base to medical students, and laboratory exercises in physiology and microbiology were gradually replaced with simulations. Anatomy survived with less time spent in student dissection, and histology slides were quickly replaced by digital pictures. Early patient experience to practice taking a complete medical history and completing a full physical examination was relegated to simulated patients. The obstructions to active, participatory learning became overwhelming due to the student-to-faculty ratio, the complexity of inpatient medicine, and the majority of patients, often with multiple comorbidities, cared for in a time-limited ambulatory visit. Academic health centers could not absorb more learners rotating on the inpatient services and in their hospital-based clinics.

The world's population continues to grow, and people, senior adults, neonates, cancer survivors, and those with genetic diseases, live longer, thanks to advances in medical science. The need for more physicians caring for more complex patients has increased, and, worldwide, part of the response is the founding of new medical schools. The new schools are less likely to be partnered with academic health centers and research universities. New medical schools are more likely to partner with community hospitals, community health centers, and practicing private physicians. Because the resources to support the new schools are less likely to attract a large group of veteran teachers and researchers, founders of these campuses have seized

the opportunities to rethink the curriculum. As technology facilitates online replacement of textbooks, podcasts instead of in-person lectures, and case simulations with less patient interactions, new medical schools, not tied to tradition, can move more rapidly to build active learning curricula vs. schools that are more entangled with large faculties and medical centers. Instead of retooling a successful faculty to work "differently," new schools can experiment with educational approaches to maintain student curiosity, invigorate teachers and learners, and emphasize the lifelong skills that future physicians require in a rapidly changing world.

Moving Forward: Creating Active Learning Environments

This monograph is specifically directed to teaching faculties of new medical schools and medical faculties seeking pragmatic ideas to transition a passive learning environment to an active environment. The authors are teachers, most of whom were not "educated in pedagogy," who are writing to help colleagues with their struggle to develop teaching skills for active learning in an ever-increasing technologic and impersonal world.

The members of the faculty who authored this monograph are from the Azrieli Faculty of Medicine and the University of Georgia. The Azrieli Faculty of Medicine, Bar Ilan University, welcomed its first medical students in 2011. The school was developed in the town of Safed, Israel, a town that overlooks the Sea of Galilee. Safed's population is significantly diverse, including minorities and recent immigrants, and significant poverty. The Galilee has fewer physicians, both generalists and specialists, than other areas of Israel. Simultaneously, the State of Georgia in the United States chose to expand the state's public medical school because of a statewide deficit of physicians, especially in rural areas, with a new medical campus in Athens, Georgia. Athens is home to the University of Georgia, which dominates the community but resides in one of the most impoverished counties in the State of Georgia with 20% of the adult population medically uninsured. In Athens, the community hospitals had little involvement in medical education and no involvement in postgraduate medical education, while in Safed, the hospital had a modicum of postgraduate education. Separated by over 5000 miles, situated in different cultures, both medical campuses chose to pursue "active learning" as their pedagogic approach.

This monograph brings a pragmatic approach to active learning with successful examples of teaching initiatives, which could be copied or modified to meet the requirements of another institution. Chapter 2 introduces the concepts of preparing teachers and learners for the processes of active learning. Although the approach to university education has begun to reverse the lecture-based pedagogy well engrained worldwide in most educational institutions, the vast majority of students, having been rewarded for their individual success, come to medical school without the skills or enthusiasm for collaborative learning. Faculty teachers, most of whom learned their educator skills by observing their teachers, are more comfortable being

the expert presenter of information than the facilitator of discussions. Changing the process of teaching and learning requires different skills, which can be accompanied by personal discomfort and lack of early success.

Teaching a large group of learners will always be a reality, given the costs of education and the scarcity of faculty. The key to successful large-group teaching is discussed in Chap. 3, Giving a Great Lecture—Going From Fine to Fantastic. In current pedagogy, the lecture is considered outmoded and only rarely helpful. Per Abraham Flexner, "Out-and-out didactic treatment is hopelessly antiquated; it belongs to an age of accepted dogma or supposedly complete information, when the professor 'knew' the students 'learned.' The lecture indeed continues of limited use." [9] However, with the aid of technology, changes in classroom architecture, and a change in "lecturer" expertise, large-group teaching can become "activated," breaking down the passive large-group learning into multiple small-group or individual activities within a single classroom.

The jargon of education, such as "flipped classroom," "problem-based learning," "case-based learning," and "team-based" learning, has been spread widely through medical journals and conferences. Although it is important to know and understand the similarities and differences in pedagogic processes, pragmatism energizes the creativity of educators to pick and choose an approach that is most likely to stimulate learning within the confines of their environment. Few institutions use a "pure process" throughout their curriculum and even throughout a specific course. Chapter 4, Active Learning—Methods and Variations, demonstrates the strength of mixing approaches to develop learning activities that are optimized for the core learning objectives of a specific class session.

Chapter 5, entitled "Clinical Teaching—The Bedside and Beyond, responds with an approach to engage William Osler's challenge: "Medicine is learned by the bedside and not in the classroom. Let not your conceptions of disease come from words heard in the lecture room or read from the book. See, and then reason and compare and control. But see first." [10] The advances in medicine and the changes in society have brought both opportunities and obstructions to bedside learning, but the patient remains the medical student's best teacher, thus dictating the need to create effective and efficient methods to teach and learn during patient care. Evaluating skill and knowledge growth during the clinical clerkships, examples of work-based learning, is tackled in Chap. 6.

Chapters 7, 8, and 9 discuss curricular subjects that are difficult to teach and often regarded by students as less directly pertinent to their future careers. The authors share their experiences using active learning methods to approach the principles of professionalism, personal attitudes, and medical ethics in a Medical Humanities course. Striving to demonstrate the strength of community resources, as well as appreciating the incomplete safety nets for the vulnerable, experiential learning is used extensively in the Population and Community Health curriculum. Students also use lessons from work-based learning and experiential learning experiences to confront the barriers to understanding patients from diverse cultures, the subject of Chap. 9.

Two methods that integrate both learning and teaching include the concepts of near-peer and peer teaching and working on an interprofessional team. Chapter 10 demonstrates how to develop a formal near-peer teaching program that educates a cohort of students with the skills to accept the role of anatomy instructor for students in the first-year anatomy course. Several active learning methods, including team-based learning and problem-based learning, use peer-teaching in their pedagogical models. As an active member of an interprofessional team discussed in Chap. 11, it becomes clear that contributing to team deliberation could be considered informal "teaching," while receiving new knowledge from other team members would be informal "learning." Ability to work successfully with and learn on patient rounds as a member of an interprofessional team becomes more important as medical care becomes more complex.

Socrates said, "Education is the kindling of a flame, not the filling of a vessel." [11] Osler stated that "The hardest conviction to get into the mind of a beginner is that the education upon which he is engaged is not a college course, not a medical course, but a life course, for which the work of a few years under teachers is but preparation." [10] Flexner added, "the student must be trained to the positive exercise of his faculties; and if so trained, the medical school begins rather than completes his medical education." [12] Chapter 12, Developing Lifelong Learners, describes the competencies, skills, and attitudes of a lifelong learner and how active learning can facilitate their development and maintain them throughout a physician's career.

In the concluding chapter, Professor Michael Weingarten, family physician, bioethicist, and first Dean for Medical Education at the Azrieli School of Medicine, wrote to remind all those who wish to teach about the ethical responsibilities of teachers and learners.

The authors have used the pronoun "they" to promote gender parity, but when it is necessary to speak of an individual, except in the final chapter, they have chosen to use the pronoun "he" to refer to any individual man or woman student, learner, supervisor, or teacher. This was chosen for consistency and to decrease any confusion with a complete understanding that, throughout the world, the number of women students often constitute 50% or more of medical school classes and increasing numbers of women are obtaining senior faculty and administrative positions.

In addition to chapter conclusions and summaries, the authors have ended their chapters with "Take-Home Points" emphasizing the most important learning points in each of the areas presented.

Take-Home Points

1. Active learning strategies demonstrate positive academic and professional outcomes.
2. Active learning methods encourage faculty creativity and the flexibility to accommodate institutional constraints.
3. Active pedagogies are more likely to stimulate "gifted learners" than the traditional passive approaches.

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Chapter 2
Preparing Teachers and Learners

Barbara Schuster

Teacher Preparation

Doctoral education has traditionally been research focused, although the majority of faculty members at universities spend a significant part of their careers in the classroom or in the role of tutor. As higher education became more important for obtaining a wide array of career positions, including technical and administrative positions, university classrooms expanded to include larger number of learners. Teaching a seminar class of 20 learners became a rarity and was replaced by a lecture format. The "outstanding teacher" in a large-group format has been the expert in his field who could communicate technical, difficult, and/or confusing concepts with humor and aplomb in a 50-min presentation. Interactions between the presenter and listener were limited, and the student worked to scribe as much of the presentation as possible for future reference. How much information the student absorbed and retained has been debated. Progressively, attendance in medical school lectures significantly decreased with the "lecture" available on handouts, posted online, or recorded by student-organized "note services." Students can listen to the lecture on audio recordings without attempting to "take notes." As technology advanced, lectures have been video captured, allowing students to remain at home to watch and listen to the lecture at their preferred time and speed.

How have the faculty been prepared for their role as teachers? Most Ph.D. students helped support themselves by accepting teaching assistant positions. Until recently, universities did not require preparation for these entry teaching positions, and thus the future faculty member could only imitate their professors with little formal education or personalized feedback. Organizing a lecture, facilitating a seminar, writing reliable and valid examination questions, and developing a syllabus were often learned "on the job." However, through their experiences, the newly

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N. Dickman, B. Schuster (eds.), *Active Education for Future Doctors*,
https://doi.org/10.1007/978-3-030-41780-2_2

minted faculty members learned that if asked to teach a course, they had the authority to teach as they wished and often what they wished. Even in professional schools where information taught has more similarity between institutions because of national standards and examinations, the individual course decisions were usually instructor directed.

Similar to doctoral education in sciences, medical education, until recently, did not consider skills in teaching essential for future careers. The senior physician on the clinical service was the expert, and students and junior physicians learned by observing the senior attending physicians, learning from their decisions. Asking questions in the hierarchical environment of the clinical wards was not often appreciated. By the time a junior physician rose to the position of consultant, most teaching physicians had learned to teach and behave similarly to their mentors.

How, then, can traditional faculties begin to embrace a classroom where the lecturer is no longer in "complete control" or the clinician is no longer "the expert"? How can the faculty be transformed from controlling educators in rigid classroom environments with passive, accepting students into teachers who are more of a facilitator or coach in an active classroom setting, an environment where active student questioning is expected and encouraged? The answer is to begin the transformation in steps with the understanding that active learning and flexible teaching can begin in a traditional large-group classroom.

Moving from the traditional classroom in a curriculum of separate time-defined and subject-defined courses to a highly activated integrated curriculum can be a daunting task. However, moving from a passive teaching style to active classroom pedagogy is a more achievable process.

Challenges and Obstacles with Introducing Active Learning Techniques

Prior to embarking on curriculum change even if it is replacing frontal or lecture learning with active learning, the senior leadership must be able to define the reasons for the change and the achievable outcomes of the change. Faculty buy-in of the process and outcomes of active learning are essential to this strategic change. Consistent student feedback and/or consistent feedback from patients, hospitals, and employers help plead the case for change to active learning.

Students across most medical schools have increasingly begun to avoid lectures stating that their learning is more efficient done outside the classroom. If the students find no advantage to being present, the faculty should not ignore the message and consider change. The flipped classroom concept (Chap. 4) is based on having the students complete the learning of background or basic information prior to an active classroom exercise.

At the new medical campus in Athens, Georgia, USA, in an effort to obtain student feedback about the core clinical rotations, focus groups, facilitated by members

of the School of Education faculty, were held at the end of each semester with the medical students rotating through the first clinical year. After six consecutive semesters, student response was consistent. The students agreed that the four elements of the rotation that made a rotation both educational and enjoyable were (1) being able to evaluate a patient independently, (2) being allowed to come to their own conclusions before presenting to the attending physician, (3) receiving immediate direct feedback on all elements of their clinical skills and decision making, and (4) being given active patient responsibility and being incorporated into the care team. All the feedback demonstrated that the students preferred to be active participants in patient care, not passive observers. These four elements are very consistent with Harden's four principles leading to effective learning: feedback, activity, individualization, and relevance [1].

Why the Faculty May be Resistant to Change

Every faculty member can recall the work that was required to develop a course and the many hours a good teacher invests in modifying and updating a successful teaching session. Leadership should recognize and acknowledge the time that must be invested by the faculty member to make a major change in their teaching when moving to active pedagogy. Young professors with the additional stressors of research, publications, and service required for promotion may balk at the perceived increased burden of teaching.

When one teaches, they are "on stage", an uncomfortable position for many faculty members. Lecture teaching allows the faculty member to have the most control within the classroom, yet they often feel insecure about their ability and skill to deliver a successful presentation. Inserting and developing active learning activities in a large-group class session require a different skill set. New skills include learning how to facilitate an in-class exercise rather than only delivering information while remaining "in control" of the lesson objectives. Lack of student presession preparation and student resistance to participate in the planned exercise pose additional challenges. For many faculty members, coping with questions that they cannot answer as "the expert" may result in feelings of inadequacy and being responded to inappropriately.

The faculty may express concern about student learning. Many faculty members perceive that their responsibility is to present all the information that the student will require to pass licensing and graduation examinations. Therefore, when their personal class sessions are reduced in number or length to carve out time for small-group sessions or to develop opportunities for experiential learning in the community or if the faculty is mandated to use a teaching style that does not directly deliver the information to the students, the faculty member may feel compromised. Even when presented with studies demonstrating objective outcomes, usually standard testing such as the USMLE examinations, that students in schools with active

learning fair as well as or better than cohorts in more passive learning environments, many faculty members remain resistant to change.

The faculty members are concerned about the students' evaluations of their teaching when the students' expectation of what information "should be delivered" is not fulfilled through an active learning exercise. Until the faculty members feel secure about their new skills in active learning techniques and the "quirks" have been removed from their newly developed learning exercises, they and their leadership should expect and accept the risk of less positive teaching evaluations [2].

Anticipating and Preparing the Teachers for Change [3, 4]

Educating the teachers for active learning should occur both "outside of the job environment" and "on the job," also referred to as "workplace learning." [5] The principles of adult learning should be utilized when developing workshops for faculty learning. Workshops such as the fundamentals of responding to student questions, writing multiple choice questions for use in presession evaluations, and practicing coaching vs. lecturing may be best executed off campus in a comfortable environment. The sessions should require active participation by attendees and be demonstrative of the techniques that are to be used within the classroom. Role-plays and, if possible, videos for a group review of active learning techniques that have already been trialed by faculty members can facilitate participation. Consider a workshop in which the faculty is asked to construct a student exercise and then have the exercises reviewed in facilitated small groups. If possible, the most senior administrators, the dean, the vice dean for academics, etc., should participate as "learners." The presence and participation of senior leadership demonstrate strong institutional support and educate the leadership on the breadth and depth of skills required of teachers for active learning. Consider faculty development as "educating down as well as educating up" to decrease obstruction from those who will carry out the educational changes, as well as obstruction from leadership who may have come into their positions from the research or healthcare delivery arms of the profession and not updated about medical school pedagogy.

Educational change is initially accompanied by additional costs of increased faculty planning time, increased faculty development time, and often a need for changes in the physical environment for student teaching, such as rooms that can accommodate small group work with furniture that is mobile versus large, stepped lecture halls. Students may need more sophisticated computers with greater capacity and required apps on cell phones for in-class response. Schools may need upgrades in Internet connections, student search capabilities, and educational software for video capture and podcast development. The faculty will need help from those knowledgeable in the development of interactive educational programs and retrieving student responses from preclass exercises.

Once the faculty has begun to trial active learning methods, the faculty will require constructive feedback and personalized input. This is best done by someone

with skills in educational design and execution since the focus of the feedback should be the organization and delivery of the "lesson," the observable teaching skills of the faculty presenter, and the lesson acceptance by the students. Colleagues from departments or colleges of education who are skilled in observation and coaching individual faculty presenters bring expertise, without bias about the individual medical teachers, to the difficult task of changing teacher behavior. Done in a confidential manner without formal reporting to the faculty member's supervisor, the process allows for a trusting relationship between the observed faculty member and the educational consultant. The faculty member can feel freer to express his self-doubts and admit his concerns to someone who is not responsible for his yearly job evaluation. Receiving difficult feedback from someone outside the medical school may also be more acceptable.

Senior administrators have the responsibility to define a rational and achievable timeline for the change from passive learning to active learning. Senior medical education leadership in collaboration with the faculty may need to develop new feedback and evaluation methods to recognize the positive steps that the teaching faculty has achieved in educational reform vs. emphasizing yet unmet goals. To obtain good student feedback, both senior leadership and faculty members may need to initially "accept" negative input from students who are also undergoing changes in their study behavior and being requested to evaluate new "lessons" that may require revisions. Seasoned professors, as well as young faculty members, may need positive support if the first attempts at developing active classroom experiences are less successful then their polished lectures. In addition, those leading educational reform must recognize that not every faculty member should implement active learning to the same degree. There are members of the faculty who are outstanding lecturers for whom introducing less dramatic changes such as adding a relevant clinical case presentation to an otherwise nonclinical molecular medicine presentation may be the most appropriate intervention. However, another faculty member who struggles with poor student attendance at his lectures may find "flipping the classroom" an avenue for stimulating himself and his learners. All faculty members have their individual skills, not every class session needs changing, and the engaged teacher, no matter what the technique is, will always connect better with students.

Suggested Steps toward Implementing Active Learning and Flexible Teaching

Step 1: Introduce the concept, background, and overview of active learning and updated pedagogical activities. Present the current information on the advantages and success of flexible teaching and active learning methods.

Step 2: Have the faculty agree to trial an active learning technique during a lecture. This may take months of "precontemplation" and watching "early adopters"

take a first step. Encourage every faculty member to take one teaching session and "try out" one new large-group or small-group "disruptor," as described in Chaps. 3 and 4. Do not suggest "flipping the classroom" for every class session as the first approach. Be prepared for "first time failures" and rapid return to the comfort of lecturing.

Step 3: Have the faculty members reflect on their experience. This could be done in a small or large group, but disclosing in a smaller group of faculty members with whom they feel comfortable might allow for more honest assessment. Have a non-involved facilitator, a faculty member from another department who is using active learning techniques, to moderate the discussion. What went well? Was anything not completed as planned? How did the teacher feel? Was there any student feedback? Would they be willing to try the process again? Should the individual faculty member change the lesson or retry it with minimal changes? If the lesson was captured on video, review the film.

Step 4: Expand the "same active intervention" to several sessions and experiment with an additional technique when comfortable.

Step 5: Introduce the concept of "flipped" classroom with its differences from and similarities to activating learners within a lecture. Ask each faculty member to study one avenue for "flipping" a single session and trial it. Again, allow for reflection among colleagues in a supportive environment.

Step 6: When the faculty members have become skilled and comfortable with multiple teaching alternatives, set an expectation that the faculty must include active learning and flexible teaching processes in the majority of their classes, the technique being the teacher's choice, giving the faculty members some control in their course.

Student Preparation

Like the faculty, students are anxious about change in pedagogical approach to teaching and learning. Students who begin medical education after completion of secondary school, as well as students entering medical schools directly from a first degree, are accustomed to a very organized and teacher-directed education. The students have been exceptionally successful in following well-designed syllabi, completing assignments, and executing examinations based directly on the lessons presented substantially in a lecture or teacher-directed classroom. Successful university students feel secure in "repeating" the information presented by their professor without questioning its correctness. Students are uncomfortable when asked to absorb and integrate the rapidly increasing and vast medical knowledge with its ever-changing evidence without the direct guidance of the traditional lecture. Students understand that assessment has driven their learning and that the assessment is usually by multiple-choice questions or a written examination. The uncertainty of what must be learned through active learning exercises can be stressful for the uninitiated medical student [6].

In medical school, when given a choice between a small group based discussion with increased independent learning on one hand and lecture on the other, many students would choose the latter for reasons of comfort and its previous success and because the students can remain more "anonymous " and opt not to attend. Active small-group learning requires students to accept responsibility for educating their colleagues and also increases more scheduled "deadlines" for personal preparation. Though schools that have a curriculum with small-group learning and fewer lectures may have a reduced daily class schedule, sessions requiring attendance often increase. An example is a weekly longitudinal 2-hour case seminar scheduled every Monday, Wednesday, and Friday that will require the students to be prepared for and contribute to class three times per week versus only needing to "be prepared" for an occasional scheduled individual assessment, such as a quiz or test, if the curriculum is lecture based. Successful implementation of team-based learning in a predominately "large group" course, requires students to be prepared to participate. Group responsibility may curtail the "four-day unscheduled weekend" or paid job opportunities that medical students, especially with families, might covertly choose to accept.

The daunting "jump" that all students encounter when entering medical school is similar across all schools and in all countries. The additional change to active learning shines a spotlight on a few challenges:

1. A typical study pattern often used in secondary school and college is putting off assignments until confronted with the due date or the written examination. With an assessment imminent, the student enters a period of "binge studying," followed by "purging the information" on the examination. This study method does not succeed when every day of an active small-group learning requires preparation and participation.
2. The assessment outcomes for active learning in the preclinical curriculum go beyond the objective test, clearly involving skills and attitudes not necessarily emphasized in lecture-based education. Thus, the student is confronted with the reality that "passing the written examination is not enough."
3. Active learning facilitates the opportunity to utilize and transfer new scientific and medical concepts through patient cases and to integrate knowledge horizontally and vertically across biologic systems and medical specialties. The work of synthesis and integration is quite different from memorization and ultimately builds a cognitive base for clinical diagnostic reasoning. However, the work of knowledge synthesis, integration, and transference is a new task for many students requiring adjustment to learning expectations and study skills.
4. Because active learning offers multiple teaching and learning interventions and variations, student success may be improved if the individual student understands how he best learns. As an example, in preparation for class, one student may find that listening to a podcast and writing an outline may allow him the background needed to engage in the next day's learning activity, while a classmate may need to read the chapter and construct a concept map.

5. Time management skills are core for success as a medical student, a resident, or an attending physician. Looking up the answer to a question to be presented in a seminar the next day could require an hour of work or 5 hours of work. Because the medical student is expected to absorb a daunting depth and breadth of knowledge, it is essential that every student learn how to apportion time appropriate to task, learn to present effectively and efficiently, and learn how to balance study with other activities. The boundaries of preparing for a lecture-based course are much better articulated than those for active learning environments. Students may feel freer to engage in exercise and sports when there is "no class participation required" for the following day versus when a student is expected to participate every day.

Mitigating the Challenges Confronting the Students

It has been said that "Stress occurs when expectations do not equal reality." Until one has experienced the intensity of medical school, no one can truly understand the reality of the workload. How can the faculty mitigate the challenges of medical students' new reality?

1. Make the expectations very clear to students applying to your institution so there is "no surprise" upon arrival. In recruitment materials and again during orientation, describe why the faculty has chosen to pursue a very interactive learning environment and, when available, be able to describe through local examples its positive effects on the students' medical careers. Senior medical students and recent graduates are often the best spokespeople to address these issues.
2. Develop a curriculum that would include a "progressive on ramp" for the building of new skills and to help change a student's prior study habits to those that will facilitate success in an active learning environment.
3. Take time to teach the skills that are needed to be successful in the curriculum and that are pathways for accomplishing the competences expected of every graduate. Asking a student to develop a search question, searching for an appropriate resource to obtain the answer, synthesizing an answer to a question, and presenting the answer to classmates are four different skills. Faculty coaching as well as protected curricular time are essential to assure that all students have a secure foundation in all skills required to be successful.
4. Many students enter medical school with a naïve understanding of true teamwork and may have had a previous negative experience working on an "academic team." [7] Few medical students have been educated in team dynamics unless they have had experience in the military, team sports, or business consulting. One small group activity does not constitute a "team." A well-functioning team requires time together working through interpersonnel issues, accepting responsibility for the team, and developing trust. Teaching skills to optimize teamwork development should be purposeful, not assumed [8, 9].

5. Engage the students early and teach the skills of giving and receiving feedback. Done well, the communication with faculty and student colleagues is improved and mid-course corrections are more likely.
6. Expect each student to bring variable levels of ability and expertise to the role of medical student. The student who has been a television news reporter is much more likely to be comfortable interviewing a patient and speaking in class, while the student with a PhD is more likely to be facile with scientific literature searching and statistical understanding.
7. Provide support for students who are having more difficulty with skill development and the changes required in study habits. Often recognized in small-group seminars or by poor quiz grades, early intervention is essential to prevent long-term failure. The differential of the causes for difficulty is broad. Having an astute and caring educator who can "diagnose" a learning issue and has complete understanding of the institution's curricular expectations is the first step toward remediation. Table 2.1 lists some of the most common issues that may underlie learning problems. Active learning environments may facilitate early recognition that a student is experiencing trouble.
8. Linking active learning activities in the preclinical curriculum as often as possible with clinical experiences, simulated or real, helps early medical students to understand the future relevance of their daily work [9, 10].
9. Develop an "on-ramp" to gradually introduce the pedagogic methodology to be used. An example of such "on-ramp" for case-based learning may include the following:

   (a) During orientation, have students and the faculty "walk through" a simple case to familiarize everyone with case format and class expectations.

Table 2.1 Common issues that may underlie learning problems

1. Study routine—is the student spreading his studying throughout the week or waiting and "cramming"? Is the student routinely prepared for Monday classes?
2. Learning routine—how did the student study in college? Has his pattern changed? Does he know his optimal learning pattern—Listening, reading, study buddy, learning through experience, etc.?
3. Exercise/relaxation routine—did the student stop exercising, reading nonmedicine books, visiting with friends or family, participating in spiritual renewal, playing music, etc. because "there was no time" due to long hours of studying?
4. Inability to pace—can the student pace his studying to apportion adequate time to complete all medical school and personal life activities? Is this a time management problem?
5. Is there a learning disorder that did not previously interfere with student success? Dyslexia? Slow reader? Until the student tangles with the learning expectations of medical school, very bright individuals have often been able to develop accommodation systems that may no longer be effective.
6. The student's personal expectation to maintain the same academic ranking as he had in college may increase his stress and undermine self-confidence. Inability to accept less than perfection may lead to difficulty focusing on the task.
7. Has there been a recent personal change in his life? Personal health, illness or death of a close friend or family member, unemployed parent, change in partner relationships?

(b) Start full case presentations the first week of class.
(c) To facilitate student participation during the first 8–12 weeks, write "question prompts" so students begin to understand how to approach an unknown clinical case. After that time period, drop the prompts.
(d) Quiz frequently. Quizzes should be scheduled, low risk, and cover understanding of the basic concepts and background knowledge without asking the student to transfer or integrate the knowledge. Evaluating higher cognitive learning skills should occur later on in major examinations. Frequent quizzes help the student to develop a continuous study habit and alert the faculty if there are any basic concepts with which the class as a whole has difficulty.
(e) Singular cases should be used to allow enough time for thorough discussion and skill development. Multiple cases within the same time limit may be appropriate as the students' skills progress.

Summary

The decision to introduce active learning in a formerly lecture-based curriculum requires the faculty and students to learn new skills. Although the educational literature supports active learning for improving knowledge integration and transference, both the faculty and students may obstruct progress based on comfort and success with the former system and discomfort with change. Therefore, the senior leadership should attend to the professional needs of the faculty and acknowledge the changes required for a successful student learning and the concerns of failure by all involved. Careful planning, appropriate expectations, and paced introduction of change may help minimize the disruptions.

Take-Home Points

1. Faculty teachers and student learners are challenged with changes in the curriculum.
2. A change to active learning requires new skills and different expectations of teachers and learners.
3. Thoughtful introduction to active learning can help facilitate a successful implementation of curriculum change.
4. Purposeful preparation of teachers and learners can mediate the challenges of change.

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Chapter 3
Giving a Great Lecture: Going from Fine to Fantastic

Peter Gilbey

Background

Lectures are the traditional method of teaching and have been for centuries. It is estimated that the average medical student will sit through approximately 1800 lectures during their studies. Although we now recognize and are more aware of the disadvantages of the lecture format, lectures still have a place in the modern curriculum and a good lecture can still be an effective and useful teaching activity [1].

The disadvantages of the frontal lecture are many. The lecture is essentially a passive experience, and student attention has been shown to decrease in 15–25 min [2, 3]. A good lecture requires confident, effective delivery and is not suited to all learning styles and paces. In fact, this "one size fits all" approach may leave many students feeling left out and not achieving the desired learning outcomes. The lecturer often has no feedback on the quality or amount of learning. Passivity discourages self-directed learning, and this may foster dependency on the lecturer. Student retention after a lecture is believed to be between 5 and 20%, [4] and what is taught is by no means what is learned [5]. In the 1910 Flexner Report, Abraham Flexner provided the following description of American medical schools: "Each day students were subjected to interminable lectures and recitations. After a long morning of dissection or a series of quiz sections, they might sit wearily in the afternoon through three or four or even five lectures delivered in methodical fashion by part-time teachers." [6] Is this significantly different from our current experience over a century later?

So if there are so many disadvantages, then why bother? Well, it is because a good lecture can be an exciting and valuable teaching method. Think back to the best and worst lectures that you have ever heard. A bad lecture can indeed be terri-

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N. Dickman, B. Schuster (eds.), *Active Education for Future Doctors*,
https://doi.org/10.1007/978-3-030-41780-2_3

ble, but a good one can be stimulating and exhilarating. A lecture is an efficient way of presenting a large volume of information to a large audience, with low cost and a low administrative load [7]. It is an ideal way of enthusiastically introducing a new subject and presenting material otherwise not available. The lecturer has significant control over the learning experience.

This chapter will attempt to give practical instruction on how to deliver a good lecture. The combination of active learning in a large group setting and the transformation of an essentially passive experience into an active one will be discussed. The reader will be invited to consider how to use the widespread availability of online devices to his advantage, instead of trying to limit their use.

By the end of this chapter, you, the reader, should be able to:

- Plan and deliver a good lecture.
- Effectively use Microsoft PowerPoint™ and avoid possible pitfalls and misuse.
- Maintain a positive learning environment and effectively use questioning.
- Guide teacher–student and student–student peer interaction during lectures.
- Use audience polling to check understanding of preclassroom material or of material presented in the classroom and/or in order to guide the lesson plan in real time.
- Use technology for interaction with students during a lecture.

Planning and Delivering a Good Lecture

Preparing to Lecture

Thorough and detailed preparation is essential. The intended learning outcomes must be well defined, by either the course or module director, or their equivalent, or if not then by the lecturer [8]. Recall Alice in Wonderland, who asked the Cheshire Cat: “Would you tell me, please, which way I ought to go from here?” The Cat: “That depends a good deal on where you want to get to.” If you do not know where it is you need your listeners to get to, then it is going to be difficult to plan and prepare. It is essential that you comprehend how your lecture fits into the larger picture. Has the same, or a similar, subject already been taught or learned? At what level? How does your lecture build on existing knowledge? You must ensure that you avoid unnecessary repetition on one hand and important omissions on the other.

After defining the aim of the lecture and the learning outcomes, you next need to familiarize yourself with the audience. You must know exactly whom your listeners are in order to be able to assess their expected needs. There are only a few things that are more annoying, or even insulting, than a lecturer asking a group of medical students: “Which year are you in?” It is beneficial to be aware not only of the level of your audience but also of the current focus of the curriculum and how exactly your topic fits. It is also important to know how many students are expected to attend. The planning of a lecture for 100 students may differ significantly from the

planning of a lecture for 20 or less. One might even ask whether it is justifiable to plan a lecture-based teaching activity for a group of 20.

After defining the learning outcomes and getting to know your audience, the next factor to be taken into consideration is the venue and the available resources. You must know, for example, if a computer and an overhead projector are available. This does seem obvious, but especially if the environment is unfamiliar to you, these questions must be asked. Even if there is a computer and a projector, there is not always a sound system, and this may affect the use of videos. There may or may not be an available Internet connection. There may be a fixed microphone on a podium, but a wireless portable microphone might also be available.

The physical learning space has a profound effect on teaching and learning [9]. This is usually beyond our control, although a lecturer may be able to request a specific type of classroom, such as a multilevel auditorium with two sets of tables or chairs per level, a large room with movable tables or chairs, or a seminar-style room for medium-sized groups. Traditional smaller classrooms are progressively being replaced by a variety of informal learning settings that support contemporary learning and teaching approaches. These developments in learning space design are reminiscent of the design of new office environments. Just like new offices, new learning spaces have to support the need for self-regulation and social interaction [10].

Learning spaces should enable and support traditional lectures, autonomous study, interactive learning in small groups, and network learning through digital platforms. Each of these processes and the underlying need for interaction or self-regulation have a specific physical learning setting to match. Versatile learning spaces may serve multiple functions and enable easy and rapid transition between teaching modalities. Almost every square meter of the built environment has the potential to support study activities.

Plan your lecture in accordance with the intended learning outcomes. The beginning should include a presentation of the learning objectives of the lecture. What should the students know, think, or be able to do at the end of the lecture? The middle, or main part of the lecture, should maximally emphasize five key points. Additional topics are more likely to cause information overload and confusion, and the information presented is less likely to be retained [2]. Bear in mind that factual information is readily available if you have succeeded in establishing interest and motivation, along with understanding of the basic principles. Your lecture should be a mix of factual information and points of interest, and it should flow logically. At the end of the lecture, you should restate your objectives and summarize. Use an effective and strong conclusion to your presentation. Your last words and your summary are likely to be remembered. Contact information should be left for students wishing to learn more. Students are usually very capable of finding the presenter's email address on their own, but giving it out at the end of the lecture delivers a message to the students that you are accessible, which increases the students' satisfaction. If appropriate, there should be time for questions. Leave time for students to complete a relevant evaluation.

Practice before the lecture. Make sure that you are comfortable with the subject and with the slide presentation, if you are using one. Make sure that you have

planned the lecture well and that the length of the presentation is appropriate for the amount of time allotted.

If possible, give your lecture an attractive and appealing title. Members of the faculty are concerned with health professions education and not with marketing, but selling your lecture a little in advance can do no harm. The title may be dictated by the course director or by the curriculum, but it may not. It is much more exciting to anticipate a lecture entitled "Giving a Great Lecture—Going From Fine to Fantastic" than one entitled simply "Large Group Teaching."

Box 3.1 Planning a Good Lecture
- Be aware of intended learning outcomes.
- Know your audience.
- Familiarize yourself with the learning space.
- Refrain from information overload.
- Promote interest and motivation.
- Leave time for questions.
- Summarize.
- Leave contact information.
- Practice.

During the Lecture

Arrive early. Lectures should start on time and end on time. A lecture that runs over its planned time is a lecture either poorly planned or poorly executed. Your listeners may not yet be as professional and punctual as you are, but you should be setting an example. By arriving early, you give yourself time to prepare. Make sure you understand any technology you are using and that everything works. Familiarize yourself with the lighting, the audio setup, and the seating arrangements. Plan where you intend to stand or sit and the available space to move around. Make sure that your presentation (if you are using one) loads on the computer or that your portable computer connects to the available audiovisual system. If you are using embedded videos, then make sure that they can be seen and heard. Make sure that you have all the equipment you need, e.g., whiteboard pens, a functioning slide clicker, a laser pointer, etc. Do not forget a glass of water and tissues, if you anticipate the need. If possible, turn off your smartphone/pager in order to minimize distractions. If you need to be available for a call or page, explain and apologize in advance that you may need to respond to it.

Begin the session by introducing yourself. You may think that the listeners know who you are, but this may not be the case. It is always useful to state your connection to the subject matter. You may be a renowned national or international authority on the subject, you may have chaired an important relevant committee or workshop, you may have published extensively on the subject, and you may have a great

amount of relevant practical experience. You may just be someone with an interest and a passion for the subject, and that is usually enough. In any case, false modesty will get you nowhere, and your listeners deserve a brief explanation of why they should spend their valuable time in your lecture hall.

Next, establish rapport with the class. In some cases, especially with a more experienced audience, it may be appropriate to initially ask the audience what it is that most interests them about the proposed subject matter and how you can be most useful to them. This type of diagnostic can help you to assure that the content of the lecture will be relevant and applicable to your audience.

Before you begin the lecture, you may want to state "house-keeping rules," depending on the attendees' familiarity with the location and type of learning session, e.g., how and when do they ask questions? Do they need a reminder to switch mobiles off?

Style

Your style as a lecturer is of utmost importance. This includes, but is not limited to, the use of your eyes, hands, and posture and the use of your voice and speech.

One cannot teach if there is no relationship, and there can be no meaningful relationship in the absence of eye contact. Look at your audience. Establish eye contact with as many students as possible. If convenient, change focus every sentence, every topic, or every breath. Avoid focusing on the ceiling or the furniture. Do not spend the lecture looking at your notes or at the computer. Learner enthusiasm for the topic and listener focus will rapidly decrease.

Your position and your posture are also important. It is usually good advice to not remain "glued" to the podium, if there is one. A wireless slide clicker will enable you to move around and switch slides without being next to the computer. Wireless devices are not expensive and constitute a wise investment. Make sure that your clicker has live batteries and that it works properly. A portable, clip-on or neck microphone will enable you to move around and still be heard properly without being attached to the podium microphone. You will find that the best and most entertaining lecturers will move around and change position during their lectures. Maintain a relaxed and comfortable posture and consider what you are doing with your hands. Customary wisdom maintains that the hands should rest in a neutral position, such as by your sides or clasped in front, and then be used to gesture in order to emphasize and illustrate a point or points. Avoid putting your hands in your pockets and playing with your keys.

Consider the loudness and tone of your voice and make sure that you can be easily heard by all listeners. Voice amplification is often required, especially in a large lecture hall or classroom. Be sure that this is available. It is worth asking those furthest away from you if they can hear you well. Your pace should be even and steady but in no way monotonous. You should be clear and easy to understand. Changes in pace and intensity can be used to stress a point. Recording a short video of yourself

while presenting a lecture and reviewing it with a peer or educational consultant is helpful in assessing your posture, hand motions, and vocal characteristics.

The use of humor is controversial and risky. It can be an effective way of establishing a connection with your audience, but it can also unintentionally offend. Unsuspecting presenters have been accused of sexism, ageism, racism, and all forms of bias, including political and religious bias. Any statement or visual (for example, a cartoon) that is perceived to be offensive may engender a negative learning environment.

The learning environment defines the experience of the learner [11, 12]. To promote learning, it is desirable to provide an environment where it is safe to experiment, express concerns, and identify lack of knowledge. Students are encouraged to stretch their limits without fear of being ridiculed or humiliated. Gaps in knowledge, when identified, should be used as triggers for learning, not humiliation.

Visual Aids: The Perfect PowerPoint™

An article in the Lancet from 2003 [13] discussed the potential pitfalls of the PowerPoint software. The author, Peter Norvig, currently director of research at Google, redesigned President Abraham Lincoln's famous Gettysburg address in a PowerPoint™ format and demonstrated how uninspiring the address sounded in a changed format. One could attempt the same exercise with any other famous speech in history and obtain similar results. The author claims that PowerPoint™ "makes it harder to have an open exchange between presenter and audience, to convey ideas that do not neatly fit into outline format, or to have a truly inspiring presentation." Despite this, PowerPoint™ is a commonly used and much appreciated visual and memory aid, but there continues to be too many cases of "death by PowerPoint™." [14]

The first thing to remember is that the presenter is the star of the lecture, not the slide presentation. The slide presentation is designed to be a visual aid for the students and a memory aid for the lecturer. The slide presentation should not replace the lecture or the lecturer and should not be created for this purpose. It does not, and indeed should not, include all or even most of the factual information given in the lecture. If a student can achieve all the learning outcomes by reading your slide presentation, then you have not succeeded as a lecturer. The main purpose of the lecture should be the interaction with the lecturer and with peers. First plan the lecture and then the slide presentation and not the inverse. Taking a book chapter and dumping the content onto slides is a very poor way of planning a lecture.

Students loath lecturers who arrive for a 45-min lecture with 200 slides. It will be obvious to students that there will be information overload, and thus likely less will be learned and retained. A good rule of thumb is to have no more than one to two slides per minute of lecture; fewer slides are often more appropriate. Include four to six points per slide and no more. If you have more to present, then use another slide. Think of a lecturer with a slide showing a block paragraph of 12 or 15 lines and then apologizing for a "busy" slide. It is better to avoid doing this.

Introducing one point at a time will help the audience concentrate on what you are saying and will prevent them from reading ahead. You can do this by using the animation features of PowerPoint™. It is very hard to concentrate on the slide and the lecturer when there is an animation of a miniature wizard constantly, incessantly, and repeatedly flipping through a large book. It may have seemed like a good idea when the lecture was being prepared, but it really does not add any value to it. An overwhelming use of technology may interfere with learners' storage of information in their short-term memory [15]. Do not go overboard with the animations. Keep animations simple and avoid distracting animations.

Consider the background of your slides. It is good to have a constant background in order to maintain a sense of continuity and stability. You may want, or even be obliged, to use the logo of your faculty or university. This will give your presentation an official look and add authority to your message. Make sure that the background does not interfere with the text on the slide. Complicated backgrounds may have darker and lighter areas, which may make it difficult to read the slide. Many presenters prefer a simple black on white as they find that this combination gives the best contrast.

Color is important, and you should be aware of your choices of color for script and illustrations. Red on blue is extremely uncomfortable for some readers and should be avoided. Be aware that the audience will have participants who are color blind, who may misread script and grafts because of color. It is essential that there be a good contrast between font color and background color. Yellow on white, for example, is a low-contrast choice and will be hard to read. You can use color to emphasize, but do not use color to decorate. This is another unnecessary distraction.

Be consistent with your use of font. Pick a font that is easy to read and avoid fonts that are too fancy or florid. These fonts are harder and more tiring to read. The font should be large enough to be read comfortably and at as far a distance as possible. You should use the same size font for all titles, headings, and subheadings. Avoid using capital letters as these are less comfortable to read. Capitals can be used occasionally to emphasize a word or phrase.

Charts and graphs are a means of displaying information in a way that is easy to digest. Consider the best way to display the information and to make your point. Trends or relationships over time are easier to visualize in graph form. Graphs and charts should be titled and not contain too much information. Copying a graph or chart from a scientific paper is sometimes the easiest but not always the best solution. The same rules regarding size, color, and contrast also apply. Try to avoid using large tables with endless detail that you do not really need. Some lecturers try to overcome this by emphasizing the relevant data with colored shapes. This still leaves the student with the daunting task of trying to comprehend the table in a limited time. It is much better to condense the information presented into that which is essential for comprehension and then decide on the best way of presenting this information. If this is a table, then so be it, but let the table be clear and concise.

Embedded videos can be educational and entertaining, but they are also potential minefields. Imagine yourself in the swing of a well-prepared presentation, flowing

and connected to the audience, and then you hit play on your embedded video and nothing happens. It is always annoying to learners and embarrassing for the lecturer. It does not matter how many times you practiced at home if at the moment of truth it just doesn't work. So be familiar with the technology you are using and arrive early to make sure that your video works in context. Make sure that you are linking to a player that is available, that the format is compatible, and that the file is accessible. Videos from YouTube™ can be downloaded and edited using simple software that can be downloaded free of charge. If you have not downloaded and edited a video, then you may be planning to link to a YouTube™ video. Be sure that you have available Internet access and that the site that you are linking to is not blocked by the organization. Many hospitals and other health organizations routinely block access to popular Internet sites.

Proof your slides for spelling mistakes, repeated words, and grammatical errors. If your slides are in a language that is not your first language, then it is useful to have someone else check your presentation. It is easier for the students and is more learner centered if you present the session and have slides written in the common language of those attending the lecture.

Be aware of international and local copyright laws and make sure that all materials used in your presentation are used with permission.

Respect the privacy of patients and colleagues by ensuring that all identifying labels are removed or concealed. This is especially sensitive when showing patients' pictures, images, or communications. No one in the audience needs to know the name of the patient whose interesting CT scan you are showing during your lecture, and it would be a violation of patient privacy.

Box 3.2 Slide Essentials

- The slide presentation should not replace the lecture.
- Avoid having too many slides and too much text on each slide.
- Use animation to your advantage but avoid distracting animations.
- Consider background and font colors.
- Make sure that embedded videos will run.
- Be aware of copyright laws.
- Respect patient confidentiality.

Alternative Software

PowerPoint™ is the most commonly used presentation software. It has many advantages. It is widespread, easily available, and familiar to almost all users without further need for learning new skills. Speaker's notes can be displayed just to the speaker. It also integrates with other software, such as PollEverywhere™ for audience polling. However, compatibility problems may appear between versions, and it is often perceived as boring or unimaginative. An interesting alternative to

PowerPoint™ that is used by many faculty members is Prezi™ [16]. This innovative software claims to stimulate the creativity of the author and deliver a more fluent presentation, although educational outcomes have not been shown to be different when compared to PowerPoint™ [17]. The website is worth checking out, and there are many good Prezi™ tutorials on YouTube™. There is a presentation library with many original examples and slide presentations that can be downloaded for offline use. Other formats can be inserted, e.g., PowerPoint™, images, and videos. The free mode is usually sufficient, although a paying account with increased functionality is available. Disadvantages include possible fragmented or jerky progression if run on a slow computer and a significant amount of time (at least initially) required for creating quality presentations. The form can be so impressive as to sometimes threaten to overpower the presentation content. And finally, some presentations have the potential to cause visual discomfort or a particular variant of motion sickness.

As with all technology, the guiding principle should be to remain updated and be aware of the technological aids that are available to you at any given time. Technologies may come and go, and any technologies mentioned may become obsolete in the near future. The guiding principle is the main and most important issue. Do not remain stagnant. If necessary, make use of your institutional teaching and educational unit. Many universities have an educational technology department. YouTube™ has some excellent channels dealing with teaching technology, and you can subscribe and keep abridge of all new and attractive innovations. These include, but are not limited to, Teacher's Tech and Technology for Teachers and Students. Again, times are rapidly changing, and these too may soon become irrelevant, but stay curious and stay ahead.

It is also worth considering not to use presentation software. Consider the great speeches of history. Would PowerPoint™ have made Winston Churchill's or Martin Luther King's messages any clearer or memorable? Would any less information have been retained? A medical lecturer without a slide presentation is a rare but interesting phenomenon. A slideless presentation is not always suitable, and it may not be right for you. However, provided the lecturer is not reading from notes, a presentation without the crutch of slides gives an impression of absolute command of the subject and when done well can be very impressive.

The Active Lecture

A student's ability to recall facts presented in a lecture decreases over time. During an hour-long lecture, student attention is at its height during the first 10–20 min and the last 5 min. Including an interactive activity brings the attention back almost to its maximum [2]. It is not uncommon to see lecturers who use unrelated slides every now and again for what is called comic relief, but is showing a cute cat or your recent holiday pictures really a good way of regaining attention? How can we make an essentially passive experience active?

Questioning

If you promise a question-and-answer session at the end, you must make sure that you have left enough time. Ask "what are your questions?" and not "do you have any questions" to change the emphasis to one of expectation. Have a prepared question to "start the ball rolling." You may prefer to allow students to ask questions as you go or use questioning to involve the audience and activate the classroom.

If someone has asked a question, be positive and encouraging. There is almost no such thing as a stupid question, and if something is confusing one student, then it is likely to be confusing others as well. When someone does ask a question, give them your full attention, then paraphrase the question and reply to the whole class. Even if you have heard the question clearly, people in the back rows may have not. It is annoying and ineffective to have a lecturer answer a question and for a learner to have to guess what that question was. Do not let a person or persons dominate the questioning. Be honest if you do not know the answer. Let the class know that you will find out the answer and how you will report it, or you can request a class volunteer to find the answer and report back during the next class session. Some questions may be beyond the curriculum, and these should be acknowledged but not answered during valuable classroom time.

If you are using questioning to involve the audience and activate the classroom, keep a positive and nonthreatening atmosphere. Intimidation and humiliation, despite being popular in the past, are not conductive to good learning [11].

Box 3.3 Questioning Tips

- Make clear when questions will be allowed.
- Leave enough time for questions.
- Ask "What are your questions?" and not "Are there any questions?".
- Have a "question of your own in case of silence.
- Give the learner your full attention, paraphrase the question, and reply to the class.
- Be positive and nonjudgemental.
- Be honest if you do not know the answer to the question.
- Ensure that questioning is not dominated by one learner.

Audience Polling

Audience polling turns listeners into active participants and has the potential to enable learners to guide their own learning, even in a large lecture setting [18]. Polling can be used to assess preactivity knowledge and attitudes. It can be used to ask the class what most interests and challenges them. Intraactivity polling can assess for understanding and guide the rest of the lesson. Postactivity polling can assess the extent to which the learning outcomes have been achieved and can gauge understanding and satisfaction. Basic polling techniques are open and visible to all,

but electronic polling enables the lecturer to decide how and when the responses will be seen and to whom it will be addressed.

The simplest form of polling involves a show of hands, and this can still be effective. Other low-tech forms of polling include assessing the prevalence of a certain response by the volume and length of applause and the use of color-coded cards. The lecturer can distribute such cards at the entrance to the lecture hall or at the beginning of the lecture, after everyone is seated. Two cards using both sides of each card can enable four possible responses. Responses could be colors—red, green, blue, and yellow—or numbers—one, two, three, and four. Students can be asked to raise a card indicating their chosen response to a question posed by the lecturer. Cards can also be used to facilitate additional interaction, such as dividing students into groups for in-class smaller group activities.

These low-tech solutions may seem to be a thing of the past. Technology has evolved beyond the use of cards, although cards can still be useful, especially in areas without digital connections or when the connections suddenly fail. In developed countries, Internet connectivity through smartphones and tablets are universally available, and students and faculty are all almost constantly online. Medical students all have at least one digital device connected to the Internet. There has been a tendency by some faculty members to minimize the use of electronic devices during lectures, concerned that students would be distracted with personal affairs. It is hard to tell if a student is diligently taking notes or if he is on his favorite app posting pictures from last night's party. The first step is to engage the students in an "activated learning environment" so that they will not lose their concentration during the learning session and drift off to the virtual elsewhere. Preventing the use of devices is most unlikely, so let us harness the devices for our pedagogical benefit and make the lesson simultaneously more interesting and active.

There are several web-based audience polling systems available. PollEverywhere™ [19] is a web-based audience response system that allows you to embed interactive activities directly into your presentation, using PowerPoint™, Google Slides™, and Keynote™. The audience responds on the web with their device or via SMS on their phones. The free version allows up to 25 responses, and an annual program allowing up to 100 responses can be institutionally based and obtained at a reasonable cost.

Use of Games and Other Technologies

Kahoot!

Kahoot! [20] is a game-based student response system (GBSRS) that educators can use not only to increase participation during lecture but also as a formative assessment [21]. Kahoot! quizzes can be used at any time during the lecture to provide a baseline of student comprehension, as well as to reinforce student connections and patterns of the concepts learned. Kahoot! is a web-based technology that is free. Educators can register on the site and begin designing their own Kahoot! quizzes or

choose from a library of Kahoot! quizzes. Quizzes can have music, pictures, and videos easily added to the background. The quizzes are saved and can then be retrieved with Internet access. Students can use smartphones, tablets, or computers to respond to the questions. Students are asked to enter a screen name and the game code to get started. Once the game begins, the questions will scroll down based on the timing, and students receive points for the quickness and accuracy of their answers. Students receive an overall score on completion, and the top three scores are displayed on the screen. Kahoot! increases engagement through competition and provides an exciting method of formative assessment. Kahoot! has been shown to produce greater student engagement and more enjoyment, concentration, and motivation. Additional research has revealed that interactive quizzes such as Kahoot! had a positive impact on student learning and that students particularly valued the inclusion of such activities in their program.

Padlet

Padlet [22] is an online virtual "bulletin" board where students and teachers can collaborate, reflect, and share links and pictures in a secure location. Padlet allows users to create a hidden wall with a custom URL. Padlet creators can moderate posts, remove posts, and manage their board. Padlet is one of the tools that can be used in visualizing the process of collaborative knowledge building. Research shows that Padlet can supplement teaching and learning activities, assist instructors in facilitating student learning and participation, and help improve student learning motivation and performance [23].

Twitter

Twitter [24], a popular microblogging social networking site, allows individuals to communicate by sending short messages. Twitter has been used extensively at medical conferences, employing features such as the creation of conference-specific hashtags, and the public display of Twitter feed. In education, Twitter is most commonly used for communication and assessment purposes. Currently, the most beneficial use of Twitter is probably that it serves as a "push" technology—such as the instructor sending important course information, homework assignments, and test deadlines to students—as well as a platform for peer interaction [25].

Pinterest

Pinterest [26] is a free visual-bookmarking social media website that allows one to create and manage theme-based image and video collections. Pinterest is a way of bookmarking, or "pinning," items that the user wishes to revisit in the future. Unlike most Internet browsers that provide one long list of website bookmarks, Pinterest

allows users to create and pin to visual bulletin-type boards to organize and manage ideas. Users can "pin" anything they find on the web to a virtual bulletin board that can be shared with others. Pinterest enables teachers to share ideas, resources, videos, news articles, infographics, and images. Pinterest allows multiple users to pin ideas and resources together to create one big visual on a board. Each pin links back to a website that offers more descriptive information. Teachers can restrict what they want students to view by creating a board with all the information they need for the assignment. Students may also work together on a group project by collaborating on a board and adding ideas or resources. A teacher might create collaborative boards for classes, allowing students to work together to find and share resources and save them in one location. This also allows teachers to revisit the board to post feedback on the resources that students have put together [27].

Use of Props

Props can be effectively used in a lecture to visually demonstrate that which is being described by the presenter. Props can recapture the audience's attention and can be used to introduce curiosity, add humor, or reinforce a point you are making.

Make sure that props are large enough to be seen by the audience. You may want to pass the props around for examination by the audience. However, consider the distraction it may cause. Does it matter if people are not listening to the next bit because they are looking at the prop? Could passing a prop be less disruptive during a planned in-class activity? Will the prop make it around the room in the time allowed? Would it be better to leave the prop out for viewing at some other time?

Box 3.4 Use of Props

- In a lecture on hearing impairment in the elderly, I hand out single-use earplugs that I buy in bulk for a negligible price. I ask the students to put them in their ears and make some noise in order to get a sensation of what a 30-decibel hearing impairment feels like. This serves to break the monotony of the lecture and also to illustrate the point that I am trying to make.
- In a lecture on head and neck examination in a clinical skill course, I perform flexible endoscopy of the nose, pharynx, and larynx of a student volunteer. I screen the examination on a large high-definition screen, which can easily be seen by all learners.

If it is appropriate, patients can be invited to participate in lectures. This is especially suited to lectures with a strong clinical orientation. Patients can be interviewed about their condition or asked to demonstrate physical findings. One must obtain consent from the patient in advance and ensure a respectful atmosphere. Students can also be asked to volunteer to be examined in front of their peers. This is appropriate when the examination is noninvasive and does not involve elements

that have the potential to embarrass or cause discomfort. Student consent must also be obtained, and it is wise to make sure that a suitable candidate is located in advance.

Small Group Activities in a Large-Group Setting

Buzz Groups

The large group may be split into smaller groups, and a task to be discussed in the smaller groups is given. The smaller groups may consist of pairs or several students. Groups can be student selected or instructor selected. If the groups are instructor selected, selection can be based on age, gender, educational or professional background, or any other parameter deemed to be relevant to the task at hand. Working in buzz groups can be useful for students to check their own understanding, prepare questions or answers, or speculate on what might happen next in a scenario. When collecting ideas from the buzz groups, try to get contributions from each group. Responses can be gathered with an audience polling system.

Snowballing

Snowballing is a technique that can be helpful to bring group ideas together as an extension of the buzz group. The activity may be started in pairs, then pairs to pair up to fours, then fours to pair up to eights, and so on. As the large group reconvenes, the ideas and results of the smaller group discussions are collected. A potential problem with snowballing is if in joining the groups' findings the results are very similar, there may be little to discuss in the large group and the students may become bored. Snowballing can be very good for discussing ethical cases.

Fishbowl

In the "fishbowl" layout, an inner group is surrounded by an outside ring that observes the active inner ring. The inner group discusses the issue, while the outside ring listens for themes and arguments. The outer ring can then be asked for their views. This is particularly suitable for smaller "large" groups.

Role-Play

Role-play is a classic technique in small-group settings, but it can also be used in large-group sessions. Students can be assigned roles to enact before the large group, and responses from observers can be elicited after the role-play. Different members

of the large observing group can be asked to pay attention to different aspects of the scenario. For example, in a faculty development activity designed to discuss the importance of clarification of learning outcomes, a learner playing a student and another learner playing an attending physician are asked to act out a situation in which a student arrives late to the first day of a clinical rotation. Half the large group is asked to pay attention to the verbal communication and the other half to the non-verbal communication. You must assure that the role-play is well seen and heard by all members of the large group.

After the Lecture

After the lecture, recall and reflect. What went well? What would you do differently next time? Evaluation is always a good idea, and we should all be reflective teachers. However, there may also be other ways of evaluating our lecture, and formal student evaluations may only arrive at the end of the semester or year. The use of a "one-minute paper" has been recommended to obtain immediate feedback from students at the end of the lecture [28].

Box 3.5 "One-Minute" Paper

"One-Minute" Paper Worksheet

Name: _____

Date: _____

Lecture title: _____

_____

Directions: Take a moment to think about the lecture you have just attended, and then answer the following questions:

1. What was the most important thing you learned in today's lecture?

   _____

   _____

2. What question remains uppermost in your mind at the end of today's lecture?

   _____

   _____

3. What was the least clear point in today's lecture?

   _____

   _____.

Thank you.

Adapted from Cantillon, *BMJ* 2003;326:437

Students' comments and questions can be addressed on the electronic learning system or via email or web-based discussion forums. Various rubrics for the evaluation of oral presentations exist [29, 30]. It is useful to review these and consider what, in your opinion, your own personal strengths and weaknesses are. You can ask a student or students to assess your lecture using one of these rubrics or request an evaluation by a more experienced colleague. Although it is not easy to reveal weaknesses to peers or accept critique from students, consider the benefits of being assessed to help you gain the skills to present not just a fine lecture but a fantastic lecture.

Summary

In many places in the world, teachers are still called lecturers, although as teachers we do much more. The ability to deliver a good lecture remains a basic and valued skill. A lecture can be a useful and effective learning activity, if well prepared, well delivered, properly placed within the curriculum, and engaging. With a little effort, and the use of technology, a lecture can be turned into an active learning experience, which is much more likely to attain the stated learning objectives.

Take-Home Points

- A good lecture requires planning.
- Avoid the pitfalls and misuse of slide presentations.
- Maintain a positive learning environment and effectively use questioning.
- Guide teacher–student and student–student peer interaction during lectures.
- Use audience polling to check understanding of preclassroom material, or of material presented in the classroom, and to guide the lesson plan in real time.
- Use technology for interaction with students during a lecture.

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Chapter 4
Active Teaching–Active Learning: Methods and Variations

Nomy Dickman and Doron Cohn-Schwartz

Introduction

Education of the new generation of physicians is a multifaceted task, building layers of skills planted on a solid knowledge base instilled in the students. Optimally, this process would be designed as an empowering experience, facilitating the learner's ability not only to retrieve dry facts but also to demonstrate deep understanding which will allow putting the elements together to a functional whole. The prevalent teacher-centered learning is missing the point by restraining the students to a passive mindset as they are flooded with an endless string of facts wrapped in PowerPoint presentations. The clear majority of the educators in the medical field aspire to engage the students in an active form of learning. However, many educators lack effective tools to do so.

The ultimate goal of medical education aspires more than to equip the graduates with bits and pieces of knowledge. The goal is to educate competent physicians able to make correct medical decisions when the patient's clinical presentation is unclear and to do so while demonstrating the highest levels of professionalism, reflecting the medical community's moral values. The development of critical thinking throughout medical education can be described through Bloom's taxonomy [1], and its six levels of thinking: gaining and remembering knowledge, understanding/comprehending the new knowledge, having the ability to apply the knowledge learned to a real patient problem, being able to analyze the involved medical data, to synthesize the patient information developing an appropriate differential diagnosis, and

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N. Dickman, B. Schuster (eds.), *Active Education for Future Doctors*,
https://doi.org/10.1007/978-3-030-41780-2_4

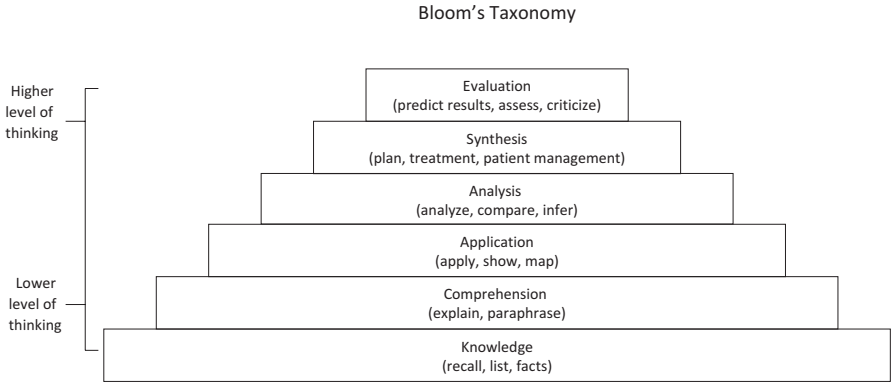

Fig. 4.1 Bloom's taxonomy noted with the increasing sophisticated knowledge and skills required to master the highest levels of cognitive thinking required of a physician

finally, being able to evaluate and defend the medical decision (Fig. 4.1). When constructing a curriculum, consider the first two levels in Bloom's taxonomy as lower levels of thinking and the remaining four levels as the higher levels of thinking. To achieve the goals of medical education, a major challenge for medical educators is to create in-class work to facilitate a higher level of thinking.

Prominent educational models have emerged and have been proven as facilitating active learning. These approaches constitute part of the constructivism turn to self-directed active learning. Constructivist learning theory defines learning as a personal, active process, in which the learner actively structures the knowledge and casts meaning to new knowledge based on his previous knowledge, i.e. new knowledge is placed on a "scaffold" of previously known knowledge [2]. The constructivist theory emphasizes learning as a developmental process, in which the learner extracts the meaning by continuous reflective abstraction of the taught subject [3]. Community discourse propagates further learning and assimilation; therefore, the class should be seen as a discussion community, humming with activity, thinking, and group dialogue. The building of knowledge takes place in a personal manner, enhanced with social interactions with moderators and peers.

In this chapter, the activities of the flipped classroom and active group learning emphasize pedagogical methods to motivate students to aspire and achieve the higher levels of thinking.

What Is a "Flipped Classroom"?

Traditional teaching usually begins with a frontal lecture, passing knowledge of a subject to students from an "expert professor" in a classroom setting. After the class, the students are expected to work at home, assimilating the subject with tasks such as problem sets, labs, and simulations [4]. In contrast, the flipped classroom

concept, coined in 2007, expects the student's initial exposure to a subject to take place prior to the formal class, predominantly through individual or student-arranged small group study [5]. The accession of subject content before class is preparation for active learning experiences in the classroom. Thus, the formerly passive classroom environment followed by active homework assignments "is flipped". Many educators have emphasized that the flipped classroom allows dedication of class time to higher cognitive thinking levels [6–8]. In class, with the presence of instructors and peers, the focus of learning can shift from knowledge and recall to application, analysis, synthesis, and integration [9].

Preparation for class is an essential requirement for success in the "flipped classroom". It differs from the previous standards of pre-class reading assignments in that the subject information required to be learned pre-class will not be repeated in a formal in-class presentation. In fact, the information is usually not formally reviewed by the professor in the classroom. However, the information will be the basis for the in-class activities, and the students are expected to be ready to achieve the next step of learning through the in-class activities. Pre-class home study may include any of a variety of learning modalities including texts, medical literature, faculty-developed podcasts, YouTube videos, and slide presentations with or without audio. The professor may develop problem sets or online quizzes to help the students in their self-study. Results of online formative assessments can alert the professors the areas of difficulty which can then be specifically addressed in the classroom.

The flipped classroom model reflects the ongoing paradigmatic shift in education from teacher-centered instructional strategies (e.g., lecturing) to student-centered instructional strategies. If designed and implemented appropriately, the flipped classroom can enhance student experiences of learning individually, in large classrooms, and in small groups. Flipping the classroom stimulates the integration of key knowledge through in-class activities involving critical thinking and problem-solving. The active learning modalities are more likely to engage student curiosity, an element essential for professional life-long learning.

Does the Flipped Classroom Actually Promote Better Learning?

A group of physicists have performed the following experiment in a 250-student class [10]. The class was divided into two groups. Both the groups began the semester with instruction through interactive lectures in the exact same manner and with similar instructors. Interim evaluation demonstrated no significant differences in learning. In the twelfth week, one group taught by an inexperienced instructor was presented a unit using a flipped classroom approach. The students were given pre-class reading assignments and take-home quizzes. Class time was devoted to small group discussions, in which each student group was required to complete both multiple-choice questions and short-answer questions. The instructor did support the small group discussions, yet no formal lecture was given. The students in the

control group were encouraged to read the same pre-class assignments, given an in-class lecture reviewing the information in the assigned reading by a highly regarded experienced lecturer, and individually answered most of the questions as a summative assessment. Student engagement was assessed by four observers and was found to be twice as high in the experimental group. On a test given at the end of the week, the students in the experimental group outperformed the students in the control group by more than two and a half standard deviations.

Keh Fooh and colleagues [11] published a meta-analysis examining the educational benefits of the flipped classroom approach. They focused on studies where the students had available pre-recorded lectures to hear at home and excluded publications where written materials were the sole source of pre-class learning with their concern that written materials alone may only be able to present factual information. The investigators reported that students not only expressed high levels of satisfaction when participating in a flipped classroom model but also showed a significant effect on classroom participation and achievement when compared to students in a traditional teaching model. The students experiencing a flipped classroom model positively regarded the use of face-to-face discussion-based activities in small groups and stated the method increased their motivation, enhanced their engagement, and increased their interest in learning the subject presented. About 70% of the students preferred the flipped classroom. Many students mentioned that a "flipped classroom modality" increased the home workload. Some educators understand the time needed to learn the fundamentals of new subjects and have suggested that in a flipped classroom curriculum, fewer "in-class hours" be scheduled allowing for the student time for independent learning. Keh Fooh and colleagues recommend limiting the total length of video lectures to 25 minutes, a length of time consistent with an adult's ability to concentrate during a lecture. Additionally, Keh Fooh and colleagues reported that the instructors found teaching in a "flipped classroom" was more rewarding, as the modality presented better opportunities to provide feedback and mentor students. Figure 4.2 illustrates the outline of the flipped classroom and its correlation with Bloom's taxonomy.

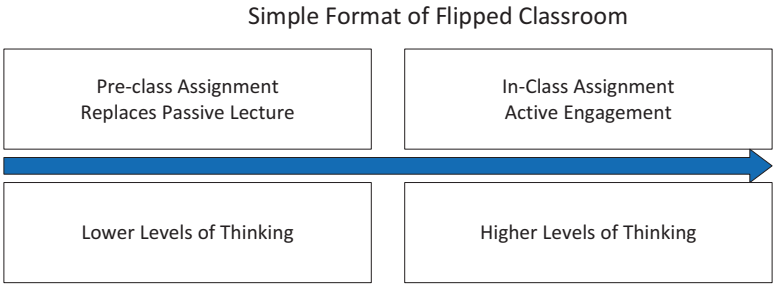

Fig. 4.2 The flipped classroom and its relationship to "lower and higher levels of cognitive thinking"

Is It Case-Based Learning (CBL) or Problem-Based Learning (PBL)?

Case-based learning is a major teaching modality for small groups [5]. After some advanced preparation, students are usually presented with a clinical case as the basis for discovery and problem-solving. Case-based learning is a faculty-facilitated experience. Both students and facilitators have responsibility for completing the learning objectives. During the experience, students are pushed to focus on inquiry and problem-solving. Facilitators are tasked with guiding the conversation back to the main learning objectives if the discussion becomes too tangential.

CBL cases should have a realistic clinical scenario but can be written to emphesize a wide variety of learning objectives to include basic science principles, disease presentations, differential diagnoses, and therapy as well as professional, legal, or ethical dilemmas. The cases can be "straight forward" to emphasize a single entity such as hemoglobinopathies or they can be very complex such as a HIV-infected pregnant woman presenting in labor at 33 weeks who has had no prenatal care and has no money to cover the costs of delivery or the care of a newborn. Because CBL usually requires case closure at the conclusion of the class, little or no additional work is required after class. CBL is considered "guided inquiry" [12].

Problem-based learning (PBL), another approach to small group learning, differs from CBL in several ways. Students are not expected to come to class with specific preparation, and facilitators play a more passive role in guiding the discussion [13]. Often referred to as an "open inquiry approach", the students are expected to define the problem and are more likely to explore tangents. The cases for PBL are usually clinically based but more often less directive forcing the students to struggle with problem resolution. PBL is more likely than CBL to require follow-up learning after the class discussion which may be lengthier due to the non-facilitated discussion and greater discovery approach.

Neither CBL nor PBL include a formal presentation of knowledge, i.e., no lecture of any length. However, given that CBL expects focused preparation, it has become an activity of choice with a "flipped classroom" curriculum. Both CBL and PBL are best done with consistency of small group members whom have developed trust among the members.

Team-Based Learning (TBL)

Team-based learning (TBL) was developed by Larry Michaelson and colleagues in the 1970s as an educational strategy for use in academic settings [14]. It was initially used to help encourage active learning in large groups of students with a single faculty member. The large class is divided into smaller groups working on the same activity and presenting their decisions to the entire class. A single faculty member is able to intervene in small groups if student progress stagnates, and the faculty

member is present to facilitate the final full class discussion. With the increasing educational uptake of active learning across many institutions of higher learning, team-based learning has become a commonly used approach in medical education.

Four elements define team-based learning, which include strategically formed, permanent teams; readiness assurance; application activities that promote both critical thinking and team development; and peer evaluation.

Successful TBL curricula are dependent on the formation of teams. The team members should be selected by faculty who attempt to balance the teams using academic strengths and personal attributes, i.e., all team compositions should be as similar as possible. Dissimilar teams are more likely to have an advantage or disadvantage when completing the group activity and presenting decisions to the entire class. A positive of the TBL approach is the development of the skill set necessary for working as a team member which includes accepting responsibility for one's own work as well as the outcomes of the team's activities. The ability to provide and accept feedback from colleagues, learned early through TBL, is essential for positive participation on future clinical teams. For students to form a cohesive team requires between 35 and 40 h of working together. Therefore, TBL is best structured for semester-long courses.

A TBL session requires that the students study assigned materials at home. In the classroom, the first activity is an iRAT or individual readiness assurance test, a short multiple-choice quiz to assess the individual's knowledge and comprehension of the assigned home study. Prior to learning the answers, the quiz is repeated with the student's small group. This is referred to as the tRAT or team readiness assurance test. Students will receive both an individual mark for the result of the iRAT and a group mark for the tRAT. The correct answers are revealed to the class, and the groups can appeal a question, but must do so based on the materials studied. The faculty facilitator can choose to clarify issues misunderstood by a majority of the class or ask an individual or group who knew the answer to discuss the question. The iRAT is intended to motivate students to read at home and allows an assessment of an individual student's retained knowledge. The group exam necessitates rethinking of the student's own individual answers and inputs a bit of competition within the group.

The TBL small group activities are designed to engage the students in the higher levels of thinking on Bloom's taxonomy including application, analysis, synthesis and evaluation of knowledge. The session may include several activities but most are case-based including clinical, scientific, professional, and/or ethical issues. The activities should address significant problems integrating a studied concept such as the Kreb's cycle with a patient dilemma. Since the team must come to a conclusion to present to the entire class, the outcome question is best written with a specific choice and clear alternatives. All teams are given the same problems, and all decisions are reported simultaneously. During the full class final discussion, the most important teaching points should be clearly delineated (Fig. 4.3).

The addition of peer evaluation became an element of team-based learning to help students understand their accountability to each other. When students work intermittently in small groups without a consistent membership such as during a

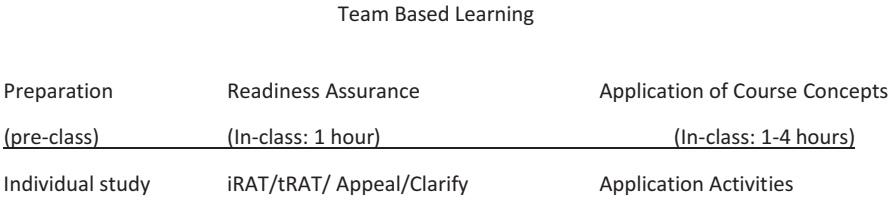

Fig. 4.3 Illustration of the timing and flow of the activities in a team-based learning session

half-day seminar, accountability to the other group members is nonexistent. However, when a consistent group must work together throughout an entire semester, the academic and personal behavior of each individual can either disrupt or enhance the learning and the group environment. The original TBL process proposed that formal peer evaluation be used, given a numerical mark, and included as a percent in the student's final class grade. Others have preferred to use regular group feedback sessions with students receiving and giving helpful comments to each other, with faculty present, citing specific positive and negative behaviors.

Putting Pedagogy into Practice: Flexibility Is the Key

Using teaching methods as classically described may or may not fit the curriculum or the resources at a given institution. The following are a number of examples of how faculty have used the discussed teaching modalities. Following each example is an explanation of how the author has flexed the teaching method to accomplish his objectives.

Example 1 The students in a 4-week family clerkship have a day a week assigned for formal education. The remainder of the week is spent in ambulatory offices caring for patients under the supervision of Family Medicine teaching faculty. The students rotate on Family Medicine after completing their hospital rotation in Internal Medicine. Thus, the medical school has given Family Medicine the task to focus their academic days on chronic disease prevention and management. The students on the Family Medicine rotation are divided into small groups for the academic activities. Before the academic day, the students are given pre-class study material. In the beginning of the day session, they undergo an individual readiness assurance test. Next, the students answer the very same test in groups, followed by a discussion of all the questions on the readiness assurance test. The groups are given several realistic patient cases with specific management questions to answer. The groups present their answers, and all the cases are discussed with a faculty facilitator. A different topic is chosen for each week covering common chronic problems such as diabetes mellitus, mental health syndromes, and rheumatologic issues.

Discussion: Example 1 is a demonstration of using an almost complete TBL approach to clinical clerkship formal education. It places emphasis on pre-class learning, i.e., flipping the classroom, with little or no direct knowledge lecture from teacher to student during class time. It engages students in a "higher level" of thinking with complicated case-based exercises, allowing more sophisticated integration of knowledge placed on a scaffold of knowledge from previous rotations and pre-class reading. Because most clinical clerkships are only 4–8 weeks in duration, it is unlikely that complete team formation has been accomplished unless several clinical rotations continue a similar academic day with different topics but keeping consistency of team membership. The latter may be unrealistic in medical schools where students do not rotate through their required clinical rotations in a stepwise order. There is no peer evaluation in this particular example because the students are on the "same team", for less than 30 h.

Example 2 Dr. K described the former teaching of occupational health regulations [15] as "spectacularly dry material". Changing his approach, he decided to give the students, 1 week before the formal class, online links to relevant laws and materials summarizing the core information in 15 power point slides. Class time was dedicated to interesting discussions regarding the information raised by the students themselves, rather than convey the information. During that week, he encouraged the class to participate in an online question and answer session based on a short clinical scenario of a welder getting sick from welding fumes.

Discussion: Example 2 uses the "flipped" classroom approach with the assignment of pre-class materials followed by in-class discussion without any lecture. An additional case for study is consistent with active home learning after discussion of the basic concepts and student questions.

Example 3 Case-based learning can be used to teach almost any medical topic including ethical issues. Two weeks before a class on late gestational age abortions, all students involved in the class are given a series of case scenarios. Each scenario is assigned to two students working together who will have the responsibility to present the case to a small group of students. The group of two study the scenario and decide what information they need to understand the ethics of the case. The pair then searches for information based on what had been learned in the previous ethics course. The pair of students is expected to execute a web search for professional guidelines, relevant Israeli law, and other sources such as court rulings. During the small group class session, each couple presents their assigned scenario to the group, and the students debate the ethical issues and the applicability of both the laws and the guidelines. The debates allow sharpening the focus of the dilemmas and the moral principles raised by the students.

Discussion: Example 3 demonstrates the use of case scenarios for both out-of-class and in-class active learning. The example is not a "flipped classroom" because no information is given to the students to study before a class in which the session would be active. The example has some elements of PBL because the work asked of the students is not directly facilitated by faculty. The student pair is then asked to

present to a small group of students where debate occurs, again with little faculty facilitation. However, unlike the initial descriptions of PBL, the students in this example begin the work before a formal class. The students are able to engage in this assignment because they have already developed a "scaffold" of knowledge due to a previous ethics course. A CBL approach to similar content would be an assigned pre-class preparation about abortion and Israeli law with the case given to the students at the beginning of a group class. A CBL approach would have a more facilitated discussion with learning objectives to be completed by the end of the class.

Example 4 On Day 1, the students are presented in-class with a complex clinical case and are asked to develop a management and therapeutic plan for the patient. The case is analyzed in small groups, and the students brainstorm about what information is needed to make the medical decisions. The students develop a list of issues or questions to be researched outside of class. Each student has responsibility for one or more of the questions. When the group reassembles, the new information is disseminated to all members of the group and discussion resumes. The objective of the second class, Day 2, is to discuss how to integrate the information into clinical practice and specifically how the new information helps to frame the therapeutics and management of the patient presented in the case. Faculty may be present but intervene rarely in the discussion.

Discussion: Example 4 has more characteristics of PBL as the students are given no pre-class assignments, there is little faculty facilitation, there is student work to be done outside the classroom between Day 1 and Day 2, and the discussion is student driven. It is not an example of a "flipped classroom" because there is no pre-class assignment replacing an in-class lecture of factual knowledge.

Example 5 During the typical third-year rotation on Pediatrics, many patients with seasonal infectious diseases, failure to thrive, trauma from accidents, and asthma are commonly seen. Common illnesses presenting commonly or uncommonly are more prevalent than uncommon illnesses presenting commonly, often mimicking the presentation of common illnesses. The latter are more difficult medical dilemmas for students and attending physicians. The following case is an example. A week before the regularly scheduled clinical conference, the students were assigned to listen to a faculty developed podcast on kidney diseases in newborns. A worksheet accompanied the assignment to help further understanding of the subjects presented. The students were encouraged to use available online textbooks for further study. The worksheet was to be collected at the beginning of the clinical conference. As the conference began, the students were presented with a case summary of a neonate who presented with hyperpigmentation, failure to thrive, and salt-wasting. The baby appeared ill. Further history, physical examination findings, and birth history were given. The class had a faculty-facilitated discussion of the differential diagnosis during which students were free to use handheld electronics to search for unanswered questions. Faculty skillfully guided the conversation to the correct diagnosis of adrenal hypoplasia.

Discussion: Example 5 demonstrates the "flipped classroom" with a CBL as the in-class activity. No lecture is provided, and the success of the in-class activity is dependent on the student's pre-class preparation. The worksheet to be collected increases the probability of pre-class preparation to the standard expected by the course director, and the discussion is actively facilitated by faculty.

Example 6 At the beginning of the pre-clinical trauma course, the students are given a comprehensive question list covering the multiple topics to be covered in the course including brain, abdominal, and multi-organ trauma in addition to shock. Each question includes vital signs and other physical and neurological signs. The questions are multiple-choice questions based on the learning objectives in the course. The students are encouraged to search the medical literature for additional information about topics of interest. During the course, the students are encouraged to use the questions to guide their study. The course is concluded by asking the students the same questions. The students are asked to pick the correct answers and explain the diagnosis and treatment.

Discussion: The teaching method in Example 6 does not demonstrate a flipped classroom, PBL, CBL, or TBL. Instead, it gives the students the learning objectives and knowledge expectations for the course. The questions function as a pre-test and post-test, allowing the students to "fill in the information" from any and all available knowledge sources to include electronic and non-digital texts, online videos, and clinical observations. The questions guide the learning which can be done independently, in student organized study groups, or in a class.

Example 7 Discussions about abortion involve sensitive issues. Each individual brings to the discussion their own personal values influenced by both religious and cultural beliefs. The Department of OB/GYN approached this complex issue using parts of several teaching modalities.

Prior to the class, the students were given reading materials that constituted an introduction to the medical knowledge required for the in-class activity. As the class began, the students undertook a short readiness assurance examination. The students were then given the following case to analyze: A 42-year-old woman with multiple medical risk factors and no social support drops by your clinic after discovering that she is about 12 weeks pregnant. The patient smokes, is obese, and suffers from uncontrolled insulin-dependent diabetes mellitus and hypertension. Metabolic testing shows that her creatinine clearance has decreased and that her serum creatinine and blood urea nitrogen are mildly elevated. She has been hospitalized three times in the previous year with ketoacidosis. She has attempted to conceive for many years and has had five miscarriages. A pregnancy could be detrimental to the mother's life. Should you, as her physician, support her desire to keep the pregnancy, and if so, how would you monitor her progress? Or, because of the overwhelming risks to her, how would you attempt to convince her that she should end the pregnancy?

The class is then divided into two groups—the "keep the pregnancy" group and the "do not keep the pregnancy" group. The students are asked to join either the "for

pregnancy" or the "against pregnancy" group. Each newly formed group is then asked to complete the same, initial examination as a team. After retaking the assessment, each group thoroughly discusses the case and presents their reasons for their decision "to keep" or "not to keep" the pregnancy to the entire class. Students are then allowed to change groups if the opposing side convinced them to change their personal stance.

The debate for or against continuing the pregnancy often raises questions to which the students have no answers. Following the initial full class discussion, the students, usually confronted with incomplete knowledge to consolidate a defensible opinion, end the first in-class session. The students subsequently turn to home study to gather additional knowledge to help them build the medical, ethical, legal, and moral arguments needed to address the dilemma. The second in-class session, allows the groups to reform, discuss what was learned, and develop their final advocacy position. Both the groups present their arguments, and the entire class then enters into further discussion. A faculty facilitator is present to confirm that all relevant knowledge has been brought into the final debate. A concluding discussion is held to examine what the students have gained from the teaching unit and how to generalize an inquiry-driven quest for knowledge to support solving the complex challenges inherent in medical dilemmas involving moral and personal values.

Discussion: Example 7 uses bits of several active learning modalities to approach Values and Knowledge Education (VaKE) [16]. The lesson structure begins with a pre-class assignment followed by a readiness assurance test. This is how a team-based lesson would begin and qualifies as a "flipping" of the passive knowledge background from a lecture to a pre-class assignment. However, the similarity to a classically described TBL quickly ends. A case is presented but only two groups are initiated based on student preference and most likely student personal beliefs, not faculty decided with a desire for "equal and balanced" groups. The readiness assurance test is then repeated by each group. After group discussions, each group presents their initial position on "to" or "not to" support continuation of the pregnancy, and students, influenced by the discussion, can switch groups to "join the other side" of the debate. Switching groups would not occur in a TBL where group consistency is a core element. Similar to a PBL module, the resolution of the issues is not complete, requiring both the groups to continue to find information outside the classroom to support their advocacy positions. (This is not considered "flipping the classroom" because the student activity is student-driven inquiry, not replacing a lecture.) When the two groups return to the classroom, the groups integrate their new knowledge, and each makes a final presentation to the entire class. There may not be any resolution to the case as is the usual ending in a CBL, and there has been little faculty facilitation as in a PBL. However, a final discussion with a faculty member to assure all major medical, moral, and value elements that have been included sums up the module. Example 7 is a highly interactive student-centered learning module with elements of flipped classroom, TBL, PBL, and debate.

Summary

The flipped classroom concept, replacing the in-classroom lecture with active learning modules and requiring the student to be prepared for the active learning with pre-class learning, has opened creative opportunities for students to integrate new knowledge under both direct and indirect faculty facilitation. The pre-class assignments must be developed, so that students can absorb new background information with enough comprehension to progress to the higher levels of thinking as outlined by Bloom's taxonomy. The in-class activities must be created to engage the student with real-life scenarios to fuel curiosity.

All the pedagogical modalities—TBL, CBL, and PBL—can be used without formal lecture teaching. As described in this chapter, the use of mixed modalities is common and can be creatively used to accommodate all areas of the curriculum, preclinically and clinically, and individualized to class size and faculty availability. Thoughtful planning within and across courses, identifying the objectives of each session, and understanding the expertise of the faculty, remain very important in moving from a lecture-based curriculum to an active classroom-based curriculum.

Take-Home Points

- The flipped classroom replaces a passive classroom lecture with student-centered active learning which requires the fundamental knowledge to be learned through pre-classroom study.
- Designing quality pre-class learning assignments, appropriate for a broad array of learning styles, can promote home study.
- It is important to educate the faculty on how to develop both pre-class and in-class quality learning materials.
- Learning modules in all formats should be thoughtfully designed, can be flexed to meet the curricular needs, and should serve the learning objectives.
- Faculty time investment to develop their personal skills in facilitation and their skills in developing active teaching/learning activities and quality pre-class assignments is beneficial for student acquisition of higher levels of thinking and teacher satisfaction.

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Chapter 5
Clinical Teaching: The Bedside and Beyond

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Introduction

Medicine is a profession of caring for people. In the late nineteenth century, Osler introduced the concept of clinical teaching. He took students outside lecture halls into the hospital wards, establishing an appropriate position for the medical students in the ward and the relationship between the hospital and medical school [1].

Bedside teaching translates the former observational apprenticeship into a method of active teaching and learning. The patient's bedside is the best place to demonstrate the entire process of patient care, from history taking, through physical examination and clinical reasoning, to decision-making. Students have the opportunity to observe the tutor role modeling communication skills [2] in the hospital or in the ambulatory clinic. The strength of bedside teaching derives from the learning that occurs while caring for real patients who are able to present a reliable history of their problems. The obvious relevance of the problems presented encourages students to be active participants in their learning.

Teaching at the bedside provides the opportunity to integrate the various skills and knowledge bases essential to medical care. The spectrum of teaching, therefore, is very broad including basic science, communication skills, clinical skills, interpretation of blood and imaging tests, and the social determinants of health. Discussion with the patient's presence brings the dimensions of the individual and his environment into the discussion of illness and disease, the patient-centered approach.

Learning at the bedside allows the students a more intimate relationship with the patient, an experience that contributes to their professional development [3]. Bedside teaching is the best way for modeling professional behavior, evaluating the student's clinical skills, and providing feedback in real time [4].

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N. Dickman, B. Schuster (eds.), *Active Education for Future Doctors*,
https://doi.org/10.1007/978-3-030-41780-2_5

After years of being positioned as the default method of teaching, bedside teaching is reported to be in decline. In contrast to an estimation of 75% use of bedside teaching in teaching hospitals [5] in 1960, it is recently reported that only 8–19% of teaching in hospitals [5, 6] is by the bedside. Often when the curriculum describes teaching rounds in the hospital, the teaching occurs in seminar rooms without the patient present [7]. There is a high level of agreement between teachers on the value of bedside teaching for acquiring and practicing traditional skills, like physical examination and interview, but less agreement and support for bedside clinical discussions [8].

Peters and Cate summarized the reasons for decline of bedside teaching in the hospital noting time constraints, rise of technology, interference to teaching (noise, patients speaking), difficulties in teaching simultaneously in a large group of students, and lack of teaching skills [9]. The situation in the ambulatory practice is not easier: pressure of time, work overload, and commitment of the teacher to his or her private patients make the approach to teaching students difficult [10]. The need to consider patient safety and threat from malpractice claims contribute to the reduction of responsibility for and experience with active patient care afforded to students [11]. Interestingly, research has demonstrated that patients report satisfaction from being involved in bedside teaching and most patients interviewed would recommend it [12].

Ambivalence is reflected in students' views on bedside teaching. Students viewed bedside teaching as contributing to their learning but felt that much of their learning need not occur at the bedside. The students evaluated bedside teaching as a method to develop professional skills and an effective way to learn specific skills, like history taking and physical examination. However, half the students felt that the conference room was the best place for case presentation, while the other students considered the conference room and the bedside as equally good locations for learning [12].

Williams et al. described bedside teaching as a missed opportunity and underutilized. In their research, they discussed this topic in focus groups of teachers. The teachers described barriers that are personal, interpersonal, and/or environmental. The teachers noted they were aware and could monitor the patient's comfort but felt restricted by the pressure of time. Nevertheless, the participant teachers believed that despite the progression of technology, patients still expected to talk with their physicians [13].

Social trends and technological development have contributed to withdrawal from bedside teaching. Verghese describes the distance created by excessive use of a computerized system, best demonstrated by the use of the electronic medical record, describing the patient's role as an "icon." [14]

At the same time, the Internet has brought medical information to every house. People use the Internet to search for information on every field, including medicine. Social media has made a wide range of medical information accessible to everyone in contrast to the past when medical knowledge was reserved for medical professionals. Accessibility of information has changed and increased patient knowledge

and their ability to participate in their own medical care. However, information has also changed their expectations of their physicians and overall healthcare [15].

This trend in communications also influences the doctor–patient roles and relationship [16]. It is not appropriate to have the patient in a passive role when his health issues are discussed during bedside teaching. In a research study to investigate the role of the patient at a bedside teaching encounter [17], the researchers observed and audiotaped 27 bedside teaching encounters. Although bedside teaching took place in the patient's presence, the patients remained passive. The expectation that patients would actively care for themselves [18] should be reflected in the education of the future doctors. Motivation and involvement of patients should be implemented while teaching at the bedside.

Voices are heard from medical educators for returning to bedside teaching accommodating to changes that have taken place in the healthcare system. Coping with the observed decrease in students' clinical skills felt to be due to less practice at the bedside, Draper et al. present bedside teaching as an essential component of medical education that should not be forgotten but should be reinvigorated and accommodated to the present educational challenges. Patients should be encouraged to participate, and students should come well prepared through practice with patient simulations for the bedside teaching encounter [11]. Monrouxe et al. also raised the need to have the patient more active [17]. They pointed at the contradiction between the expectation from patients to care for themselves and the passive role they play in a bedside teaching encounter.

Learning through caring for patients is a very effective way to learn and retain the knowledge base of medicine. Through interviewing, performing a physical examination, and discussing the patient's medical issues, the student acquires knowledge, practices the core clinical skills, and integrates the data through critical thinking to develop diagnostic and therapeutic plans. By presenting the patient to the tutor and a group of students, residents, and/or staff, the student practices how to organize the pertinent elements of the patient's illness into a professional format.

Challenges in Clinical and Bedside Teaching

Medical students formally begin to apply their medical knowledge with experiences in acute and chronic hospitals, acute and long-term nursing facilities, and the ambulatory offices of generalists, specialists, and subspecialists. In all settings, the attending physicians (tutors) are time pressured, and educating medical students becomes an additional burden for a physician already overwhelmed with patient care. In all settings, teaching physicians are concerned with patient confidentiality and student acceptance by the patient and/or their families. Choosing appropriate patients for student evaluation and patient participation in the teaching process can become uncomfortable for the novice teacher. Allowing a student any level of responsibility for a patient requires the teaching physician to feel confident as a teacher and to

develop skills that involve supervision at a distance which may vary with the trust relationship with each individual learner.

Some teaching challenges do vary with the setting. In acute hospital settings, the acuity of patient illness is very significant, and the expected lengths of hospital stays have been shortened. The time for an extended medical student history and physical examination may be unavailable because of the gravity of illness limiting patient ability to communicate, the immediate scheduling of radiographic and/or invasive tests removing the patient from his room, and the changes in medical and surgical procedures which allow for earlier hospital discharge. In the generalist ambulatory settings, the patient visit is short, 10–15 min, but the patient is likely to return for follow-up while the student is assigned to the same office setting. Longitudinal assignments in both generalist offices and subspecialty offices allow students to develop short-term patient relationships, greater insight into the care of patients over time, and the evolution of disease.

Probably the greatest difference in ambulatory vs. hospitalized patients is the difference in who controls the patient care. In the inpatient environment, although patients should have input into the medical decisions, the patient is continuously monitored by medical staff, and the timing of medications, meals, and tests are controlled by the medical staff. The results of a laboratory test completed in the morning can result in a medication change in the afternoon. The care of the patient must fit into the routine of the hospital. In the ambulatory setting, the patient is in control with the choice to follow or not follow the advice of the physician. This difference has tremendous effect on what teaching physicians choose to emphasize in their teaching, when and how teaching occurs, and what students begin to expect of clinical teaching. Additionally, because students usually spend more time during the core clinical year on inpatient settings, they are more likely to feel comfortable with the "control of a patient's healthcare" to be doctor directed and are more uncomfortable with the uncertainty of patient-directed healthcare.

The recognition of the above similarities and differences presents many opportunities for educating learners using efficient and active learning methods.

Time Constraints

Clinical physicians, primary care as well as specialists, are expected to care for increasing numbers of patients in the inpatient and outpatient settings. When asked to teach, clinicians use lack of time as the reason for declining the offer. Students who have been taught the basics of obtaining a patient's history and physical examination, however, can facilitate patient care without undue prolongation of the attending's day.

1. Students can complete the history and physical examination on one new patient while the attending cares for other patients. Although the student needs more time, the attending may see 2–3 other patients before returning to the

student's patient. The attending should preferably choose patients for the students who can articulate a reasonable history and whose medical issues do not require immediate intervention. In the office setting, patients who enjoy the interaction with the medical staff, are seen frequently, and are long-winded are often good for students. The patient may enjoy the attention while the attending avoids a prolonged visit.

2. The presentation of a new patient by a student helps the student organize the medical data obtained and allows the student to think through a differential and propose an intervention. When allowed to present "at the bedside," the attending can simultaneously begin to assess the patient, ask the patient additional questions, review the positive physical findings, and discuss the medical issues simultaneously with the student and patient. When patients are well known to the attending as in continuity specialties, the patients often enjoy watching their physician educate the young colleague and will often participate in the conversation. This process is educational for the learner, integrates the patients into their care decisions, and is time-efficient for the attending.
3. Involving the student in the care of the inpatient, the student can "pre-round" gathering all the laboratory data and the daily patient progress prior to formal patient rounds. Medical students in hospitals with no residents can accept many of the patient care roles of residents but will need increased supervision. In the outpatient office, the student can be asked to gather the interval history on patients and pursue ordered laboratory data to present to the attending before or during the visit with the patient.
4. Once actively involved in patient care, students can be asked to seek answers to questions that have arisen in caring for patients and to report back to the attending. This educates the care team and saves time for the attending physician.
5. Student learning is further maximized and legitimized by writing an appropriate note in the formal medical chart if allowed by local law. In some countries, parts of the student note can be accepted for purposes of attending documentation and billing.

Incorporating the Student as a Team Member

Evidence has demonstrated that patients accept and often enjoy the addition of learners in their care. Learners often spend more time with the patient, particularly in hospital settings, than the attending, and many patients are able to more freely speak with medical students whom they find less threatening. The obstacle is more often the concern by attending physicians who may be uncomfortable with allowing others to participate in a long personal doctor–patient relationship. Some attending physicians are "more protective" of their "private patients." Nursing personnel can also be resistant to the introduction of learners in settings where they have seen themselves as the patient protectors. There are several processes that can ease the presence of medical learners in inpatient and outpatient settings.

1. Develop acceptance by members of the healthcare team—administrators, nursing, physicians, ancillary services, etc. The roles and limitations of learners must be fully vetted with leadership and staff whether it be a hospital setting or an ambulatory clinic.
2. There should be transparency and disclosure of the presence of learners and their roles. Hospitals will usually have a statement about the presence of learners in their consent to treat form signed during the admission process. In ambulatory settings where consent to treat forms are less common, a prominently displayed plaque or certificate disclosing the presence of students and commending the relationship of the practice with the educational institution is appropriate.
3. A learner should always be introduced to the patient, preferably by the attending or a more senior member of the healthcare team caring for the patient. The patient should always have the right to refuse the presence of a learner.
4. The patient should be encouraged to participate in discussions of their medical issues, and the healthcare team should expect increased questions from the patient and the family given the greater access to medical information through the Internet.

Preparing Students and Tutors for Bedside Teaching

Although clinical physicians feel comfortable by the bedside, teaching learners while practicing can be more challenging. To mitigate concerns, both students and tutors should undergo pre-clerkship preparation.

Both students and tutors, whether working in the hospital or outside the hospital, should know and understand the goals of the clerkship and the minimal standards expected by the medical school and the medical curriculum. Not only should the expectations be distributed and available online to all students and tutors prior to the beginning of the clerkship, but the tutor should review the expectations with the student or students on day 1. All rotations should follow a "common core" of expectations such as student behavior and the requirement for absolute confidentiality of patient information. Students should be reminded that tardiness is unacceptable and attendance is required. There does need to be a consistent mechanism for students who acutely require time off, a system that is available every day, 24 h, 7 days a week.

While reiterating the expectations of the medical school, the tutor is responsible for clarifying any expectations that differ from the "minimal core." Some hospitals restrict the wearing of hospital scrubs for staff and physicians to the operating room, delivery room, and recovery room, while others allow hospital scrubs throughout the hospital. However, even if hospital rules allow the wearing of hospital scrubs outside of the procedural areas, individual tutors have the right to ask all their learners to restrict their dress, unless performing a procedure, to culturally appropriate business clothes. In the ambulatory setting, the tutor should also directly address the issue of dress and not presume the student's expectations agrees with his office standards. Studies of patients continue to expect health professionals to appear

"respectful" and "appropriate," but the interpretation of this description differs among individuals, generations, and cultures.

Caring for a patient is a privilege, and the student must be respectful to all staff and patients. Students have the responsibility of fulfilling the learning objectives set forth in the medical curriculum through individual study but must not be allowed to neglect the clinical and educational opportunities and responsibilities in the hospital, in the ambulatory offices, and in the community. The oversight of the learner's progress and activities are usually in the realm of tutor responsibility.

Tutor oversight can be accomplished through two active interventions. Selecting the patients with whom the individual student learner will be most actively involved facilitates the student's stepwise progress in developing his clinical skills and medical knowledge. Patient selection, whether in the hospital or in the ambulatory setting, should be titrated when possible to a learner's needs. Thus, tutors should, early in the clerkship, assess the learner's skill level and knowledge base and select appropriate patients. Selecting patients who are too challenging for a learner's skill level may engender such significant stress that it may obstruct the learning. A seasoned tutor should also consider the diversity of medical problems and psychosocial issues, selecting patients who present with a variety of medical complaints and are representative of gender and racial identifications, economic status, and cultures that reflect the community.

The most difficult and possibly most important skill for a tutor is the understanding of and the skill in delivering feedback to learners. In medical education, feedback would be defined as corrective information about a learner's knowledge, skills, behaviors, and attitudes. The most helpful feedback to learners is timed immediately as possible with the event, is apropos to the specific event, and is discussed confidentially. Feedback differs from evaluation in that evaluation is usually presented at the end of a clerkship, often includes a comparison with other learners (such as a grade), and becomes part of the student's academic file. Feedback can be easily incorporated into daily teaching, correcting missed historical information, missed physical examination signs, or incorrect clinical decisions in a positive, helpful, and nonpunitive voice. Timely feedback should also be used to praise positive learner behavior and patient care.

Feedback Examples

Scenario	Tutor response
Learner failed to ask patient with pulmonary symptoms his occupation	A patient's occupation may be the key to the diagnosis; let's go back and ask him
Student did not feel an enlarged spleen in a young adult with mononucleosis	The spleen is enlarged but difficult to feel unless the patient is lying on his right side; let me demonstrate
The nurse on the floor told the tutor that the student LS was successful in managing an angry patient	LS, well done choosing a quiet voice and calm approach with the angry patient

Teaching Clinical Medicine

Inpatient teaching has traditionally included a "lecture" to a small group of students and residents in a conference room on the hospital ward. Although the topic might cover several important medical issues common to patients on the ward, not unlike lectures in a large classroom, retention of helpful information is low. If the healthcare team includes multiple levels of learners (medical students, residents, pharmacist, mid-level medical providers, etc.), presenting a medical topic in a lecture format to educate all members of the team is a daunting expectation even for a seasoned, senior attending. Additionally, the learners in attendance are more likely to remain passive listeners, thus decreasing their information transfer. Thus, active learning approaches lend themselves to the clinical setting. Many methods also increase the efficiency of teaching while caring for patients. The educational goal for the attending physician is NOT to teach everything but to develop an environment for patient-based clinical inquiry while developing clinical skills and extending medical knowledge. Teaching strategies which are useful for inpatient and ambulatory teaching include the following:

1. Teach in sound bites, i.e., small amounts of information directly applicable to the patient being seen. Often this can be done with the patient and family present. Examples would include demonstrating a new physical examination skill or discussing the results of the recent laboratory data using language understandable to all those present including the patient. Since most physicians will discuss the results of laboratory tests with their patient, doing so with the learners present educates the learners as well.
2. While walking to the next patient room, ask a clinical question apropos to the patient just seen or one apropos to the patient about to be seen. Be careful about confidentiality; the question must be carefully worded without patient names. An attending might ask a third-year medical student when a serum iron level would be helpful or what causes a serum sodium to decrease. The answers are "educational," and if related to a patient, the information has an improved likelihood of being remembered. Teach while you walk.
3. Assign clinical questions apropos to a current patient to be researched overnight and reported on by the learners the next morning during team rounds. Assign every member of the team a question—answers limited to 3 min.
4. At the conclusion of morning team rounds, review 3–5 points of "learning" that occurred that morning.

Two techniques [19, 20] for patient-based efficient clinical teaching which can be executed in both inpatient and outpatient settings have been successfully used with students and residents. Both techniques are methods for presentation of the patient to the supervisor after completion of the history and physical examination. The learning issue using the "1-minute preceptor" is more teacher directed, while the learner is the driver when presenting using "SNAPPS."

Steps in the Two Techniques

1-Minute preceptor (Teacher directed)	SNAPPS (Learner directed)
Get a commitment	*S*ummarize briefly the history and findings
Probe for supporting evidence	*N*arrow the differential to 2/3 possibilities
Reinforce what was done correctly	*A*nalyze the differential: Compare and contrast
Correct mistakes	*P*robe the preceptor by asking questions
Teach a general rule	*P*lan management for patient's medical issues
	*S*elect a case related issue for self-directed learning

Examples Using the Techniques Above

The 1-Minute Preceptor

G is a third-year medical student on the family medicine clerkship. Patient Mr. O.

Mr. O is 79 years old. He has had diabetes for 20 years controlled with an oral hypoglycemic agent and has stable ischemic heart disease. During the past month, Mr. O noted increasing fatigue. His hemoglobin level checked 2 days ago was 10gm/dl, a decrease from the previous level of 12gm/dl 1 month earlier. Mr. O admits to increasing difficulty with physical effort. Mr. O's physical examination is without abnormal signs. Mr. O's problem summary: Anemia, difficulty with effort, and fatigue.

Get a commitment	G—The anemia is the causal factor for the fatigue and difficulties with effort
Probe for supporting evidence	G questioned about how he came to that conclusion
Reinforce what was done correctly	Teacher praised his review of the past laboratory results
Correct mistakes	Teacher demonstrated pale nail beds not noted by G
Teach a general rule	A drop in hemoglobin is not a phenomenon of aging. Thus, there is yet an unknown reason for the decrease

SNAPPS

G is a third-year medical student on the family medicine clerkship. Patient Mrs. D.

Mrs. D is a 42-year-old divorced mother of two adult children who live in close proximity to her apartment. She complains of coughing for the past 2 days.

This cough is productive of yellow sputum, a change from her regular morning cough of 1-year duration. She is a 22-pack-year smoker. She was referred to a pulmonologist but did not go, afraid about the pressure to quit smoking. On examination, Mrs. D was not in respiratory distress and was afebrile. Wheezing and rales were heard in her lungs bilaterally. Heart sounds were distant.

*S*ummarize the history and findings	See above
*N*arrow the differential 2/3	Pneumonia, acute bronchitis, exacerbation of asthma, or COPD
*A*nalyze the differential	Evidence of prolonged smoking with regular cough makes COPD a likely background diagnosis with possible bronchospasm/asthma (wheezing present) concern for pneumonia (productive cough/rales)
*P*robe the preceptor	G asked: How can I decide during the visit if this is asthma or COPD?
*P*lan management	O_2 saturation check, bronchodilators, reevaluate; schedule chest x-ray
*S*elect case-related issue	G chooses to study acute and chronic care of COPD

Learning in the Workplace

Learners have been programmed to believe that quality learning must be done in a classroom. Recently, more educators have begun to honor the importance and quality of learning in the workplace. The following example demonstrates how a student can become involved in the care of an inpatient as an active member of the healthcare team and its implications for active learning and quality teaching.

The Patient: Mrs. Lev is 80 years old and lives alone. She has Type II diabetes mellitus controlled with oral medications. She was admitted to the hospital complaining of fever, chest pain, productive cough, and difficulty breathing for 3 days. She was prescribed antibiotics by her primary care physician but has not improved. X-rays in the emergency room showed pneumonia with pleural effusion. She is accompanied by her daughter.

- The attending sought permission from the patient to incorporate a medical student in her care.
- The attending assigns Yoav, one of the students, to be responsible for Mrs. Lev and introduces him to Mrs. Lev and her daughter.
- Yoav meets with Mrs. Lev and her daughter without other team members in her hospital room. During their meeting, Yoav listens to Mrs. Lev's medical history and her social and family situation. He completes a physical examination.
- Yoav discusses Mrs. Lev's medical issues with the attending doctor. Yoav presents his differential diagnosis and suggestions for workup.

- Yoav sees Mrs. Lev every morning, reads her medical chart, and reviews any changes in her physical examination. In the morning team rounds, Yoav updates the other team members about Mrs. Lev's medical progress and changes in her physical examination and presents the results of new laboratory tests.
- A CT scan of her chest has led to a diagnosis of a lung tumor. Yoav discusses the differential diagnosis and appropriate next diagnostic steps with his attending.
- Yoav educates himself by reading about lung malignancies and reviews how to break bad news.
- Yoav accompanies his attending to observe how the attending discusses the bad news and to be supportive of his patient and her daughter.

The example demonstrates many of the important features for active learning. The student is given a receptive patient who is capable of communicating her problems. The student is responsible to the team for daily reports about the patient. The student is given a chance to present his medical differential and suggestions for workup to his attending physician. The student develops short-term continuity with the patient and her daughter and becomes interested in reading about the patient's problems and how to present bad news. The student is then able to observe the attending physician role model how to deliver bad news to a patient and the family. This example of work-based learning includes practice with clinical skills, patient communication, clinical decision-making, following an evolving disease presentation, reevaluating initial therapies, asking the clinical question and researching an answer, and role model observation.

Summary

William Osler heralded the development of clinical teaching, and Abraham Flexner in 1910 reminded medical educators that students learn by doing. The current enthusiasm for replacing passive learning with modes of active learning has sparked a return to considering how teaching at the "bedside" can be executed effectively and efficiently. Allowing the medical learner to become part of the healthcare team and expecting the learner to shoulder an appropriate level of responsibility, with supervision, for patient care, remains essential to educating the future physician. Learners desire to evaluate the patient independently and present their own conclusions to the supervisor. Learners also find immediate feedback helpful. Current constraints for medical teachers can be creatively overcome through changing teaching techniques and acknowledging that active patient-centered student learning can accomplish the goals.

Take-Home Points

1. Inpatient and outpatient clinical education is best patient centered.
2. Clinical teaching in the inpatient setting is more similar than different to clinical teaching in the outpatient setting.
3. Prepare teachers and learners for the clinical environment.
4. Active learning and teaching techniques such as the 1-minute preceptor and SNAPPS are methods to improve both teaching efficiency and efficacy.
5. Integrating learners into the healthcare team is key to successful inpatient and outpatient experiences for both the learner and the supervisor. Patients are usually very accepting of learners.

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Chapter 6
Assessment of Clinical Education

Anthony Luder

Clinical studies which constitute at least half of the time devoted to training doctors, are the most important part of an MD course. In most countries, the demonstration of the ability to incorporate acquired clinical knowledge and skills in the care of patients constitutes the final step in the completion of a medical degree, entitling the graduate to practice as a doctor. The successful study of clinical medicine requires the mastery of a complex mix of theoretical, practical, and humanistic skills. These span the gamut of Miller's knowledge and behavior pyramid—knowing, knowing how, showing how and doing [1]. The progressive assessment of the clinical student through all these levels is required in order to ensure that doctors have the personal and professional skills and attributes upon which modern medicine depends. This is a formidable task [2].

Clinical medicine is taught and learned in a wide variety of inpatient and ambulatory locations, ranging from hospital inpatient and emergency departments, institutes, clinics, and operating rooms to community centers and doctors' offices. None of these places have teaching or learner appraisal as their priority; rather their raison d'être is the care and treatment of patients. The time a student or resident may spend in any one environment may be as short as a few days or as long as many months. Longitudinal clerkships provide the opportunity for students to place patient cohorts, rather than specific disciplines to be the organizational center of their clinical experience. Longitudinal clerkships of 3 to 12 months have been successfully implemented for selected students in many medical schools with academic success equal to that of classic discipline-based block rotations. Most clerkships are compulsory, but elective and/or selective clinical experiences, which are also important for broadening students' education, have an important role to play.

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N. Dickman, B. Schuster (eds.), *Active Education for Future Doctors*,
https://doi.org/10.1007/978-3-030-41780-2_6

Although the essence of clinical teaching is based on the ages-old apprentice model, much effort is given to the strengthening of scientific knowledge and evidence-based reasoning both for clinical practice and also for research and development. Most students perform their studies in small groups or as individuals. They meet a wide variety of health professionals who inevitably have a broad range of abilities as teachers. As well as learning medicine, the successful student also has to master working within the healthcare system, a skill which some learn faster than others. The student is required to make a rapid transition (the "white coat" ritual) between the safe and sterile academic classroom of the initial years to the real life maelstrom of actual people with illnesses and suffering.

The transition to clinical medicine and the complexities of patient care place inevitable stresses on the students. Theoretical universal knowledge gained in the preclinical stages must be applied to complicated disease presentations in a great broad diversity of individuals often under emotional and temporal pressure. There are also major challenges in communication, empathy, ethics, professionalism, and endurance. These are the backdrops against which students must be evaluated in robust and dependable ways.

Whatever methods are used to appraise students, they must be judged against the following criteria [3]:

- Transparency. Staff and students must clearly know in advance what will be tested, when, where, and how.
- Pedagogic robustness. Testing must be as objective and reliable as possible, in the sense that if the same student were to be tested twice in the same circumstances, the same result would be expected.
- Appropriateness. The testing method should test the aspect required and be relevant. It should be of as high quality as possible. Written examinations should preferably be all new, be original and be carefully written, prepared, edited, and vetted by experienced examiners with time devoted and protected to this endeavor. In practice this high bar is not always achievable.
- Fair. Administration should be strictly supervised in quiet, clean, comfortable, and ordered surroundings.

The best way to achieve all these goals is to use a variety of methodologies and at different times during the clinical curriculum [2]. Prerotation testing primarily examines base knowledge learned predominately in the preclinical curriculum; in-rotation evaluations test performance; and completion appraisal should test both these as well as integrated competencies such as clinical reasoning, clinical judgment, and therapeutic interventions. This will provide the best chance of fair and accurate judgment of a student as he learns and develops over time. The following scheme is a general plan that can be adapted as necessary according to place, time, and specialty.

Prerotation Testing

It is often desirable that a clinical placement begins with the students having a basic understanding of the clinical specialty before the first day. The syllabus should set out clearly what is expected. The students may complete self-instruction by reading selected parts of textbooks or online modules as well as participating in lectures or small group activities such as projects, seminars, or tutorials. Increasingly students have simulated and real-patient encounter experience even during the preclinical period. The implementation of personal portfolios may be useful in many faculties to enable staff and students to keep records and track their experiences, achievements, and learning materials [4]. These are especially important for documentation during longitudinal clerkships.

Portfolios [4]
Portfolios are personal records of data, experience, and achievement kept and updated by the student. They used to be printed but now they are generally electronic. Among the items recorded can be the following:

- Basic course information: syllabus, curriculum, timetables, diaries, campus maps, contact information, lesson plans, exam practices.
- Course materials including reference lists, articles, book sections, data and information sheets, presentations, video and sound clips, pictures, illustrations.
- Patient and procedure records, clinical log books.
- Progress charts: subjects mastered or requiring further study, problems requiring solution, marks or grades achieved, priority lists for study and action, questions for faculty.
- Discussion or chat spaces for interaction with other students and faculty, links to Email and social media.
- Reflection and personal thought.
- Feedback.

Portfolios are essentially private records but the student and staff can define certain parts for sharing with staff or even public view. In some medical faculties, portfolios can be awarded quality grades for completeness and detail. The portfolio can permit teaching staff to make additions such as entering feedback or marks.

In many of the longer traditional clinical rotations, students may have a formative or summative assessment before the placement. This encourages knowledge retention and revision, which will optimize the learning experience during the rotation itself. Written examinations using a form of multiple-choice format are popular for this purpose since they are efficient and robust [5].

Multiple-Choice Question (MCQ) Examinations [5]

Writing Multiple Choice Questions requires patience and time. Questions should focus on core subjects and not peripheral or trivial themes. The level of knowledge or judgement tested should be appropriate for the experience and level of the learner and "copy-pasting" questions from higher-level exams is not appropriate. In general, all questions should be new, but in practice not more than 20% of the questions should have appeared on exams within the past 3 years. The following are some guidelines for successful MCQ's:

- The question root should be as clear and concise as possible, usually not more than 2–3 lines. Only relevant information should appear.
- There should be a mix of difficulty, so that about a third of the questions are hard, a third medium and a third easier.
- The examination should be analysed for psychometric validity and robustness after completion and invalid questions deleted.
- Single best answer (SBA) questions are now most favored since they test clinical knowledge, not the ability to interpret grammar or think inversely, which are skills not being tested by the exam.
- The answer options should not introduce new elements not included in the root.
- The answer options should all be approximately the same in length and complexity.
- It is bad practice to write answers in the negative ("all the following are right except") as this can confuse the examinee.
- Consecutive questions should not depend on the answer of the previous question, since failure in one question will necessarily lead to failure in the next.
- Questions should be plain with one best answer and not include options such as "all of the above are correct" or "none of the above".
- It is important that incorrect answer options are as plausible as possible but not deliberately misleading.
- Questions should not be based on matching a list of options with a list of answers.
- The number of answer options may be 4 or 5 but should be consistent.
- Allow about 90 s for each question and sufficient time (30 s) to transfer and check responses to computer cards, if these are separate.
- Short tests can include 20–30 questions; final examinations may include between 150 and 200 questions.
- In the examiner's copy the correct response should be clearly marked (by bolding or adding a symbol) and a page reference to the course text material appended for later reference, appeal, and quality control.

In-Training Evaluation

This stage is critical since the student can be helped to improve and optimize his experience in real time, while he is still in the rotation and there is time to correct faults and difficulties. It is the opportunity for the assessment of performance in practice or, in Miller's taxonomy, the stage of "doing" [1]. Many ways of evaluation can and should be exploited in order to maximize coverage and minimize bias:

1. Individual and group tutor meetings. The student will have regular tutor encounter assessments during which progress and obstacles can be openly discussed and solutions for problems identified. A summary meeting will take place at the completion of the placement.
2. Student seminars. These provide an opportunity for each student to learn a topic in detail and gain experience in presentation to colleagues, who gain from his efforts accordingly. These should be based on actual patient cases and experiences. The attending tutor will assign a grade based on quality of delivery and information presented.
3. Patient clerkings. Each student will be given the task of periodically submitting full written reports of clerked patients, for example, weekly in a long rotation. The reports should be original work and include a full history, physical examination, problem list, investigation plan, list of suggested and differential diagnoses, clinical and prognostic discussion, treatment, and follow-up plan. These submissions should be carefully read by the tutor or clinical instructor and returned with annotations, corrections, and comments. They may also be used for oral case discussions during which each item of the patient write-up is awarded a mark.
4. Participation in routine activities. The clinical staff will form a cumulative impression of the student's motivation, behavior, appearance, participation, knowledge, skills, insight, and judgment. Examples of activities include rounds, meetings, presentations, clinics, and procedures. The student should be observed at patient encounters whenever possible. The so-called Mini Clinical Evaluation Exercise (mini-CEX) and observed procedure (OP) are structured forms of these evaluations during which a staff member provides formal feedback after an actual clinical task [6]. As many staff members as possible should contribute to this process in order to ensure as nonsubjective a result as possible.

Mini-CEX
The clinical task is pre-prepared and constructed. This might be the examination of a body system, the taking of a specific history or the performance of a task like taking a blood sample.
Observed Procedure
The student is observed directly or indirectly during a clinical experience in real-time with actual patients, such as clerking or counseling a patient.

5. Task list. It is important for medical teaching staff and students to have a clear alignment of expectations before the rotation begins. An excellent way to follow progress is the use of a clinical logbook [7]. The student will be presented with a comprehensive list of medical (and where appropriate nursing or other paramedical) activities and procedures in which they will be expected to witness and participate. This is not designed to be a spectator activity, but the student is expected to know the indication, purpose, dilemmas, and any possible complications of each medical activity and procedure. The responsible staff member will sign off on each satisfactorily completed task. A post-graduate variation of the log book is known as multi-source feedback (MSF). Other faculties might use an electronic 'log book'.

Clinical Log Book [7]
Clinical log books list for the student and staff a record of procedures and tasks successfully completed during the attachment. The student has a staff member sign off on each item completed. These tasks form part of the requirement for completing the attachment. Examples of these tasks vary greatly between different departments but some general ones could include:

- Submission of written patient intakes for assessment, including history, physical examination, problem list, suggested investigations, diagnosis and differential diagnosis, clinical discussion, management, and follow-up.
- A list of on-calls performed.
- Medical procedures observed or performed and understood: births, operations, resuscitations, blood taking, insertion of tubes, catheters, and drains, LP, bone-marrow or biopsy, insertion of venous or arterial lines, point-of-care measurements or imaging.
- Nursing procedures observed or performed and understood: measuring temperature, pulse, oximetry, blood pressure, height and weight; feeding non-independent patients; changing dressings; evaluation of pain; administration of drugs and fluids by different routes.
- Seminars delivered or clinical case-conferences managed.

Table 6.1 summarizes how the competencies are assessed using these multiple methods.

Completion Appraisal

A student learns multiple competences during his clinical studies. His ability to perform the multilayered tasks demanded in medicine is evaluated at the completion appraisal, although there may be intermediate tests as well. In the past, most of the

Table 6.1 Table of competencies and evaluation methods for in-training students

Competency	Tutor interaction	Task logbook	Student case presentations	Student seminars	Participation in routine clinical activities	Written patient clerking notes
Progress and obstacles	✓	✓				✓
Exposure to procedures		✓			✓	
Clinical knowledge			✓	✓	✓	✓
Clinical judgment			✓		✓	✓
Patient integration			✓			✓
Study goals			✓	✓		
Professionalism	✓				✓	

burden of clinical evaluation has been placed on this aspect of testing. Unfortunately, there are still too many examples of inadequate pre- and in-rotation performance evaluation which fail to identify a failing student or provide encouragement to the snail or the stumbler. The result might be an unexpected relative or complete failure at the final testing hurdles, a dispiriting and occasionally devastating experience for the student. For the faculty, the failure might be considered a huge waste of resources. It is clearly incumbent on the teaching institution to provide a system which is based on the methodological criteria listed above.

Four main systems of evaluation are in use in different parts of the world: written, oral, practical, and simulation. In an ideal system, use will be made of all of these options as they each have strengths and weaknesses.

- Written tests are used particularly to test knowledge, clinical thinking, and problem-solving. They can be of different forms, including multiple-choice, multiple-answer, short, and long essay forms. Single-best-answer (SBA) types of multiple-choice tests have proven to be very popular since they lend themselves easily to computerization for rapid marking and psychometric validation analysis, which makes them relatively light on resources. Written examinations can be broadly based and include graphic and pictorial items and online material. On the other hand, creating high-quality tests is a complex and highly demanding process (MCQ tests discussed above).
- Oral tests can take the form of virtual case discussions over 10–20 min during which the student is taken through a structured staged scenario by one or more examiners, and is awarded marks for the correct completion of each stage. This is a demonstration of "knows" and "knows how." Such cases can make full use of graphics, sound, and video clips and any other enrichment that modern technology can provide.

Oral Tests ("Viva Voce")
One or two examiners test the ability of the student to understand a clinical scenario and develop a clinical discussion. The student is given a short one or two-line summary of the case ("a 50-year-old man with a productive cough" or "a 7-year-old girl with abdominal pain"). The student may make notes and is required to ask pertinent questions related to the case and then the case develops with information supplied by the examiner including physical findings, photographs, illustrations, and investigations, according to the requests of the student. The student summarises the problems and suggest diagnoses and management. At the end, some questions may be asked by the examiner regarding the disease process, its treatment, and follow-up. The examiners have a list of ready-made questions they must ask and required answers to evaluate, so that standardization is maximized. A quiet comfortable room is essential and the examiners should give their entire attention to the process.

- In practical tests, the student is expected to complete a defined task under observation ("show how"), which may be direct or remote via a camera or one-way window. Examples include taking a history, performing a partial or full physical examination, or perhaps demonstrating a procedure such as testing a urine sample or performing an ECG. It should be borne in mind that the presence of the observer often affects the performance. However, in the objective structured long examination record (OSLER), a student is typically left unobserved with a real standard or simulated patient for up to an hour and then has a feedback interview with the examiner for another 20–30 min. If observed, the student should be evaluated both on the technical aspects of the task (e.g. by the use of a checklist) and his behavior, language, confidence, structure, fluency, and deportment during the session. In cases in which an actor, standard, or real patient is involved, they should also provide their own feedback using standard rubrics [8].

OSLER [8]
OSLER examinations require planning to ensure that prepared and cooperative patients are available. This can be a logistical challenge for large numbers of students and therefore OSLER examinations are not always appropriate. Patients should be thoroughly briefed and if possible "standard" patients with fixed known physical signs used. These patients can also provide feedback. The fields to be assessed include presentation, physical examination, investigation, appropriate management, and clinical acumen. The student can be left unobserved for 20–30 min to complete the history and examination, since the act of observing can be a confounder for some students. In well-planned and executed examinations, OSLER have been shown to have good validity and reliability.

- Simulation has become increasingly important as an educational and evaluation methodology [9]. It offers a wide range of possibilities using models, manikins, and an almost unlimited range of computerised, virtual, and online technologies. Simulation allows excellent appraisement of "knows how" and "shows how". It has become increasingly used in postgraduate assessment especially in the emergency, trauma, and surgical specialties. Simulation examinations are best carried out in specialized education center which can provide a high-quality observation environment, logistic and timing control, and evaluation tools.
- The Objective Structured Clinical Examination is a system designed to provide exposure to all these examination techniques by the employment of numerous stations. At each station, the student may be tested by a different examiner, using a different method [10]. The greater the number of stations and examiners, the less possibility exists for interference by subjective, random, and extraneous factors, and, therefore, the overall process is more stable and the result more reliable. OSCEs are used both for formative and summative assessments. OSCEs are demanding of time and resources, but their advantages have made them universal since their introduction in the 1970s, and they are now considered to be the most dependable and valid way of performing clinical evaluation in undergraduate and postgraduate settings.

Objective Structured Clinical Examination (OSCE) [10]

- A typical OSCE would include 10–24 stations with each station lasting from 5 to 15 min.
- Each station should examine a specific and focused skill or item, and include itemized history taking using simulated patients, physical examination technique with actors or mannikins or models, clinical thinking, interpretation of images, physiological and laboratory investigations, and report preparation.
- Evaluation can be performed using check lists for itemized skills and rubrics for style and fluency. Both examiners and actors/patients can provide assessments.
- Stations can be duplicated or combined when longer tasks are involved.
- If feedback is provided after the station by an examiner or using a standard "school solution", time should be allotted accordingly. Feedback can also be given after the OSCE. Feedback should be given within a reasonable time and involve details of the student's performance at each station.

- The overall mark is not necessarily an arithmetic average of all the stations; sometimes very poor performances at a number of tasks may fail a student even if in other competences he has succeeded and gained an overall pass grade. Whatever system is adopted, it should be clear to all before the examination.
- Rigorous pre-planning, staff and examiner briefing and real-time logistic control are vital for a successful OSCE. There should be clear announcements 2 min and 30 s before the end of each station and strict adherence to timetables. Typically, there would be a 2-minute space between stations for preparation and thought. Students should be instructed to use the toilet before the examination and that no eating, drinking or smoking is permitted during the examination. The smartphones and computers of students and staff should be switched off or removed. It is common to provide light refreshments if the examination lasts for more than 2 h.

Table 6.2 summarizes the pros and cons of completion appraisal methods.

Table 6.2 Table of completion appraisal systems—pros and cons

System	Pro	Con
Written exams including MCQ	• Test knowledge • Simple to administer • Cheap	• Require validation • Don't test competency
Oral voce viva	• Tests clinical thinking and problem-solving • Can use images and graphics • Resembles real life	• Labor intensive • Difficult to standardize
Practical observation/ OSLER	• Tests actual skills • Real or actor patients can be used	• Time-consuming • Subjective • Logistically complex
Simulation	• Safe—no harm can be done • Tests "show how" • Broad range of technologies available	• Expensive • Require special equipment and setup
OSCE	• Maximizes validity • Multiple stations with a variety of tasks	• Time- and resource-demanding • Labor-intensive

Summary

In this chapter the challenges involved in assessing clinical medical students at different stages of their training have been described. Miller's taxonomy provides a clear framework of progress in the process of learning medicine, and each stage requires tailored methods and techniques of evaluation. Detailed descriptions of these as well as their relative advantages and drawbacks have been described. Common to all systems of assessment is the need for reliability, validity, and academic dependability. It is hoped that the reader has gained a clear idea of the options available and some practical assistance in implementing them.

Take-Home Messages

- Assessment of clinical students should be appropriate for stage and purpose, continuous, transparent, robust, and fair.
- Appraisal techniques include written, oral, observational, practical, and simulation methodologies.
- Portfolios and logbooks are useful tools for continuously following academic and professional progress.
- Different methods may be used at different times, places, and stages of training.
- A combination of evaluation techniques is most likely to provide the highest quality evaluation of medical learners.

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Chapter 7
Medical Humanities and Active Learning

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About Medical Humanities

Medical humanities refers to a multidisciplinary field within medical education that explores contexts and experiences, as well as critical and conceptual issues in medicine and health care, using varied arrays of disciplines from the humanities and social sciences [1–3]. Such disciplines may include philosophy and ethics, law, history, arts, sociology, anthropology, cultural studies, etc. The beginning of the medical humanities field as a recognized teaching and research terrain of medical education is often linked with the establishment of the Institute of Medical Humanities of the University of Texas Medical Branch at Galveston (UTMB) in 1973. During the 45 years that have passed since this inaugural event, the medical humanities field has gained an increasing presence in medical schools, especially those in Western countries. Presently, medical humanities is usually considered a standard component of the educational curriculum offered in medical schools of most Western countries [2, 4–6].

However, with its increased popularity, the actual application of medical humanities in different medical schools has varied considerably, certainly in terms of the disciplines that are emphasized or included in these schools' curricula, as well as its overall framework [1, 6]. For example, New York University and Northwestern University have offered curricula in the medical humanities with a strong emphasis on literature, while their engagement with the history of medicine was quite limited. The University of California, San Francisco, and Harvard University include an emphasis on the history of medicine, anthropology, and/or sociology, but did not offer in their medical humanities curricula literature or religious studies. In addition, the extent and manner in which bioethics and medical ethics are integrated in medical schools vary considerably.

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N. Dickman, B. Schuster (eds.), *Active Education for Future Doctors*,
https://doi.org/10.1007/978-3-030-41780-2_7

Similarly, the framework in which medical humanities programs are implemented is varied as well. That is, medical humanities courses may be defined as "elective" (nonobligatory courses chosen completely at the discretion of students), selective (certain required number of courses/academic points that are selected by students from a larger list of medical humanities courses), or mandatory courses. It should be noted that many of the medical humanities programs use the elective or selective scheme, rather than the mandatory framework. The specific medical humanities program at the focus of the current chapter is based on two mandatory medical humanities and medical ethics courses, one in each preclinical year.

Still, insofar as the goals of medical humanities within medical education are concerned, there is an overall agreement that methods, concepts, knowledge, and insights from one or more of the humanities can be used to explore the issues of illness, suffering, and healing. As David Bernard suggested, the importance of the medical humanities lies in its provision of tools to examine "questions of value and meaning within and around medicine." [7] Furthermore, it is often suggested that by teaching the medical humanities, medical schools may nurture important qualities of mind among future doctors. Such qualities include critical thinking, flexibility of perspective, nondogmatism, ambiguity acceptance, empathy, self-awareness, and self-knowledge [3, 8].

Medical Humanities and Active Learning: Theoretical Linkage

Medical humanities teaching often involves the employment of learning tools associated with active learning. Broadly defined, "active learning" refers to a learning method in which "students participate in the process and students participate when they are doing something besides passively listening." [9] Active learning is supposed to assist students in understanding the subject at focus through promoting their own inquiry, gathering and analyzing data in order to solve higher-order cognitive problems. Key tools or teaching techniques that are used to obtain these goals of active learning include small-group learning and reflections, both of which are also used extensively in medical humanities teaching [10].

Barnes defined principles of active learning, highlighting seven specific attributes entailed in this method of learning, as shortly described below (Box 7.1) [11, 12].

Box 7.1 Principles of Active Learning

1. **Purposive**: Stresses the importance of relevance of the task to the students' concerns.
2. **Reflective**: Emphasizes students' reflection on the meaning of what is learned.

3. **Negotiated**: Presents negotiation of goals and methods of learning between students and teachers/facilitators/guides as part of the learning process.
4. **Critical**: Stresses the idea that students appreciate different ways and means of learning the content, thereby enabling them to examine it critically.
5. **Complex**: Emphasizes the importance of letting students compare learning tasks with complexities existing in real life and making reflective analysis.
6. **Situation-driven**: The need of the situation is considered in order to establish learning tasks.
7. **Engaged**: Real-life tasks are reflected in the activities conducted for learning.

Notice that these principles or attributes of active learning assign key roles to reflective and critical thinking (attribute # 2, 4, 5), even to the extent that the goals and methods of learning may be negotiated between students and teachers (attribute # 3). As such, these attributes appear to fit with key goals of medical humanities teaching as denoted above, namely, nurture critical thinking, self-awareness as well as nondogmatism, and flexibility of perspectives. In addition, the aforementioned attributes also emphasize the need to link and connect the learning tasks to real-life situations (attribute # 6, 7), while also ensuring that the learning tasks are relevant to the students' concerns (attribute # 1). The latter set of attributes seem to correspond with what David Bernard described as a key meta-goal of the medical humanities: providing tools to examine "questions of value and meaning within and around medicine." [7] Hence, the commitment of active learning to stress the connection of learning tasks to real-life situations, while ensuring that these tasks are relevant to medical students' concerns, may be understood as fitting a medical humanities curriculum emphasis on examining questions related to the world of medicine through the lenses of the humanities and social sciences.

The Context: The Medical Humanities Program at Bar-Ilan University

The Faculty of Medicine at Bar-Ilan University (BIU) in Israel is relatively new, established in 2011. The flagship program of this faculty of medicine is a 4-year graduate program in medicine, divided into the preclinical (1.8 years) and clinical (2.2 years) stages. From its inception, the faculty of medicine at BIU has put an emphasis on an integrative approach to teaching medicine at the preclinical stage. That is, instead of teaching the core "traditional" preclinical courses, such as anatomy, physiology, microbiology, etc., most of the courses are focused on either

diseases or processes in the human body. For instance, in the neoplasia course, as students focus on cancer in its different forms/variation, they learn the physiology, pathology, and endocrinology aspects involved in this disease process, as well as some applicable genetic issues. Moreover, even in cases of continuing with core "traditional" courses, such as basic gross anatomy, specific areas of human anatomy are incorporated within other integrated preclinical courses like "brain and mind" and "aging and degeneration."

Consequently, the vision for the medical humanities at Bar Ilan University was an integrative curriculum. The idea, inspired by some other universities including McMaster [13, 14], was to develop a longitudinal integrated 2-year medical humanities curriculum, mainly interwoven within the core preclinical courses. Moreover, the fundamental rationale for designing such a program was to increase the relevance of the themes that would be taught through their linkage to the subject area around which the core medical course revolved. Since most of the medical humanities curriculum is linked to and interwoven within the core preclinical courses, it only made sense to design the medical humanities curriculum as a mandatory one, instead of the common design of such curricula in other medical schools as selective or elective courses. In addition, we thought that a nonmandatory scheme for the medical humanities program at the faculty of medicine of BIU might end up "preaching to the converted." Similarly but with a more limited scope, the medical humanities program at BIU includes small-group discussions in ethics and in emotional processing interwoven into the longer clinical rotations (i.e., internal medicine, pediatrics, gynecology, and surgery). It should also be noted that some fundamental elements of the different academic areas included within the medical humanities curriculum (e.g., philosophy/ethics, psychology, sociology, arts) are taught separately in a 3-day intensive period. The decision to include a 3-day intensive block allowed presentation of the fundamental concepts that were less intuitively connected and, thus, less likely to be successful if integrated into the core preclinical medical courses.

The medical humanities program at BIU aims to nurture among its medical students the following humanistic aspects of medicine: (1) awareness to social and cultural contexts, (2) emphasis on ethical behavior with patients and colleagues, and (3) interpersonal sensitivity. Teaching these humanistic aspects of medicine is grounded primarily on a combination of varied disciplines from the humanities and social sciences.

Table 7.1 presents how key themes in the longitudinal integrated program for the first-year students are integrated within the various core preclinical courses. Please note that the different background colors represent the underlying academic disciplines, as depicted in Fig. 7.1 (e.g., green background for philosophy/ethics/history of medicine, while navy-blue background is used to denote psychology).

For example, at the beginning of the first year, when students are enrolled in the "Public Health" course, they are introduced to the topics of "cultural competence" as well as to the "ethical, political, and financial aspects of the national health budget." Clearly, these two topics are directly related to public health in Israel, whether it's due to the multicultural nature of the country or to the fact that basic health

Table 7.1 Main themes of medical humanities in the first-year curriculum

Theme/Subject	Medical Course
On Culture and Health: Cultural Competence	Public health
Ethical, political and Financial aspects of the national health budget	
3-day MH foundations: ethical, psychological, sociological and art-based perspectives	
Anatomy of Professionalism: History of dissections & the changes in med. professional.	Anatomy
Life and Death, the Living Body vs. Dead Cadavers: an art's perspective	
Emotional processing: Students experiences from & around dissection lab (3 meetings)	
Socialization Processes in the Training of Medical Students and Young Professional	
Eating Disorders: medical, psychological and social perspectives	Bio-energetics
Addictions: Psychological perspective	
Small-Group Discussions led by Psychologists/Social Workers	
The Art of Diagnostics and Empathy: VTS as an observation and technique	Pathology
Ethics, Economics & Research in the relations with Pharmaceutical Industry	Pharmacl.
Stress, Anxiety & Depression: psychological & neurological perspectives	Mind & Brain
Foucault and the idea of madness	
Mental illness and Art	
The Butterfly and the Diving Bell- Film Screening + Written Reflections	
Cultural and religious issues in genetics and reproduction	Genetics, Reproduction & development
On Eugenics and the Israeli genetics information law	
The Cognitive and psychological development of a person	
Ethical and Legal Issues in Late-Onset Genetic Diseases	
"My sister's keeper" film screening and Ethical Issues in Designer Baby	

MH medical humanities

insurance is publicly funded. Later, when students are at the "Anatomy" course, they are exposed to relevant topics from art ("life and death, living body and dead corps") and history of medicine (history of dissections) in order to highlight relevant ethical and sociocultural perspectives related to the subject of anatomy. Finally, and skipping to the end of the first year, within the "Genetics, Reproduction, and Development" course, relevant ethical, cultural–ethical, and psychological themes are discussed. Hence, ethical themes like "eugenics and the Israeli genetics information law" and "cultural and religious aspects of reproduction and genetics" are discussed, along with psychological core themes regarding the development of humans.

In terms of teaching and learning methodology, the medical humanities program at BIU utilizes versatile tools and methods, with an emphasis on active learning. Thus, along with the "traditional" large-classroom lectures, small-group learning is extensively employed with respect to ethics teaching. Almost all classes related to

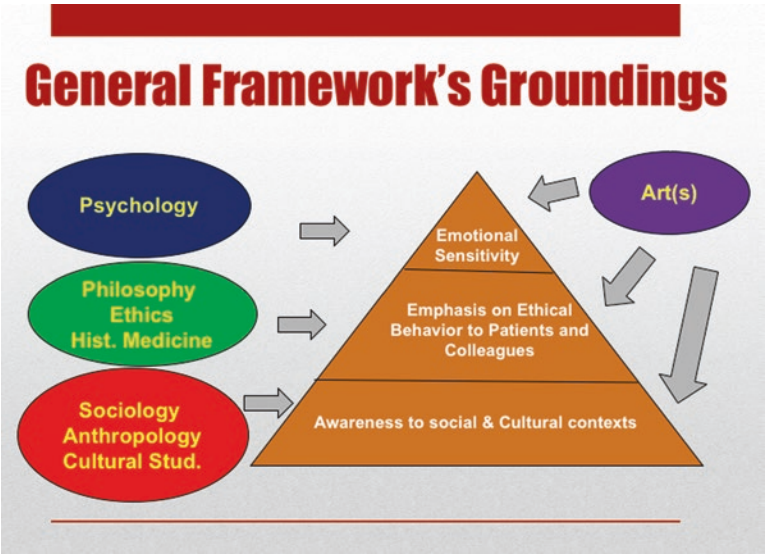

Fig. 7.1 Framework for disciplines groundings of medical humanities

medical ethics at the preclinical stage are divided into roughly two equal parts. First there is an introductory lecture designed to present the main issues and dilemmas encapsulated within the lesson's topic. Then, small-group learning sessions in the form of CBL/PBL (case-based learning/problem-based learning, respectively; see chapter 4 for more details) are held. These small-group sessions, led by external facilitators, are focused on active discussions of either a fictional or real-life case/problem involving some of the key issues and dilemmas presented in the introductory lecture. In addition, small-group discussions related to the emotional/psychological aspects of being a medical student and a future physician are taking place around pivotal topics such as the dissection lab, addiction and eating disorders, cancer care, as well as aging, end of life, and dementia. The emotional aspects of medicine are also given voice via another form of active learning, an individually written self-reflection assignment. Finally, the visual arts are used either in films that serve as triggers for small-group discussions on ethical or emotional/psychological topics and written self-reflections or in the form of visual art images as tools for enhancing visual observation skills and empathy.

"Hands-On" Experience in Integrating Active Learning Within Medical Humanities

How main components of the medical humanities curriculum of BIU are linked to and implement varied aspects of active learning are presented in the following three examples. These examples concern (1) ethics learning in small groups—preclinical

and clinical years; (2) addressing emotional aspects with which medical students and future physicians need to grapple, via small-group discussions and reflective writing; and (3) visual thinking strategies and other art-based learning involving active learning.

Example 1a: Small-Group Learning in Ethics via CBL/PBL—Preclinical Stage

During the preclinical years, the medical humanities curriculum at the Faculty of Medicine of BIU includes small-group discussions regarding medical ethics. These discussions cover as varied topics as cultural competence, ethics, economics and research in the relations with the pharmaceutical industry, eugenics and the Israeli genetics information law, vaccination hesitance, ethics in clinical trials, ethics of triage, and ethical issues in end-of-life care. In the first year of medical school, the small-group discussions are led by trained PhD students who use predesigned fictional cases, while in the second year, the discussions are facilitated by experienced physicians, often bringing true relevant cases from their own experience. Box 7.2 below includes an example of a fictional case used in discussing the topic of "cultural and religious issues in genetics and reproduction," while Box 7.3 shows the basic guiding questions for this topic used by the facilitators of the groups in order to spark discussions among students.

Box 7.2 Ethical and Religious Issues in Genetics and Reproduction: Vignette

R.D., a 38-year-old pregnant woman, comes to the genetic counseling center together with her 45-year-old husband to discuss the results of a screening test done during the second trimester of her pregnancy, ordered because of her age. The screening test shows an increased risk of Down's syndrome for the fetus. The couple is childless, although they are already married for more than 8 years and are longing to give birth to a child. The husband was recently fired from his blue-collar job on an assembly line manufacturing cans, since the factory was closed. R.D. serves as an assistant to a kindergarten teacher and receives a minimal wage. R.D. is advised to undergo amniocentesis (AFT). The test is performed during the nineteenth week of her pregnancy, and the results are received during the twenty-first week.

The results show the fetus has the genetic abnormality consistent with a Klinefelter syndrome. Carriers of this syndrome usually have tall stature, small testicles, lack of development of secondary male sexual characteristics, lack of bodily hair, increased breast tissue, and infertility. The syndrome may also have influence on cognition, resulting in an average IQ of 80–90, along with specific cognitive-driven problems such as language problems and deficiencies in managerial activities (e.g., problem-solving, planning, etc.). It

should be emphasized that there is relatively high variability in the clinical representation of the syndrome across different patients.

Nevertheless, a study conducted in Israel regarding the possible factors influencing the decision to do an abortion given a fetus with sex chromosome aneuploidy (CSA), including Klinefelter syndrome, shows the following results: (a) 80% of such pregnancies were stopped by performing an abortion. (b) When given possible reasons pertaining to the clinical representation of CSA leading for performing an abortion (i.e., fertility, sexual development, malformation, behavioral problems), most of the women participating in the study did not choose any of these reasons. (c) The main fear these women articulated concerned having a child that will be seen as a "misfit" and/or lack of confidence regarding the prognosis they were given.

Box 7.3 Ethical and Religious Issues in Genetics and Reproduction: CBL Guiding Questions

1. (Before reading the case): Each student in the group is asked whether there is a "line" that she/he would not have crossed in performing abortion based on the results of a prenatal diagnosis test, and if so, why? The facilitator offers various results of a prenatal diagnosis such as deafness, mutilation in BRCA 1, 2, "dwarfs," etc.
2. The case is read out loud in the group.
3. Let's assume that R.D. (the woman in the vignette) comes to you as a physician and asks you to explain to her the considerations for and against an abortion. What are the relevant considerations for the described case based on all the facts you were given?
4. What differences may be in reaching a decision whether to perform an abortion or not between a religious and a secular patient and between Jewish, Muslim, and Christian patients?
5. Let's assume for the sake of discussion that, before undergoing the amniocentesis, due to the high risk for Down's syndrome, it is possible to offer R.D. the option to ask the lab not to reveal any information concerning risks for diseases/syndromes related to the X and Y chromosomes.
   (a) As a physician, if it was only up to you whether or not to offer this option to R.D.; what would you do?
   (b) What are the relevant considerations for and against this option?
   (c) Are you allowed legally to offer such option? What's the applicable law?
6. Let's assume you are a religious physician whose religious belief and moral perception instruct you not to perform an abortion in the vignette's described circumstances. How would you act and why?

Such discussions have three main purposes, which are also connected to active learning. First, they are designed to elicit and promote students' application of key ethical and, where relevant, legal themes touched upon during the introductory lecture, taking place right before the small-group discussions. Hence, students are required to move from a passive listener mode during the lecture to an active learner mode, in which they are actively engaged in examining, framing, and discussing key ethical issues involved in the given fictional case, against the backdrop of the theoretical materials presented in the lecture. Second, in the course of identifying and discussing the ethical issues and dilemmas entailed in the fictional case, students are exposed to the varied opinions that their groupmates may have regarding these issues and dilemmas, thereby better understanding the complexity entailed in them. Third, and as part of achieving the former two goals, students practice active listening, since they are encouraged to refer to their classmates' previous relevant arguments. Consequently, the students also have the opportunity to enhance their articulation and framing of the dilemmas and their possible solutions during the discussions held in the small group.

Example 1b: Small-Group Learning in Ethics via Student-Selected Real-Life Cases

During the clinical rotations, discussions in small groups regarding ethical issues are also held. However, there are two primary differences between these discussions and the discussions taking place during the preclinical stage. First, during each of the key clinical rotations, students are requested to identify cases in which patient care or physician actions were viewed as ethically questionable or alternatively as illuminating interesting ethical issues. Hence, instead of being given cases, either fictional or real, by the facilitators of the small groups at the preclinical stage, on the clinical rotations, students are expected to further enhance their identification skills of ethical dilemmas by deciding which cases to discuss. Second, the students are asked to present these cases, linking them to applicable medical ethics principles to illuminate the dilemmas entailed in the chosen cases.

Consequently, the discussions in small-group during the clinical rotations extend and enhance the students' active learning. Hence, active learning takes place not only during the formal sessions that are facilitated by an experienced physician but also through discussions among the students before these sessions. Absent the external facilitator, the students are expected to engage in both self-directed and peer-directed learning which enhance their abilities.

Furthermore, as students are exposed to ethical dilemmas through their own "hands-on" experience, the level of discussions becomes more sophisticated. The students become more comfortable, open, and sensitive to the nuances within these dilemmas and the possible resolutions. That is, the direct exposure to real-life cases of ethical dilemmas and challenges assists students to better acknowledge and

understand the complexity of these cases than when they were presented with predesigned cases at the preclinical stage. Such an enhanced understanding may also extend and enhance the achievement of medical humanities' key goals including nondogmatism, and flexibility of perspectives and empathy, as well as overall critical thinking.

Example 2: Addressing the Emotional Realm via Small-Group Learning and Reflective Writing

Medical students enter a profession which entails interaction with and treatment of other human beings, often undergoing physical and/or mental crisis. As such, acknowledging the emotional realm underlying and influencing both patients and physicians may be a key element in enhancing future physicians' communication with and empathy toward patients, along with increasing the students' self-awareness regarding their own emotions and feelings [15–21].

One key method of addressing the aforementioned emotional realm in at the BIU faculty of medicine is through small-group discussions led by either a psychologist or a social worker. The professionals who are recruited to be facilitators have extensive experience in leading therapy in small groups, and many of them are also teaching/supervising students of psychology or social work in other academic settings. The purpose of these meetings is two-folded. First, the meetings allow students to engage in emotional processing of their own experiences such as in the dissection lab or with observed patient–doctor interactions and relationships. Second, through relating to the students' experiences and their exposures to patient–doctor interactions, a variety of core emotions (e.g., fear and anxiety, anger, joy, etc.) and/or core emotional–behavioral tensions are highlighted and discussed from a psychocognitive perspective

The baseline for the discussions in small groups are either emotionally inciting external triggers (e.g., films, meetings with patients/ex-patients, family members) or the students' own emotion-inciting experiences during their training (dissection lab, first clinical rotation). However, these external triggers or alternatively the students' own emotion-inciting experiences are not simply used "as is" but as a platform for providing the students with an opportunity to express their emotions and feelings directly. These triggers or experiences serve as a backdrop against which the psychologist or social worker leading the group introduces key relevant concepts, theories, or models from the psychological domain. Then, to deepen the learning process of these concepts, theories, or models, they are further examined and applied through the students' reflections of their own experiences. Such so-called cognitive lenses create a "safe zone" for students to relate to the emotional aspects of being medical students and future physicians.

Another tool for addressing the emotional realm is reflective writing. "Reflection" may be defined as "a metacognitive process that occurs before, during and after

situations with the purpose of developing greater understanding of both the self and the situation so that future encounters with the situation are informed from previous encounters" [22]. While, the employment of reflections may vary considerably, in terms of form (written or oral), suggested structure, and main pursued goals, they all remain true to the Latin origins of the term: "to bend" or "to turn back" [22, 23]. Hence, the emphasis is on revisiting a depicted situation (real or fictional) or alternatively an expressed idea, in order to more deeply analyze it, thereby hopefully reaching a better understanding both with respect to the situation or idea and their meanings or implications for the individual that analyzes them. The ability to gain such deeper analysis has much to do with the "processing" performed by the individual engaged in reflecting. However, certainly in reflective writing within medical schools, the direction of such processing may be guided by the teacher or tutor according to the designated goal of the reflection. For example, in a "reflection for learning," the guiding questions employed by the teacher would direct the student to the more cognitive realm, whereas in a "reflection to develop therapeutic relations," there would be an emphasis on the affective or emotional domain [22].

In the BIU program of medical humanities, reflective writing is mainly used to achieve the latter goal, and, therefore, the orientation of these reflections is more toward the affective domain. Hence, while the analysis with which students are engaged is cognitive in its nature, the purpose of the analysis is to touch upon the emotional domain. For example, one reflective writing assignment that students are asked to submit pertains to the film, *The Diving Bell and the Butterfly*.

Supposedly, all students are exposed to the same situations, as they watch the same film. However, each one of the submitted written reflections is unique. There were students who chose as a starting point for their reflection to focus on particular scenes in the film that other students ignored. Some students did not focus on a particular scene in the film as the point of departure for their reflection, but instead centered on a key theme that underlies the whole film in their understanding and used this theme as the anchor of their reflection. Even students who chose the same starting point, insofar as the main scene, they chose to focus on finished writing very different reflections.

Still, the common denominator of both the small discussion groups led by psychologists or social workers and the reflective writing assignments is that they provide students with the opportunity and positive support to help them cognitively and critically relate to the emotional aspects entailed in their future profession as physicians. Thus, these activities clearly emphasize six main principles in active learning (see Box 7.1): (1) purposive, (2) reflective, (3) critical, (4) complex, (5) situation-driven, and (6) engaged.

By focusing the learning on the emotional aspects that concern medical students, whether in their current position as students or in their future role as physicians, the learning entailed in the aforementioned activities is *purposive* in the sense that its relevance to the students' concerns is stressed. In a similar vein, and for the same reason, such learning, whether through small-group discussion or reflective writing, is *engaged*, as it encourages students to relate to their emotions and feelings. This learning is also *reflective*, since it revolves around students' reflection on the

meaning of what is learned. Moreover, in order to reflect on their emotions, the students examine themselves *critically* against the applicable theoretical knowledge (small group discussions) or external triggers like films (reflective writing). Finally, the emotional realm is accessed through particular situations to which students relate. Depicting such learning as *situation-driven*, and using real or fictional situations as the trigger cases, the *complexities* of real life are thoroughly examined.

Example 3: Visual Thinking Strategies and Other Art-Based Learning Involving Active Learning

Visual thinking strategies are a pedagogic approach involving discussions of works of art aimed to encourage learners to look carefully, verbalize their observations and ideas, and interact with others regarding their interpretations of the images [24]. A key common goal for employing visual thinking strategy classes and other visual art-based teaching is the enhancement of visual observation or visual literacy [24–28], which is the ability to "read," interpret, and understand information presented in pictorial or graphic images [29]. Indeed, visual thinking strategies, like other forms of visual arts-based teaching, stress the possibility for different interpretations of the same art image. In fact, works of art teaching, whether in the form of visual thinking strategies or other teaching methods, is understood as potentially contributing not merely to visual literacy and visual diagnostic skills of students but also to their ability for self-reflection, communication skills with patients and colleagues, and an increased sense of empathy [24, 26, 30, 31]. Furthermore, in a recent paper that was published based on visual thinking strategies classes within the medical humanities curriculum at the faculty of medicine at BIU, it was suggested that visual thinking strategies may also be contributing to medical students' tolerance of ambiguity [32].

The BIU curriculum includes some visual-arts based classes, including visual thinking strategies, mainly for first-year students (Box 7.4). There are three main goals for these classes. First, they are designed to encourage students' expression of and exposure to multiple interpretations of what seems to be a single "objective" work of art. Second, art is used as a vehicle to expose hidden social and cultural embedded influences regarding concepts relevant to them as future physicians, such as death, illness, and gender. Finally, contemporary postmodern "provocative" works of art are used in order to encourage students' self-reflection on their own personal and cultural barriers with respect to what is "acceptable" and "unacceptable" for them.

Box 7.4 Description of a Visual Thinking Strategies Class

- The visual thinking strategies session lasts for 90 min and includes five images, mainly images from the modern era depicting situations in which sick, dying, or deceased patients are involved (e.g., *The Anatomy Lesson of*

Dr. Nicolaes Tulp by Rembrandt [1632], *The Doctor* by Sir Luke Fildes, [1891], *Death in the Sickroom* by Edvard Munch [1894], etc.)

- Before showing the images, the lecturer gives a brief explanation regarding the idea of visual thinking strategies and its application in other medical schools (about 15 min).
- Each image is displayed on a big screen. All images are in color.
- Following the primary recommendation regarding the questions that should be asked during VTS visual thinking strategies sessions, the three-question scheme is employed, as elaborated below.
- Students are initially presented with the *first* question: *What was going on in the displayed image?*
- Students are then given 5 min to look, examine, and reflect about each image with their friends.
- Afterward, the students were asked to share aloud their thoughts about what was going on in the art image with the lecturer and their classmates.
- For each depiction offered by a student regarding the displayed image, the lecturer asked a *second* question, namely, "What do you see [in the image] that make you think that?" Other students were encouraged to join in the discussion as well.
- Finally, the lecturer also encourages students to examine *whether they could spot further interesting details in the picture*, thereby following the *third* recommended question for visual thinking strategies.
- The open discussion regarding each image lasts about 15 min.

While these classes are usually conducted in a "large classroom," they are very interactive, occasionally also including *ad hoc* small-group discussions, thereby encouraging active learning among the students. The first and last goals of the art-based classes in the BIU medical humanities curriculum directly correspond with key principles of active learning. Encouraging students to express their varied interpretations of given art images exposes them to the *complexities* entailed in these images. Likewise, such varied interpretations are created out of students' ability to offer *reflective* thinking on the meaning of these images from their perspectives. Finally, through their exposure to their peers' interpretations of the art images, students may further enhance their capability of *critically* examining their own interpretation. When students are encouraged to examine their own cultural and personal barriers regarding what is "acceptable" and "unacceptable," they are particularly *engaged* with the learning activity as it pertains to their own life.

Educational Pearls

Important experience worth sharing occurred in implementing active learning modalities into the medical humanities curriculum at the Faculty of Medicine at Bar Ilan University. There is a Hebrew saying that "one cannot shave himself through

other people's beards," namely, that you cannot really learn through other people's experience. While there is much truth in this statement, it should not preclude colleagues from sharing the insights gained in the process of devising and applying active learning in the medical humanities. That being said, and in light of the aforementioned Hebrew saying, please use the following "educational pearls" in the context of your own medical school.

Dos

1. Carefully choose themes in the medical humanities that can be engaging to the students during their particular phase of study. Active learning is much about *engaging* students in the topics they learn. For example, if students are at the gross anatomy course, and they are asked to submit a written assignment about the history of medicine, chances are that they will be less engaged with such an assignment. However, if the same students will be asked to prepare journals of their reflections and experiences during the gross anatomy course and the dissection lab, such an assignment may be more attractive and relevant for them.
2. Consider mixing together small-group learning with an introduction presented to the entire class in a large classroom. Active learning, certainly when employed in an area of study like the medical humanities with which most students have less experience, necessitates more emphasis on framing and introducing the topics for discussion before sending the students to "actively learn" these topics. For instance, small-group learning of ethics using case-based learning (CBL) may be more powerful and efficient, if there is a short lecture before the CBL, introducing key concepts, questions, and relevant laws concerning the discussed topic.
3. Consider the overall learning framework that your medical school supports or plans to support. While ideally it may be argued that the study of the medical humanities is best done in an active learning environment, the support for such an environment may be more limited due to budget constraints, reduced professional workforce, or time allocated to medical humanities activities. In such cases, think of focusing and prioritizing activities necessitating more intense resources like small-group learning to activities that cannot be as successful in a large group such as ethics discussions and emotional processing. Within these activities as well as regarding other activities, you may be able to further decrease the use of resources in terms of budget and professional workforce, by employing certain forms of active learning (e.g., TBL instead of CBL, flipped classroom).
4. Try to employ varied types of active learning as well different types of activities within each mode of learning (e.g., different types of written assignments [reflections, journals, academic writing activity, etc.], TBL, PBL, CBL, flipped classroom, blended learning). Variety in learning modes and activities allows both "leaders" and more "shy" students to demonstrate their strengths and avoid boredom from repetitive assignments. Variety may also help to strengthen interest in the medical humanities.

5. Remember that active learning is simply a vehicle for helping students to learn and better retain knowledge and skills. Sometimes, an excellent lecture in a large classroom presented by an engaging professor may also achieve these goals. For instance, lectures about history of medicine and certain areas of the visual arts, which are much influenced by the ability to truly deliver the *passion* behind them, might be more powerful and engaging when done by very good lecturers than if students would learn such topics by themselves.

Don'ts

1. Do not assume that simply by putting students together in a small-group environment, the "magic of active learning" will naturally follow. Without either a professional trained group facilitator or detailed guidance regarding matters such as guiding questions, the points that should be covered by the students and how to engage them, the small group environment might simply be a mini-size of the large-classroom passive learning [33].
2. Do not think that if a broad discipline in the medical humanities is used in a small-group setting within one medical school, it would necessarily fit your medical school as well. For instance, some medical schools employ small-group learning of visual arts via visitations to a museum of arts. However, if your school is not situated close by to an art museum, and/or the culture of the general society is more "practical" (as in the case of Israel), spending too much time and energy on visual arts might not be the best plan.
3. Do not confine your engagement with students to the formal domain alone. Informal talks during lunch breaks, morning recess, or even a coincidental meeting outside the campus are invaluable for gathering student feedback and stimulating positive attitudes toward the disciplines in the medical humanities. Such feedback can be very helpful in two important manners. First, it may assist you in enhancing the program and the particular activities (including active learning activities) in future years and sometime even during the same academic year. Second, if medical humanities are taught primarily in order to enhance future physicians' empathy and sensitivity to other people (patients, their families, and colleagues), then what kind of message might the students receive when they do not feel such traits are practically emphasized by those who teach them medical humanities?
4. Do not assume that it is your personal or professional failure if some students are not as engaged as you wished in the medical humanities. There is a good chance that, whatever "magic tricks" you pull in order to engage students in the medical humanities, including heavily investing in active learning of varied forms, still 10–20% of the students will simply not connect to this area of study.
5. Do not limit the preparations of active learning activities in medical humanities to the first year in which they are introduced. Try to make at least certain modifications each year, in order to address applicable students' feedbacks, your own "feel," as well as prevention of a general sense of stagnation in the curriculum

and its employed activities. Such modifications could include modifying cases and/or guiding questions in CBLs, changing the source(s) of written reflections, switching between CBL and TBL, converting some small-group activities to flipped classrooms, etc.

Conclusion

The current chapter was aimed at explaining theoretically and demonstrating from a "hands-on experience" how and why the domain of medical humanities can gain from using an active learning approach. Using the unique longitudinal and integrated medical humanities program deployed at the Faculty of Medicine at BIU, it was demonstrated how seven key principles of active learning come into play in the medical humanities and support the goals such a program pursues. Finally, based on the experience gained at BIU regarding its medical humanities program, some practical tips about the actual implementation of active learning in the realm of medical humanities are shared in the form of "education pearls."

Take-Home Points

- Engaging medical humanities program, using active learning, is an achievable goal.
- It is highly recommended to incorporate diverse themes from the humanities and social sciences, which are directly connected to the core medical courses.
- Sticking with the seven principles of active learning when designing and implementing a medical humanities program will substantially increase its success.

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Chapter 8
The Power of Experiential Learning in Essential but Challenging-to-Teach Subjects

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Introduction

Medical education has undergone significant reforms over the years as it aims to adapt and fit the demands of an ever-changing medical profession. The publication of the seminal Flexner report in 1910 is one such example. The report impacted on both theory and practice, shaping the way in which medical education has been delivered for the past century. It led to the widespread adoption and implementation of the "Hopkins" model by medical schools, rooting medical education in the biomedical sciences and training students in clinical medicine primarily in a hospital setting [1, 2].

The twenty-first century is once again calling for a reform in medical education. Persistent widening of societal gaps, inequities, and the effect of the social determinants of health on access and provision of care have triggered discussions on the competences required of future physicians [3]. Reports such as that of Marmot [4] and the World Health Organization [5] (WHO) call for doctors to not only treat patients but to intervene and advocate against societal injustice. They stretch the borders of biomedical medicine to include, for example, clinical tools together with social prescribing or biomedical research together with community-based research.

The discourse on the role of future physicians and the need for curricular reform have led to additional discussions on different types of pedagogy and their effectiveness in teaching the interplay between social structures and health [6].

The original version of this chapter was revised. The correction to this chapter is available at https://doi.org/10.1007/978-3-030-41780-2_14

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N. Dickman, B. Schuster (eds.), *Active Education for Future Doctors*,
https://doi.org/10.1007/978-3-030-41780-2_8

Teaching medical students about the impact of social determinants on health challenges medical education once again to adapt both theoretically and in practice.

In the theoretical realm, medical education continues to debate the skills and competencies required of tomorrow's doctors. The discussion is reflective of the ongoing deliberations of health services on the widening borders of health care and health-care organizations' remit of care [6]. Deliberations include the extent to which and how health services should address issues of housing, food security, education, and employment, all social determinants affecting the health of diverse patient populations.

In the realm of practice, current discussions challenge existing teaching methods and content on issues such as cultural competence, cultural diversity, social determinants of health (SDH), or health inequities which often present "facts to be known" rather than how these circumstances should be challenged and changed [7, 8]. Traditional frontal lecture-based social determinants of health teaching often leave students grappling with the relevance of these issues to curing disease [7, 8]. In addition, hospital-based training during the clinical years often does not expose students to the effect of societal structures on patient care nor to the struggles of health professionals and health-care services to address the effects of social determinants of health.

Experiential Learning

Experiential learning is a mode of learning that offers some promise in terms of educational reform. It is not new in medical education; indeed, from time immemorial medical studies have been a form of apprenticeship involving hands-on learning. Aristotle's view that "for the things we have to learn before we can do them, we learn by doing them" has formed the basis of medical studies. The difference between hands-on learning and experiential learning lies in the requirement to reflect. The concept of experiential learning, which is better defined as "learning through reflection on doing," is a relatively recent approach within medical education and has reflection at its heart [9].

Definition of Experiential Learning
Experiential learning is the process of learning through experience and is more specifically defined as "learning through reflection on doing."

In 2000, Andresen, Boud, and Choen [10] defined the essential components of experience-based learning which included the following:

- The goal involves something personally significant or meaningful to the students.
- Students should be personally engaged.
- Reflective thought and opportunities for students to write or discuss their experiences should be ongoing throughout the process.

- The whole person is involved, meaning not just their intellect but also their senses, their feelings, and their personalities.
- Students should be recognized for prior learning they bring into the process.
- Teachers need to establish a sense of trust, respect, openness, and concern for the well-being of the students.

Experiential learning could be a key tool to meeting the called-for reform in medical education. Learning through experience is essential for equipping medical students with the knowledge and skills to work toward ameliorating the consequences of societal gaps, inequities, and the effect that social determinants have on access and provision of health care.

This chapter describes the spiral social determinants of health curriculum that was developed at the Azrieli Faculty of Medicine. Combining hands-on experience with reflection and close mentoring, the curriculum can serve as an exemplar of how this and other challenging subjects can successfully be taught and learned.

Bar Ilan Medical School's Social Determinants of Health Curriculum

The Azrieli Faculty of Medicine is located in Israel's disadvantaged northern periphery and was set up with the explicit purpose of improving health for the region's diverse population. More than 50% of the population is from minority populations and includes religious and secular Jews, Muslim, and Christian Arabs, Bedouins, Druze, and immigrants from the former Soviet Union and Ethiopia. Poverty levels are high, and health inequalities are prevalent within the region. In comparison with the wealthier center of the country, there is a shortened life expectancy of 7 years.

Given the school's mission and location, it was essential that students were equipped with the knowledge, skills, and attitudes to work with the diversity of patients they would encounter. Early on in their studies, the students needed to appreciate how social determinants impact on health and to reflect on doctors' roles and responsibilities in addressing social and health inequities. It was clear that these issues needed to extend throughout medical studies and build up to the acquisition of complex clinical skills during the clinical years.

A spiral curriculum was devised which eventually comprised four courses. The process rigorously involved the three stages required in designing any educational course:

- Defining competences for each stage of the students' studies.
- Tailoring teaching methods for development of the desired skills and attitudes.
- Designing assessment tools to ensure that the desired competences were attained.

Figure 8.1 shows the spiral curriculum that ultimately evolved. It comprises four discrete required courses—two delivered during preclinical studies and two through the clinical years.

- *The population health course*: The first course students take upon entering medical school emphasizes the interplay between medicine and society and includes case-based learning and workshops led by religious leaders and tutors with physical and/or learning disabilities. In small groups, students undertake a community project with 1 of 12 nonclinical community-based organizations serving the needs of diverse populations including those with physical or cognitive disabilities, mental illness, the frail and elderly, and disadvantaged cultural groups (e.g., Ethiopian and Russian immigrants). During the project, the students are expected to develop skills in needs assessment, searching for evidence-based interventions, tailoring and adapting an intervention to a population's needs, and evaluating outcomes.

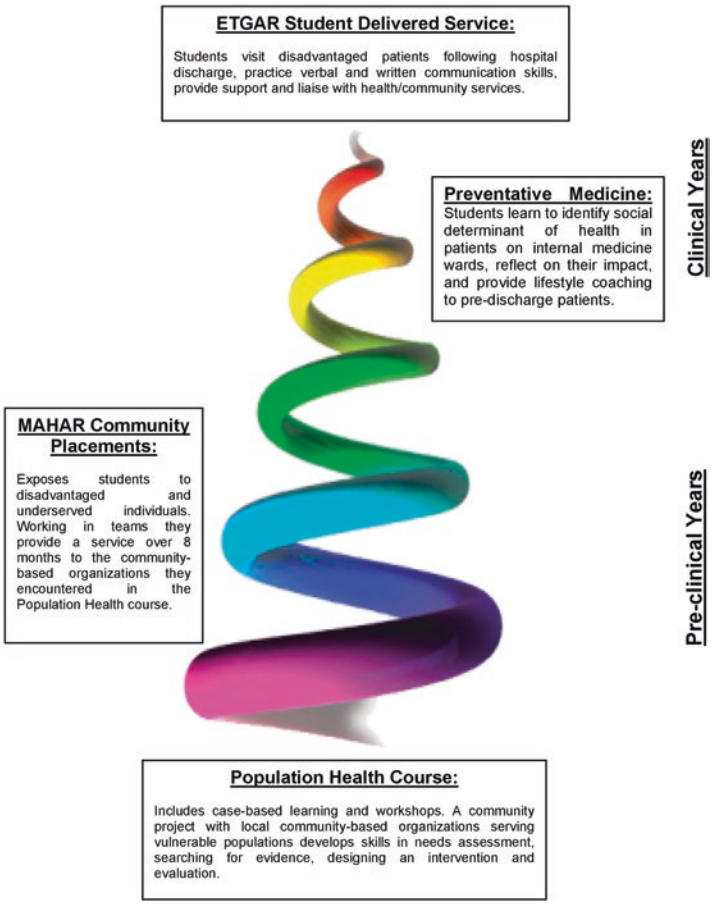

Fig. 8.1 Shows the spiral curriculum. It comprises four discrete required courses—two delivered during preclinical studies and two through the clinical years

- *The community placement course (MAHAR, Social Responsibility in Medicine)*: Builds on the community project developed in the population health course. It provides experience-based learning aiming to expose students to the disadvantaged and underserved in society. The students are required to work for a community organization for at least 4 h per month for a period of 8 months. The aim is to expose the students and help them develop deeper understanding of vulnerable and underserved populations, while providing a service and value to the community.
- *Preventive medicine course*: Embedded in the internal medicine rotation, students learn to identify the effects of the social determinants of health on their patients' illnesses and consider how the social determinants' impact might have been averted and how they can now be mitigated. The students learn to provide tailored coaching to inpatients who would benefit from lifestyle change.
- *ETGAR student-delivered service in the third year of studies*: Students visit disadvantaged patients at home following hospital discharge and have the opportunity to practice their verbal and written communication skills, provide support, and liaise with health and community services.

Development of the Spiral Curriculum

Stage 1: Defining Competencies

Designing any curriculum or course demands the definition of competencies appropriate to each stage of learning. These traditionally are divided into knowledge/understanding, skills, and attitudes. This step was a challenging, demanding in-depth discussion to ensure that the components were indeed appropriate and achievable.

Once agreement was reached, further work was required to articulate precisely each competency and where in the curriculum each competency should be addressed. Table 8.1 shows some of the key competencies that were agreed to be essential components of the spiral curriculum extending across preclinical and clinical years. It was clear that a firm basis needed to be established early, with opportunities for growth in complexity as students developed their professional identity and clinical skills.

Stage 2: Tailoring Teaching Methods to Ensure that Learning Objectives Were Met

In medical curricula that largely rely on lecture-based learning, imagination, creativity, and resources are required to ensure that competencies beyond knowledge are taught. When students come from an environment where most teaching is lecture-based, small-group teaching becomes essential to allow for adequate discussion, teaching of skills, and exploration of attitudes. In the early stages of learning,

Table 8.1 Competencies that medical students needed to achieve across the course of their medical studies

Knowledge about	Skills in	Attitudes
Local communities including the vulnerable, the disadvantaged, and the local minorities Social determinants of health Health systems Health behaviors	• Relating to individuals from varied backgrounds (ethnicities, socioeconomic status, religions) • Identifying social determinants of health • Health literacy of both patient and physician (verbal and in writing) • Supporting behavior change • Assessing health needs • Liaison with community professionals (community organizations, social services, government, municipal, etc.)	• Being open-minded to different cultures • Appreciating the essential role doctors have in tackling health inequity

teacher-prepared in-class exercises and case-based learning can be effective, but as students advance to increasingly complex stages of learning, exposure and responsibility for real patient situations are required (Fig. 8.2).

Table 8.2 shows examples of competencies and the experiential learning methods devised to ensure that they were acquired. Over the course of their preclinical studies, students were required to visit and then work over an extended period of time with a community organization working with youth at risk, immigrants, intellectual disabilities, mental illness, or poverty. In the clinical years, they encountered patients living in disadvantaged circumstances and who lacked health literacy. The "peak" of the spiral involved visits to needy patients' homes after hospital discharge in order to communicate medical information in writing and verbally and to liaise with community services as necessary.

Stage 3: Designing Assessment Tools to Ascertain whether the Desired Competencies Were Attained

"Assessment drives learning" is a paradigm that is key to the success of any course. If the aim is to ensure that students attain an appropriate level of competence for defined skills, it is essential that their competence is examined. Working in an environment where multiple-choice tests are the principal way that students are assessed, the challenge was introducing new and appropriate assessment methods to know whether the goals were achieved.

Figure 8.3 shows the variety of assessment methods employed over the course of the spiral curriculum. Table 8.3 provides more specific detail on how the competencies shown in the previous section were assessed. Assessment of experiential learning inevitably demands human resources as multiple-choice examinations are

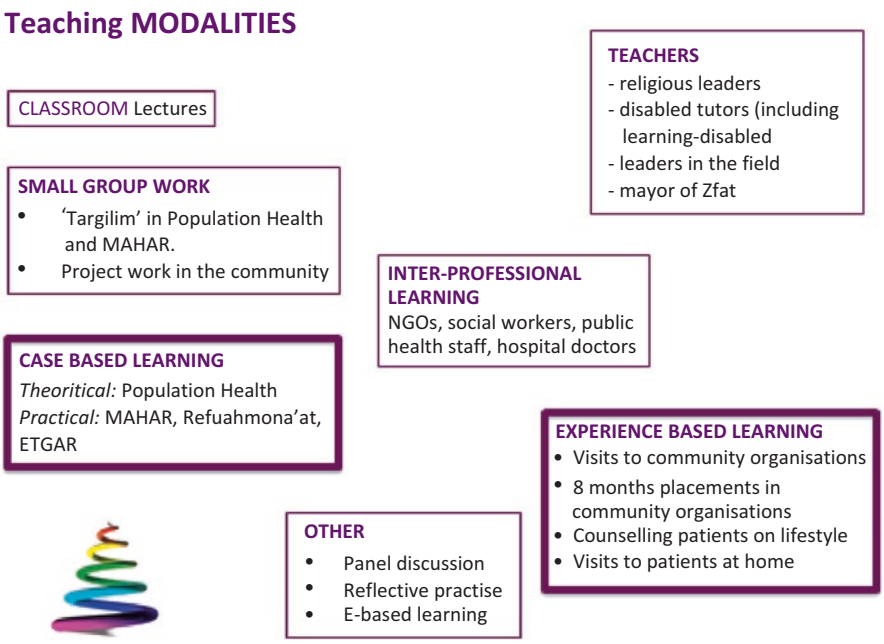

Fig. 8.2 Illustrates the variety of teaching modalities that were eventually employed in the Social Determinants of Health spiral curriculum

Table 8.2 Examples of competencies and the teaching methods employed in the spiral curriculum

Competency	Course	Experiential learning method
Understanding the needs of disadvantaged populations and the role of the voluntary sector in addressing them	Population health course	Visits to a community organization to understand their work, conduct a needs assessment, and design an intervention to meet the needs of their clients
Communicating effectively with vulnerable individuals	MAHAR community placement course	Weekly visits over 8 months to a community organization to implement the intervention developed in the previous course and to work with individuals served by the organization
Identifying social determinants impacting on hospitalized patients' health and how they influence disease development, prevention, and outcome	Preventive medicine course	Taking a detailed social history on internal medicine patients focusing on determinants that affected the development of the disease, needs following discharge and how the disease might have been prevented or its progression slowed
Identifying and addressing social determinants impacting on patients' health and health system barriers	ETGAR student-delivered service	Conducting home visits to needy patients following discharge from hospital and exploring the home and social circumstances and transition between hospital to ambulatory care
Communicating effectively with patients from diverse backgrounds who have poor health literacy	ETGAR student-delivered service	Writing simplified summaries for discharged patients and explaining the hospital care and medical recommendations at a home visit

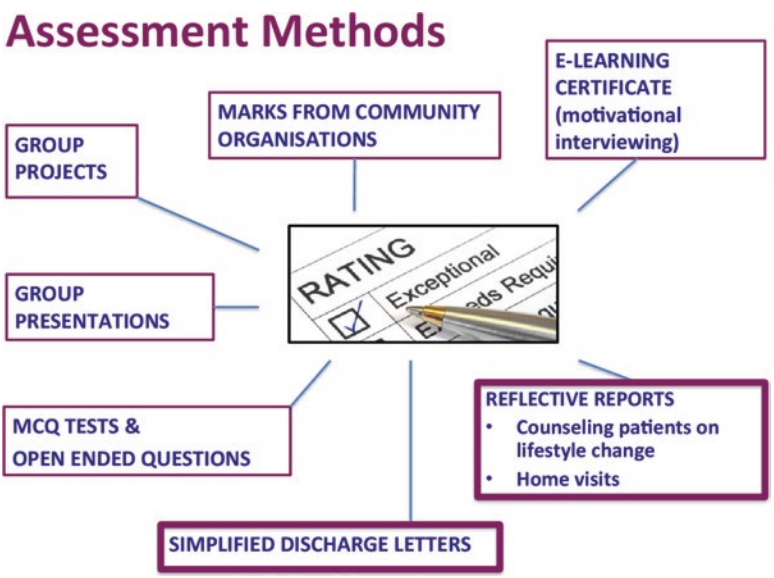

Fig. 8.3 Displays the variety of assessment methods employed over the course of the spiral curriculum reflective reports and simplified discharge letters are highlighted as they were the most reliable in assessing the practical skills

unlikely to capture the quality of the experience, and competencies acquired, although if well written may demonstrate the adequacy of thinking processes.

Challenges and Lessons Learnt from Developing and Delivering a Social Determinants of Health Curriculum Utilizing Experience-Based Learning

There is no question that implementing a curriculum based on experiential learning is a challenging task. Working in a teaching environment which is still largely based on lectures and multiple-choice question format for assessment, changing the pedagogical approach is not easy. It requires winning the hearts and minds of both faculty educators and students.

Students initially oppose the curriculum preferring a disease-centered approach to learning. They are apprehensive as to the contributions of such experiences to their medical education and at times voice that it interferes with their "real medical" studies. Yet over time, the meaningful experiences gained working in the community and with needy patients impacts students' perceptions of the relevance of this curriculum. After 6 years of implementation, the student feedback demonstrates the value of experience-based learning.

Table 8.3 Examples of competences and how students were assessed

Competence	Course	Assessment method
Understanding the needs of disadvantaged populations and the role of the voluntary sector in addressing them	Population health course	Group presentations and report on visits to a community organization and the proposed intervention involving reflection on the social determinants of health and health needs
Communicating effectively with vulnerable individuals	MAHAR community placement course	Group report on the experience involving reflections Examination with brief open-ended questions seeking awareness and understanding of their clients' social determinants of health and health literacy
Identifying social determinants impacting on hospitalized patients' health and how they influence disease development, prevention, and outcome	Preventive medicine course	Presentation of patients to the student group assigned to the same medical service as the basis for a facilitated group discussion
Identifying and addressing social determinants impacting on patients' health	ETGAR student-delivered service	Written report on the home visit which was analyzed for identification, awareness, and understanding of SDH
Communicating effectively with patients who have poor health literacy	ETGAR student-delivered service	Analysis of students' simplified discharge summaries for ability to translate medical information and concepts and to tell the hospital narrative in simple clear language

The majority of the students have acquired the desired competencies to a satisfactory level and showed improvement in their skills over the 4 years of their studies. The students demonstrate the ability to identify the social determinants of health in the circumstances provided, have improved their written and verbal communication skills with patients who lack health literacy, take appropriate action when required, and have showed that they realize the importance of the social determinants of health in their future work as doctors [11].

Box 8.1 Examples of Student Feedback

"It was gripping and moving to experience patient care outside of a clinic, in a place where the patient is master of his autonomy and strength. How important it was to get a glimpse of what happens behind the scenes of medical instructions." (Student Age 29, M).

"The project opened me to a new world of medical care beyond medical treatment alone. The openness that developed between me and the patients I visited was profound and beautiful. I learned a great deal about them, and

more so about myself and the doctor I want to become. I want to listen, and I want to get to know, and I want to somehow, despite the limitations of the existing system, to give my patients the feeling that they are the whole world, and only in this way can we develop plans by which he will believe in his treatment." (Student Age 28, F).

Communication and Liaison

In the preclinical years, our experience-based learning is located primarily in the community. Community organizations are eager to work with the medical school and welcome medical students to participate in their work. However, working with professionals outside of health services requires a great deal of liaison, and expectations of the community organization do not always coincide with those of the medical school. Community organizations have a tendency to see students as volunteers, whereas expectations of the medical school faculty relate to the acquisition of relevant competencies. Despite this potential tension, student feedback supports the outcome of enriched learning through working outside of the medical institutions. One way to ensure good communication is to visit with community colleagues in their settings and invite them to teach in the medical school which also demonstrates the respect the medical faculty has for their expertise.

Time and Resources

Experience-based learning requires time and resources. Setting up and maintaining the network of learning experiences are time-consuming. Inevitably, much of the teaching needs to be in small groups which requires dedicated and skilled tutors and adequate facilities. The assessment of written work and presentations is far more demanding than setting and marking MCQ examinations and again demands tutors and time. Negotiating the necessary time and resources can be difficult and is likely to require confrontation with medical school administration and management. An equal battle may be required to convince students that experiential learning is worthy of their time.

Developing Teaching and Assessment Tools

One of the more creative aspects of developing experience-based courses is devising tools to evaluate whether learning has occurred and competencies achieved. Reflective notes and reports were not particularly welcomed by students, but the importance of writing for patients in simple language was well recognized, and the

"translation" of the hospital discharge letter for patient use was seen to be of value. Given the burden of marking written summaries and giving feedback to students, efforts are required to ensure that there is consistency across different tutors in marking.

Special Concerns

Experiential learning inevitably involves students working outside the health-care environment. While this is enriching, some precautions need to be in place. The first issue relates to safety. Home visits are a vital part of the curriculum, and the impact is likely to be greater if students carry out the visit alone. However, for safety reasons we suggest that students conduct the visit in pairs. Another issue is the concern that students might inappropriately take increased responsibility for a health-care situation without senior professional support. This was addressed proactively during training, and tutors' availability to discuss concerns was emphasized. Careful analysis of reports showed that the students did not overstep the mark. Most of the actions the students independently took were in the realm of patient guidance and education, and they sought advice from responsible seniors when they were concerned about the patient's medical condition or social circumstances.

Opportunity

Experiential-based learning is not only of relevance and importance to those studying medicine but to students of allied health professions such as nursing and pharmacy. Educators should consider experiential-based learning when designing interdisciplinary training exercises. Integrating experiential-based learning into curricula with interdisciplinary student groups focusing on subjects such as the social determinants of health may assist in averting communication errors due to inadequate understanding of colleagues' skills and knowledge. Through working together in community settings, health professional students can develop a better understanding of the health-care team and how teamwork can be more powerful in resolving the effects social circumstances have on issues such as adherence to treatment.

Challenges to implementation of experiential learning as well as difficult-to-teach subjects are minimized and the possibility of success more likely if there is full support from the senior administration. If the dean is present to help introduce the importance of experiential learning and courses that are organized to emphasize the biopsychosocial aspects of medical care such as the social determinants of health, students are more likely to see them as relevant and important.

Conclusions

The current chapter sought to relate and contribute to the ongoing discussion of medical education in the current and future eras. Medical education must broaden its borders and educate students throughout their studies on the interface between medicine and society. This entails not only adding knowledge-based courses to the curriculum but reforming traditional pedagogy through experiential-based learning. The Social Determinants of Health spiral curriculum described offers a comprehensive yet modular example for teaching medical students through experiential-based learning. While implementing a curriculum in its entirety may be an overwhelming task, the modular approach allows a faculty to enhance or implement a curriculum with specific modules while building the curriculum over time.

Take-Home Points

- Experiential learning offers an effective way to inculcate skills and values into the medical curriculum.
- Experiential learning is an effective way to ensure that students acquire the knowledge, skills, and attitudes to integrate the social determinants of health into their medical practice.
- A modular curriculum is recommended to allow implementation over time.
- Any devised curriculum must also include assessment.
- Considerable time and resources are required to develop and maintain the quality of experience-based learning and assess whether students gain the competences desired.

Glossary of Courses

Population Health course: The first course upon entry to medical school emphasizes the interplay between medicine and society and includes case-based learning and workshops led by religious leaders and disabled tutors.

MAHAR: The Hebrew word "tomorrow," derived from the idea of training future doctors to be socially accountable, is an acronym for social responsibility in medicine. The course focuses on community placements in which students are exposed to disadvantaged and underserved individuals.

Preventative Medicine: Students learn to identify SDH in patients during rotation in internal medicine wards, reflect on their impact, and provide lifestyle coaching to relevant patients.

ETGAR: The Hebrew word "challenge," representing the challenge of transition in care, is an acronym for health literacy, support, and creation of a bridge between medicine and the community. The course is a medical student-delivered service for disadvantaged patients upon discharge from hospital to home.

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Chapter 9
Crossing the Cultural Chasms

Bishara Bisharat

Introduction

When educating the next generation of doctors, it is imperative to emphasize the awareness of how culture can affect health. Doctors with higher cultural intelligence will be able to adjust their approach to the cultural background of each patient and provide more empathetic and compassionate medical services. This will increase patients' satisfaction and adherence to medical advice. It will also improve the doctors' sense of achievement, because the doctor will be able to combine clinical practice with the art of medicine. However, intercultural medicine is a difficult subject to teach as a theoretical topic, particularly to young people without practical medical experience.

Medicine is commonly considered a universal profession. There is no difference between the blood of people with different skin tones, and any medical treatment or diagnostic procedure should be identical for everyone. Today, most of us are aware that we should approach different people in different ways. For example, the approach with an educated, high-class woman in Scotland may be different from the approach with a poor widow in southern Greece. The therapeutic approach to back pain and treatment for diabetes should be tailor-made for each patient, taking cultural sensitivities into consideration [1–3].

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N. Dickman, B. Schuster (eds.), *Active Education for Future Doctors*,
https://doi.org/10.1007/978-3-030-41780-2_9

Example 1:Delivering Bad News

At a communication workshop for interns on the topic of family medicine in the oriental culture, a simulation was held on how to deliver bad news about cancer to a patient. The actor who played the doctor acted according to what he had learned from the Western medical literature [4]. He had learned that after preparing the patient, the doctor should say the word "cancer." Many of the workshop participants then passionately described their own experiences with family members and argued that this strategy can have a negative effect in their culture. The workshop participants asked whether this approach, which may be suitable for some Western countries such as Britain or Germany, would be appropriate, for example, for people living in Jordan or Greece.

Doctors, let alone interns or students, cannot be expected to know all the cultures and customs, which include all the different meanings of words and expressions, or the differences between the various traditions. However, physicians can achieve a higher level of awareness and understanding that some words and actions may have different meanings in different cultures. Healthcare providers can become more sensitive, ask questions, and avoid judging a patient's behavior according to one's own culture and worldview. A person can develop cultural sensitivity and understanding of the cultural history of a patient's illness.

Example 2: Different Observations/Different Conclusions

The Elephant Story: An Indian Parable

"Once upon a time there was an Indian village, whose entire population was blind. One day, six people from that village went out for a walk, and encountered a man riding an elephant.

The villagers had heard about elephants before, but they had never come close to one. They now asked the rider for permission to touch the elephant so they can go back to the village and tell everyone what elephants look like.

The rider agreed and led each of the six villagers to a different part of the elephant's body. The blind men touched and felt the animal until they knew what an elephant looked like. Excited, they returned to the village to share their experiences. The villagers gathered around them to hear about the elephant.

The first man, who touched the elephant's chest, said: 'Elephants are like a big, thick wall.'

'Nonsense,' said the second man, who had touched the elephant's tusks, 'Elephants are rather short and round. They are very smooth and sharp. I wouldn't compare an elephant to a wall, but to a spear!'

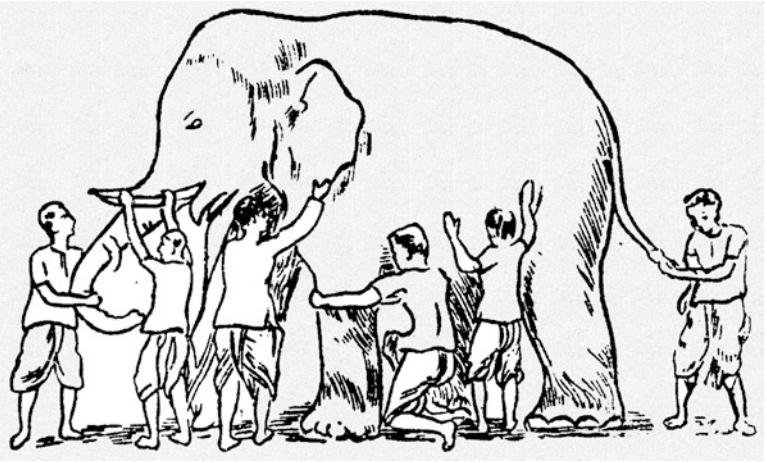
The third man, who had touched the elephant's ear, disagreed. 'Elephants are nothing like walls or spears; they are like a huge leaf made of thick wool carpet. It moves when you touch it.'

'That's wrong!' said the fourth man, who had touched the trunk. 'I'll tell you what elephants look like—they look like a giant snake!'

The fifth objected. He had touched one of the elephant's legs and concluded: 'Elephants are round and wide like a tree.'

The sixth blind man, who had gotten to ride the elephant's back, protested, 'None of you has described the elephant correctly! It is like a big mountain that sways from side to side!'

To this day, the blind men continue to argue, and nobody in the village knows what elephants look like. Such misunderstandings are common when people argue; they do not understand what the other party means and engage in arguing about an elephant when none of them has actually seen it in its entirety or touched its whole body."



Some doctors have become accustomed to the reductive approach to diagnosis and/or therapy treating a certain organ of the body as the cause of the patient's symptom as the blind men in the story above. This approach is opposite to the holistic approach, which takes into consideration the possibility that a physical symptom, such as vertigo, is not necessarily related to blood vessels or the thyroid gland but could also have roots in the patient's distress, aspirations, family relations, language, and culture.

The psychosocial model of medicine [5], in combination with cultural awareness and sensitivity, is the key to crossing the cultural chasm. This model by George Engel would be incomplete without cultural awareness, because one cannot understand the mentality of an individual or a society without understanding their culture. Students and interns will learn that an illness has a biomedical history as well as a psychosocial and cultural history and that both are essential for diagnostics and treatment.

Moving toward Cultural Competency

Learning Goals for Developing Culturally Competent Healthcare Providers

1. Learners will acquire knowledge about the definition(s) and essence of culture.
2. Learners will enhance their awareness to the existence of other cultures in their country and to the need to familiarize themselves with these cultures.
3. Learners will comprehend the connection between culture and social disparity.
4. Learners will enhance their sensitivity to the varied forms of dressing, communication, and behavior employed by different cultural groups.
5. Learners will understand the important role culture may play in the health of people, their interpretation of their health status, as well as the utilization and cooperation with healthcare providers.
6. Learners will be familiarized with the important role that culturally competent health professionals have in providing appropriate healthcare and improving quality and outcome to culturally diverse population groups.
7. Learners will be exposed to the important role that cultural awareness and competence have in improving the health literacy and cooperation of patients.
8. Learners will know how to integrate the relevant cultural background of the patient into the psychosocial model, as a basis for a holistic approach in clinical practice.

The above goals are also linked with the "levels of cultural understanding" as they are depicted in Fig. 9.1 below. By achieving goals 1–3, the learners will acquire the first level of cultural understanding (i.e., cultural awareness), while goal 4 revolves around the second level of cultural understanding (i.e., cultural sensitivity). In a similar vein, achieving the third level (i.e., cultural appropriateness) is based on realizing goals 5–7 since they inform the healthcare provider about the importance of behaving in a culturally appropriate manner toward patients. Finally, goal 7 echoes the essence of the fourth level of cultural understanding (i.e., cultural competence), as both of them relate to the healthcare provider's ability to integrate the cultural background of patients into the psychosocial model in order to achieve a holistic approach. Notice that the highest level of cultural understanding (i.e., cultural intelligence) does not connect directly to any of the above specific goals. Rather, this level reflects the implemented aggregation of all the other levels together.

It is important to emphasize that the different levels and their entailed goals are established over different training stages, rather than merely during medical school. The first two stages (i.e., cultural awareness and sensitivity) should indeed be included in the curriculum of medical students. However, applying and integrating goals 5–7 into cultural appropriateness seems to be more relevant for the postgraduate stages. Similarly, the ability to achieve fully the fourth stage of cultural understanding (i.e., cultural competence) should be expected only from more seasoned and accomplished physicians who already passed the training stage.

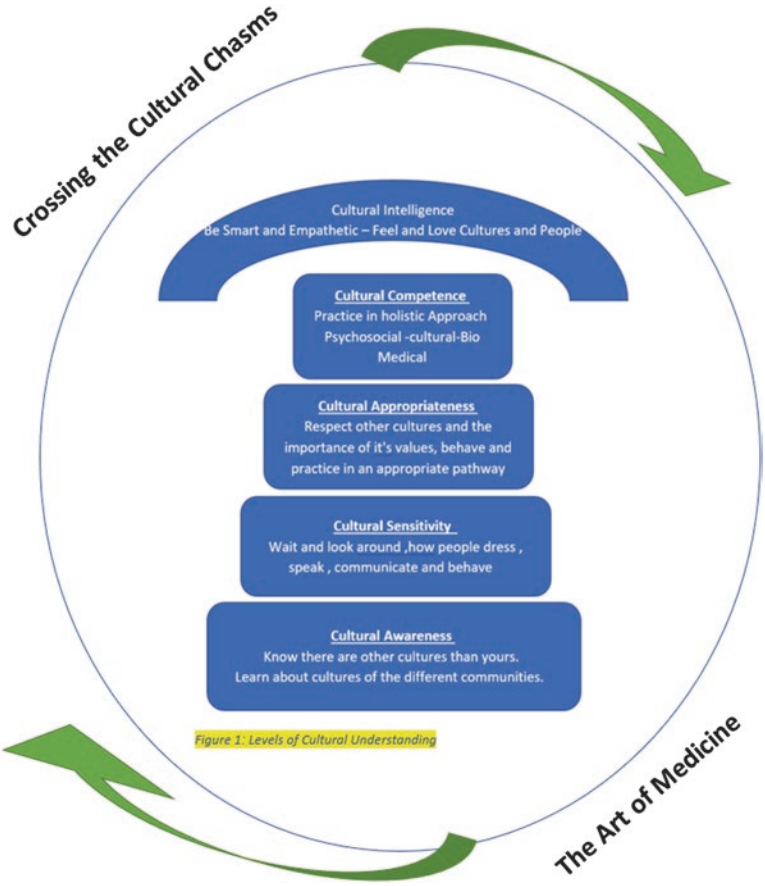


Fig. 9.1 Levels of cultural understanding

Example 3: Patient-Centered Cultural Competence: Holistic Approach

A Story from the Galilee: Body, Soul, and Culture

I didn't know how to digest Ichlas' condition. For several months, she came to the clinic over and over again, complaining of abdominal pain and vomiting. Despite her vomiting she did not lose weight, and her blood tests and various imaging tests (including endoscopy) showed no anomalies. She also received a wide range of old and new medications, but nothing helped, and Ichlas continued to suffer from pain and vomiting.

When we met in the early 2000s, she was about 30 years old, married with three children. A polite, reserved woman who always maintained a tidy appearance,

wearing simple and clean clothes. Every time she visited the clinic, she asked me for another test or consultation. She did this gently yet determinedly, in a way that made it very difficult for me to refuse—as I knew I should. To my aid came the stethoscope, a physician's best friend when struggling to deal with a patient. It's a simple tool, representing physical examination and medical attention, but it also allows the doctor to listen to the heart, breathing, and abdominal sounds. It's easier to listen to the patient with a stethoscope, and it also seems to make it easier for the patient to speak, as if her words are medically filtered through the stethoscope's hoses. I tried to offer another treatment to alleviate her pain and vomiting, but she refused to take any further medications without undergoing additional tests. I considered using the stethoscope again. What other tests could I offer, which she hadn't had yet? Does the biomedical world have anything else to offer her? These thoughts were going through my mind while examining her, and I eventually reached an unavoidable conclusion. I knew I had to be honest, loyal to medical values and to my patients, and to overcome my fears. I knew that biomedical investigations had been exhausted, and that it was time to launch a cultural–psychosocial investigation. Dealing with symptoms can be a long journey, and we don't always have simple solutions like with gastritis, which had been ruled out during the comprehensive medical investigations.

What Is It that Ichlas Is Trying to Regurgitate?

At this point, I was convinced that Ichlas' vomiting represented her wish to regurgitate from her life something she could not tolerate anymore. When I took the risk and told her that, it was as if I opened a floodgate, releasing everything she had been keeping inside. She regurgitated difficult stories of the mental abuse and deep contempt that she and her children were subject to from her husband's family, which had started a few months earlier. She could not cope with it and had to take in all this horrendous behavior and keep it inside her.

Ichlas grew up, in a large village in the lower Galilee, with loving and supportive parents. Ten years before she came to the clinic, she married a fellow from another village, located one and a half hours from her parents' village. She married in an arrangement called "swap marriage": her husband's sister married Ichlas's brother. Swap marriage is an accepted custom in traditional Arab society and is still common in villages in the Galilee. Often, they result from a genuine wish of one couple to marry, which creates a "package deal" including forced marriage between the other brother and sister. This arrangement is financially beneficial for the parents of the young couples because it does not involve a dowry, and instead it is based, to put it bluntly, on exchanging possessions. This kind of deal can become problematic when the couple that was forced to marry becomes a scapegoat. If they are not lucky enough to get along, they might ruin the life of the other couple as well, because the stability of the family is based on the stability of its entire structure. If one link in the chain is broken, the entire family might collapse. One couple will not live happily if the other doesn't get a chance for happiness, and arguments

between one couple can be projected onto the other. The balance of such relationships depends on the balance of each component of the system, which is almost impossible to achieve.

Ichlas assumed the role of the victim, taking in all the abuse for the sake of her brother's happiness. She would not ask for her brother's help, to avoid sabotaging his happiness. She didn't want to turn to her husband either, for fear that he would turn his sister against their abusive relatives. A woman like Ichlas is often left to struggle on her own, with no support network. She could not ask for help from other people her age in the village, because 80% of them were locals who belonged to the same clan. Women who move to another village following their marriage find themselves in a very disadvantaged position. They are called "strangers" and do not enjoy the same social support as women who stay in their home village after marrying. They also cannot hope for support from their own family, because tradition dictates that the husband's family becomes their family. In Ichlas's case, she suffered from ridicule and threats, and they gave her no support whatsoever. Her husband was probably too weak to deal with his extended family and assumed a neutral position in this conflict; at most, he could offer her some peace. Her own family lived in another village, and she was only allowed to visit them accompanied by her husband, whenever it was convenient for him. Because of her complex situation, she rarely visited and did not share her troubles with them, to avoid worrying them and starting a conflict around her and within the family.

Ichlas was raised to prefer her brother's happiness over her own needs, even if that meant she must endure terrible suffering. She was well aware that she had sacrificed her own happiness and well-being for her brother's. Ichlas's behavior reflected the meaning of her name in Arabic—"loyalty." I contend that there is a strong connection between a person's name and their worldview and social behavior. This connection exists in many people's subconscious, and when asked, they often agree that there is harmony between their name and their character. We have here a simple woman with a heart of gold and an enormous sense of commitment and loyalty to her family and her husband, even if they do not support and protect her. Of course, she is also loyal to her children and protects them and their future. With her uncompromising loyalty to everyone close to her—the loyalty of the loyal—Ichlas has subjected herself to the will of others. She has no choice left but to throw up.

Will Ichlas Continue to Vomit? And What Is the Role of the Family Physician?

At this point, it appears that Ichlas started to understand the origins of her symptoms. In addition, she received support from the family physician, and he explained to her the relationship between her social situation and her symptoms, which gave her some form of relief. The approach of the family physician at this stage was based on the patient and her family's perception of psychological consultation, as

well as therapy or support from the community social worker. Additionally, the family physician's approach was also based on his skills with psychological issues and short psychotherapy.

Psychosocial–Cultural History

The case of Ichlas demonstrates the importance of perceiving psychological–cultural history as well as biomedical history. We cannot evaluate this case without placing both next to the other:

Biomedical history	Psychosocial–cultural history
Vomiting	Unhappiness
Abdominal pain	Sleep disturbances
Physical examination	Swap marriage
Laboratory tests	Disparagement from her husband's family
X-ray, ultrasound, endoscopy	Lack of support from her environment
Consequences of drug consumption	Cease of support from her original family
	Distance from her original family
	Concern about her children and their welfare
	Difficulties to cope with the disparaging and trampling environment
	Collective eastern culture that discourages expressing feelings.

Instructional Methods

Cultural medicine is a challenging subject to teach because students are less aware of its significance, and even trained medical teams lack awareness of the need to take cultural differences into account in their daily practice. Therefore, students should be encouraged to engage with the subject through case studies and personal examples that come from the students themselves. This is a long process that should begin during preclinical studies and continue throughout the clinical rounds in the community and in hospitals.

Who should teach about culture and medicine? There is a rich body of literature on the subject in psychology and sociology, and teachers from these disciplines can offer students a valuable perspective [6]. However, doctors who believe in the importance of cultural differences and consider them in their daily practice are an indispensable source of influence on students and must be involved in the process.

Instructional methods in a suggested chronological order:

1. 1–3 h theoretical introduction on intercultural medicine. There are many short films of case studies that may be used.

2. Getting acquainted with different cultures by meeting relevant experts as well as religious and cultural representatives from the local populations. The students will learn about their views on health and healthcare and their expectations from doctors and medical staff. The discussion, which will be led by a doctor, will include examples, and students will have an opportunity to ask the representatives questions. It is recommended to prepare the students in advance so as to avoid their judging other cultures based on their own culture and learn to ask questions aimed at understanding other cultures without criticizing them. This aspect will be part of the preclinical studies, before moving on to clinical rounds.
3. Discussing case studies, mostly in hospital departments such as pediatrics, internal medicine wards, psychiatric wards, and family medicine clinics. Emphasis should be given to the need to consider psychosocial and cultural history in addition to biomedical history.
4. Visiting patients at home with a holistic approach in mind, involving both biomedical and cultural–psychosocial aspects [7, 8]. This will take place mostly during ambulatory clinical rotations that include house calls. These visits can give students the added value of getting to know the patient's culture and his or her entire family, which can improve the quality of diagnosis and treatment.
5. Training days for tutors in pediatrics, internal medicine, psychiatry, and family medicine, as well as head nurses and other relevant staff members who should be made more aware of cultural issues and their importance for future doctors.
6. Reiterating the importance of cultural–psychosocial history alongside biomedical history in every relevant meeting in the community or in hospitals—this will be done by tutors who will have undergone appropriate training.
7. Encouraging students to choose cultural topics for their dissertations. Students who do so will be able to implement this aspect in their practice and will thus influence their colleagues.

How to Preserve Cultural Awareness

The cultural diversity that characterizes schools of medicine and the health system in general is a valuable asset, which gives us an opportunity to learn about different cultures and to improve the health of various local populations by providing quality medical services suited to their respective cultures.

Intercultural medicine and social accountability are two complementary elements that enable us to provide high-quality, tailored health services and to achieve equality in healthcare. By following the vision and the values related to the cultural–medical aspects of social accountability, we can pave the way to elevating and preserving cultural awareness among teachers, students, and all relevant staff members.

Working Methods

1. Incorporating social accountability, equality, and cultural awareness into the vision of the faculty of medicine and public health departments.
2. Holding an annual seminar on cultural aspects in medicine at the faculty of medicine for both students and teachers, as well as encouraging all hospitals and medical centers affiliated with the faculty to participate and to organize similar events. During seminars, teams from all departments, as well as students, will give presentations about their experiences.
3. Awarding prizes to students for outstanding activities related to social involvement in local disadvantaged communities and to cultural diversity.
4. Nominating a faculty official at the level of deputy dean, who will be responsible for leading the spheres of social accountability and cultural diversity.
5. Relevant rooms and halls in the faculty will display photos and posters from different cultures, showing medical and social activities being carried out among different populations. The community's clinics and hospital wards will display similar posters.
6. The faculty as well as institutions and healthcare organizations will offer continuing education programs on culture and medicine.

Take-Home Points

1. Do not judge people from different cultures according to your own culture and values; each person has his or her own culture and values.
2. There are no annoying patients. There are only patients whose source of distress we are unable to understand.
3. Never generalize: not every Arab person is a religious Muslim, and not every American is rich.
4. If you don't know something about another culture, ask the patient or a family member.
5. If you lack curiosity, you will not gain the knowledge to make the diagnosis.
6. The art of medicine lies in the connection between body, soul, and culture.
7. The people best suited to teach about culture are those embedded in practicing it.

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Chapter 10
Students as Near-Peer and Peer-Teachers

David Karasik and Nomy Dickman

Overview of the Field

Teaching other learners can be perceived as a prominent example of active learning activities. A need for facilitating active learning, and the necessity for undergraduate students to develop competency in teaching, has been promulgated by the medical education community including the UK General Medical Council (2013). Peer teaching and near-peer teaching are two interwoven educational platforms, whereby learners are taught either by their own classmates or more senior learners, which draws on their similar knowledge base and shared generational experiences [1] and lack of "distance" between the teacher and student. Peer teaching has been introduced previously in medical education and postgraduate training [2] in the United States (USA) and internationally from Mexico and Saudi Arabia to the United Kingdom (UK) and Tanzania. This platform was proposed for a variety of medical disciplines, starting from preclinical—gross anatomy to clinical skills and other content areas. In the last decade, reports on students who taught other students were published in anatomy and other basic science, patient interviewing, and physical diagnosis, specifically the musculoskeletal examination, problem-based learning, and ultrasound use. This platform stimulates learning within courses that have large numbers of students and low faculty-to-student ratios [3].

Over the years, several definitions were proposed for near-peer teachers (NPT) format, most notably by Ten Cate and Durning [4], including peer-assisted learning(PAL) [5] or near-peer-assisted learning (NPAL) [6]. In a most recent overview of name-coining practice, Olaussen et al. pointed out that PAL, as the umbrella term, encompasses all programs in which students learn from students. They proposed a simple pragmatic terminology to "overcome ambiguous terminology" and to standardize the vocabulary [7]. Based on the student-to-peer-teacher ratio, three

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N. Dickman, B. Schuster (eds.), *Active Education for Future Doctors*,
https://doi.org/10.1007/978-3-030-41780-2_10

groupings can be carved out, named “Mentoring” (1:1 or 1:2), “Tutoring” (1:3 to 1:10), and “Didactic” (1:>10). From this approach, novel terms—all under the heading of PAL—were suggested, i.e., “(Near) Peer Mentoring,” “(Near) Peer Tutoring,” and “(Near) Peer Didactic.”

Peer vs. Faculty Teaching

Systematic reviews and meta-analysis of existing literature that aim to compare peer teaching to faculty teaching are relatively scarce. In general, they try to answer the question, whether there are positive outcomes for medical students taught by peers and whether peers can teach better, the same, or worse than the faculty. In their systematic review and meta-analysis of peer teaching, Rees et al. [8] included 10 studies encompassing 1300 students in total that used objective assessment measures and compared the 2 groups, one taught by peers and the other by the faculty. Eight of the included studies investigated teaching of physical examination or communication skills, while only two studies investigated peer teaching in the basic or clinical sciences. Meta-analyses showed no significant difference in peer-teaching compared to faculty teaching for knowledge or skills outcomes [8].

Near-peer and peer teachers are believed to be better suited for their interactions with tutees. Researchers associate this with both “social congruence” and “cognitive congruence” among the students learning from students. Bulte’s definition of “social congruence” represents how well a tutor is connected to the students, how interested the tutor is in the students’ lives, and how well the tutor understands the difficulties they are going through [2]. “Cognitive congruence” measures how well a tutor is able to present the learning content in such a way (and with such terminology) that it is accessible enough to engage and keep the attention of the students.

Nevertheless, despite student perceptions of the process might differ, students taught by peers do not have significantly different outcomes (e.g., numeric grades) to those taught by faculty. So who benefitted most from the peer-teaching exercise?

Why Teaching Others Is Active Learning?

An old saying attributed to the Roman writer Seneca goes, “While we teach, we learn.” Indeed, studies suggest that a significant amount of learning occurs while teaching [9]. This type of learning is classified as “indirect” learning [10]. Indeed, near-peer teachers must become active learners, first by refreshing their subject knowledge and then discussing and clarifying lesson concepts in their own words. Peer teachers also have to be active listeners. All teaching including peer teaching inherently relies upon flawless communication between students. Instead of one-way communication between a teacher and students, near-peer learning strategies should facilitate active engagement and interactions as students help other students

solve problems. Ideally, near-peer instructors (NPIs) help *build* an *active learning* environment which enables the development of "higher-order thinking skills" as described by Bloom. This is one of the tasks that a NPI preparation program has a mandate to instill. In a NPI setting, participants "get the best of both worlds" as active learners during the NPI prep course and as instructors while teaching their peers.

Preparing the Peer-Teachers?

Being a good teacher—or mentor—is not necessarily an inherent talent of faculty or students, but teaching can be improved if nurtured. It is therefore suggested that peer tutors should receive instruction on teaching theory and methods. Marton et al. reviewed studies published between the 2002 and 2013 from five different countries: the United States, the United Kingdom, Australia, Germany, and Switzerland [11]. Their review identified peer teaching programs, teaching workshops, and community outreach programs as the three leading initiatives for developing students' teaching skills. However, according to Soriano et al. [12], in the early 2000s, no more than 44% of US medical schools offered such programs in the previous decade. Today the US Liaison Committee on Medical Education (LCME) requires all medical schools to collaborate with residency programs on "Residents as Teachers" curricula. Similarly, only 40% of UK medical schools had compulsory teaching skills development courses within the curricula [13].

A systematic review of formal programs, including mandatory student-as-teacher (SAT) program [14], is provided by Burgess and McGregor [15]. Unlike the underdeveloped training of medical students as teachers, many schools recognized that there's a growing need to support residents to become effective teachers and launched a new program-wide initiative: Residents as Teachers (RaT). The reason to implement a resident's training experience is that the residents actually learn much of what they know from each other and from residents who are senior to them in training. However, they receive virtually no training on how to teach. In addition, the "hidden curriculum" of the RaT program would be to improve resident's skills as learners and critical thinkers and help them gain an appreciation for the importance of lifelong learning. As an example, a RaT program in MassGeneral hospital was embedded in an existing 8-case simulation curriculum for 52 internal medicine interns. Residents participated in a workshop, then served as facilitators in the curriculum, and received feedback from faculty. Participation in the program led to improvements in resident facilitators's self-reported teaching and feedback skills across the following domains: (1) instructor maintained an engaging context for learning, (2) instructor structured the debriefing in an organized way, (3) instructor provoked in-depth discussions, (4) instructor identified what the learners did well or poorly and why, and (5) helped them to improve or how to sustain good performance. The simulation curriculum, facilitated by residents, was well received by the learners.

A highly structured student-as-teacher (SAT) program in the framework of Medical Education Pathway (MEP) was implemented at the University of Rochester. Song and colleagues (2015) argued that their SAT program addresses both the local tradition of teaching by medical students and the ongoing need to prepare students for teaching in residency and beyond [16]. Their SAT-MEP serves as a model for a similar elective program at the residency level. Similarly, Erlich and Shaughnessy [17] described their student–teacher education program (STEP). Their results had confirmed that confidence in teaching increased, particularly in four key areas: oral feedback, written feedback, mentoring, and managing the difficult learner [1]. Liew et al. [18] investigated the perceived benefits of participation in a near-peer tutoring program for "junior" as well as "senior" near-peer tutors. Thirty-five junior and 16 senior near-peer tutors were asked to fill in the post-course participation questionnaires. It was found that all the near-peer tutors equally benefited from the near-peer tutoring program regardless of their seniority.

While implementing a long-term didactic training program ("Train-the-Tutor (TtT)-Program") for student tutors, Horneffer et al. [19] conducted a controlled observational study to explore possible influence of its graduates not only on their tutees' evaluations but also on their tutees learning behavior and academic results. They found that tutees of tutors participating in a preparatory program had better examination results and lower ultimate failure rates as compared to tutees of non-participating tutors. This evidence supports the need for implementation of didactic training program to educate the prospective NPTs.

Controversies in Preparing the (Near)-Peer-Teachers

Along with the general lack of preparatory programs for near-peer teachers, there are other unresolved issues in educating the next generation of medical teachers. Some institutions select students to be peer tutors on the basis of previous academic performance or performance in a personal interview. While it is appropriate that those with an interest in teaching get an opportunity to participate, it raises the question of whether or not all students should be expected to teach. Rees et al. argue that teaching opportunities should remain optional. Elective options may be an effective educational strategy to encourage even less well-performing students to engage with the peer-teaching process [8]. There are arguments for both the "inclusive" and "merit-based" approaches. On one hand, since the active learning opportunity should be widely endorsed, one should promote the "inclusive" and equal appointment of the NPTs. On the other hand, student tutees deserve to get the best of the instruction and mentoring; otherwise, instead of "shared knowledge," student tutees could end up with a "shared ignorance."

We should not be overly elated nor deceive ourselves by the tangible outcomes expected from this effort. Batchelder et al. [20] summarized this as follows: "teaching from peers may improve students' perception of their preparedness for official assessments. However, such interventions may be limited in their ability to produce

a demonstrable benefit in terms of examination performance." As was also noted, "it is still inconclusive whether lasting outcomes emerge in first-year students taught by trained student–teachers." [17]

Another question is, to pay or not to pay the peer teachers? Peer-teachers usually received remuneration for the sessions they delivered [8] or received a regular student-rate monthly salary [19]. This monetary incentive might introduce a selection bias, adding an economic stimulus for less academically successful students to teach instead of spending the time needed to attend to their own deficits. Unless "peer teaching" is equally shared by all members of the class, it would be unethical not to pay for the rendered service of a student on behalf of the school.

There is also an approach of "reciprocal peer teaching" (RPT), where students alternate roles as teacher and student. Reciprocal peer teaching can be performed by several ways, for example, when every student in a small group is required to present a topic to other members of the group and similarly when residents alternate responsibility for presenting at formal teaching conferences. An interesting application of the RPT was presented by Manyama et al. [21] There, students from every anatomy–dissection table were chosen *randomly* every day to teach their peers—under the observation of anatomy faculty. "The primary dissectors" were taught by anatomy faculty several hours prior to the actual dissection class. The faculty maintained rotation lists in order to ensure equal participation, to assure that each student served in alternating roles as a "primary dissector" and a "peer learner." [21] This practice prepares the students for the future reciprocal peer teaching, when every student in a small is group being required to present a topic to other members of the group. Similarly, in the wards, residents alternate responsibility for presenting formal teaching conferences.

Human Anatomy Serves a Poster Child for Peer-Instruction

It is not surprising why so many studies of near-peer teachers focus on human anatomy. The human anatomy class is usually among the earliest and longest courses in the preclinical years, with many hours of work, usually in a small-group setting. There is an emotional attachment of the students to the anatomy dissection as it is considered a "right of passage" to medicine. Often placed early in the first year of medical school, human anatomy pushes the student to stretch their ability to handle a very large amount of new information and terminology, usually in a time-condensed format, while developing a comfortable and acceptable relationship among their new peers. Human anatomy courses using case-based sessions and team dissections may be the medical student's first exercise in behaving collegially and thinking professionally. The best anatomy students, usually described as those who can explain and teach the material to others, become popular among the peers. Cadaveric dissection, in particular, requires balancing both teamwork and individual responsibility. Working as a team at the dissection table has a role in developing time management skills and small-group decision-making. From the perspective of

Table 10.1 Why the human anatomy skillset can be seen as a test ground for medical education

Skill or virtue taught in Anatomy class	What it prepares for in medical education
Passionate dissection of a human body	Approach to a human patient
Individual responsibility (role in dissection)	Individual responsibility (CBL, seminar)
Teamwork, communication, and collegiality in dissection setting	Teamwork and collegiality; provide feedback to colleagues
Time management under stress[a]	Time management
Retention of knowledge	Retention of knowledge
Emotional growth toward professionalism	Emotional maturity
Anatomical terminology as part of professional language	Medical terminology

[a]Since Anatomy is usually one of the earliest classes in majority of the schools

the instructors and school leadership, the human anatomy course presents a good opportunity for early identification and providing academic support for students who demonstrate difficulty in juggling the anatomical workload, the assignments, and/or the emotional response. There is a role for near-peer teachers to help the school identify and manage struggling students as a first-line intervention to prevent long-term failure. Table 10.1 summarizes benefits of human anatomy skillset for the overall curriculum of medical school, both pre- and clinical disciplines.

Example from Bar Ilan University: Near-Peer Instructor Preparation for Human Anatomy

In response to the shortage of medical doctors in Israel, [22, 23] a new Faculty of Medicine was established by Bar Ilan University in 2011. This 4-year medical program, accepts students having completed prerequisites similar to US medical school programs.

The human gross anatomy course is allocated 240 h, set up as an 8.5-week block, during which 70 to 75 first-year students dissect the entire body, excluding the brain, which is studied in a separate soul-and-mind block. Aside from lectures and dissections, hands-on radiology and ultrasound imaging are also incorporated into the curriculum. While local and international basic science and clinical teachers were recruited as core teachers, postdoctoral students and junior faculty to be "teaching assistants" were difficult to find, as knowledgeable anatomy instructors based on the graduate student pool are not readily available in the Galilee. The need to overcome this shortage of qualified anatomy dissection instructors was a driving force to initiate a near-peer teaching program to train such instructors.

Our near-peer instructors (NPIs) program is a series of several sessions spread over the end of the second semester or start of the summer break in each academic year. Twelve first-year preclinical students attended the "elective" program in 2013, 14 in 2014, 15 in 2015, 12 in 2016, and 10 in 2017. The participation in this "elec-

Table 10.2 Near-peer instructors preparatory course curriculum

Module	Time allocation (academic hours)
General pedagogy	
Principles of adult learning	1
Principles of assessment and evaluation (feedback, rubrics, peer assessment, etc.)	1
Use of technology in a seminar setting	1
Facilitation skills in a small-group setting	1
Writing reflections	1
Invited lectures: Leadership, ethics, anatomy of a child, radiology, debating, nonverbal communication	4 (1–2 h per presentation)
Anatomical knowledge and specific pedagogy	
Active dissection and prosection experience	12
Prosection presentation	1
Student lecture or CBL presentation	1 (per student)

tive" class was voluntary, although only students who completed the anatomy course in the upper 10% of the grade distribution were invited. The program's content included the basics of didactics and pedagogic approaches and teaching methods, based on constructivist learning theory [24] and adult active learning both in large- and in small-group settings [25]. The program was based on a principle of cooperative learning, with reciprocal peer teaching, where students both alternate roles as teacher and student and facilitate active learning by their peers (Table 10.2).

Specific modules included the use of active learning, facilitation skills in a small-group setting, writing reflections and methods for evaluation of the students with an emphasis on providing effective feedback, as well as advanced practical skills in cadaveric dissection, the use of multimedia/technology, radiology, and ultrasound. Hands-on sessions in ultrasound and guest lectures by specialists were also parts of the program. Providing ongoing verbal and written peer assessments was a requirement for the participants. Each session was evaluated by feedback rubrics developed by the students under guidance of the Director of Assessment. Each student was required to present a case-based learning (CBL) session or a mini-lecture on an anatomical topic of their choice and to perform a skilled prosection, with their performance evaluated by their peers using a rubric format as described above. In addition, a discussion of the ethics and values of cadaver donation and dissection was included, since the NPIs are often confronted with these issues from their more junior peers.

A voluntary survey was administered at the end of the program. It included a debriefing questionnaire aimed at assessing both the general satisfaction with the program and the teachers, and free-language comment fields, with an emphasis on the perceived value of the near-peer teaching experience. Some students provided reflective narratives of their course' experiences.

The NPI "Elective" Program

On the Likert five-rank scale (1–5), the overall rating for the "elective course" was relatively high, always above 3.0 (Fig. 10.1). Learning prosection and anatomy demonstration skills scored even higher from 2013 to 2015 but was only 3.33 in 2016. Although the students agreed the preparation of CBL and prosection experience increased their understanding of the topics they taught their peers, the score for whether it improved their teaching style/skills was lower.

According to the qualitative comments, the participants appeared at ease in the dissecting room among their peers. They even expressed an interest to get more of a subject matter rather than just didactics. The participants thought they were able to prepare and lead a case-based small-group session with confidence. The students pointed out that the course helped them to develop essential teaching skills and universal competencies, which would support their professional growth throughout the medical school. Among the most prominent and recurrent feedback items were the following responses (verbatim):

Q1. What would you tell your fellow students who ask for your advice as whether to enroll in a similar course in the next academic year?

Responses:

"I would recommend it to those who are interested to learn more, who want to transfer further the knowledge they gained, and who wants to give [it to] others sometimes without payback, someone who really loves anatomy and loves teaching"

"I probably would emphasize that the course focuses on didactics and does not focus on anatomy"

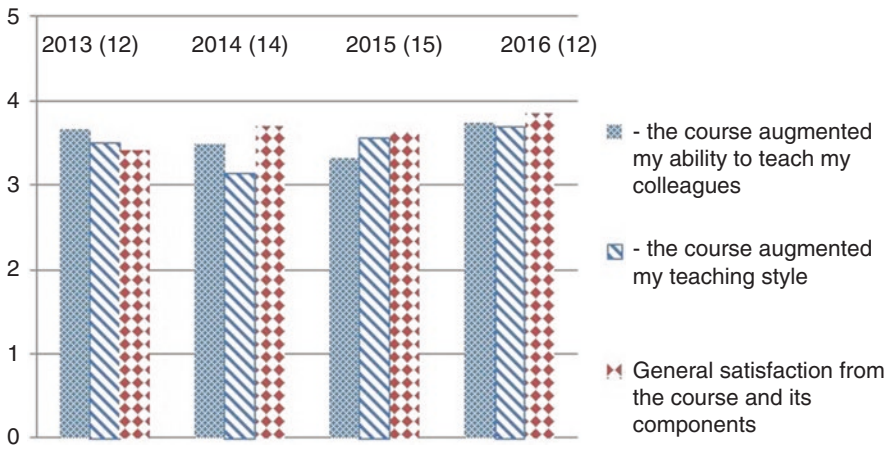

Fig. 10.1 Student opinions about the NPI program, by year (in parentheses: number of responders)

"It is suitable to medical students in general, not just to those who see themselves as future instructors, since it contributes a lot to abilities as a MD in general"
"The course is useful not only for the anatomy training, but for life"

Q2. Describe in detail a meaningful personal episode, which you experienced during your course participation.

"I was very surprised by the knowledge level of my colleagues in the course"
"A lecture from the visiting lecturer on the imaging in children was very good and connected well to the material we had learned, and enriched our knowledge"
"…mostly prosection, which was difficult, but even within a limited time I was able to accomplish a prosection for mid-ear bones…"
"Realizing that there are more good teachers among us than I thought…"

Q3. Describe a learning process you experienced during the course.

"I arrived from the experience of stage fright to an ability to self-study [the material], asking for specialist's advice, and transferring it further"
"the essence of the process was to change my role from a student to a mentor"

Using the feedback from those who completed the NPI preparation course, the course has expanded to include more "hands-on" practice in both teaching skills and technical skills necessitating an increase in course length from 28 to 40 h. Delivering lectures twice during the course's period allowed the individual students to receive feedback after the first presentation and then incorporate this feedback into the subsequent iteration. Finally, the recent purchase of the Anatomage Tables for virtual anatomy will require adding how to teach using this resource to the NPI preparation. The support of the Dean of Education will be necessary.

NPIs Performance During the Anatomy Block

As many as six students who have completed the near-peer instructor preparation course and excelled based on their peer and course faculty evaluations are offered a NPI position during first semester of the next academic year. Those accepting the NPI positions would be in their second year of medical school. The NPIs are charged to manage optional after-class sessions in the dissection room offered to the first-year anatomy class in a "mentoring" or "tutoring" fashion. The NPIs are evaluated by the first-year students at the end of the anatomy didactic block, in the same format as the professional teachers and instructors using the Likert five-rank scale, with 1 = lowest to 5 = highest.

Figure 10.2 illustrates average scores for both groups (teachers and instructors) throughout the years. There might be several explanations for the differences between the NPIs and the "seasoned" teachers, including selection of NPIs based on performance in the preparation course and the contribution of social and cognitive congruence to the first-year students.

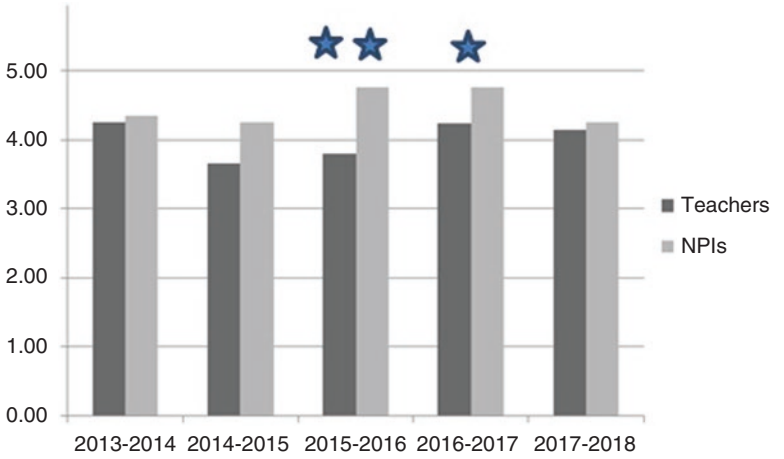

Fig. 10.2 Average satisfaction scores for NPIs and professional teachers, by the first-year anatomy students, by year. Double stars, t-test p-value <0.001; one star, p-value <0.05

The most common qualitative feedback received from the freshmen students in regard to sophomore NPIs was related to their ability to explain the material well and expressions of trust, admiration, and gratitude.

Summary of the Bar Ilan Experience

After attending the "elective" NPI program, students indicate that they gained confidence as anatomy instructors. The NPI program's participants agreed that near-peer teaching helps prepare them for their future roles as healthcare professionals. They recognized that the experience indeed equipped them with teaching skills that will be required as they move forward. Besides learning to present effectively and efficiently, in our anatomy-based program, the NPI students also prepared skilled prosections, which can be considered as a resource development for their own use as a teaching tool. The NPI program has also provided the school with an additional valuable and appropriate resource for teaching anatomy to first-year students, who themselves view the inclusion of near-peer teachers as a positive element in their learning. Certainly, improving NPIs communication and pedagogic skills should be applied beyond anatomy, by integrating other preclinical and clinical disciplines. NPIs can also be used as small-group facilitators for the flipped-classroom courses.

Summary

Evidence from the experience at the Azrieli Faculty of Medicine, consistent with reports in the medical literature, supports near-peer teaching as a win-win approach for both the academic institution and student learning. Early involvement of students in active learning and teaching is a path toward becoming lifelong learners. Given the positive educational value of near-peer teaching, it is an appropriate pedagogic approach to enhance the learning experience in the medical school setting.

Take-Home Points

- Providing a didactic series on education to the students and residents pays dividends both to the school and the students .
- Near-peer teaching is a tool for building self-efficacy in both learning and teaching.
- In anatomy, there is no difference in the satisfaction of instruction provided by near-peers compared to faculty members.
- Controversy in near-peer teacher programs includes participant inclusion criteria and remuneration for those who teach.
- Teaching peers in medical school may be a method for facilitating growth of future medical educators.

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Further Reading

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Chapter 11
Interprofessional Education

Eric Shinwell

Background

Modern health care is frequently complex, often requiring involvement of several health-care professionals. Although multiple individual consults or care interventions may provide a certain reasonable level of care, it is likely that a dedicated and coordinated team offers the potential for improvement in both the care provided and the compliance of the patient [1, 2]. Interprofessional collaborative practice (ICP) is defined as multiple health-care workers from different professional backgrounds working together with patients, families, and communities to deliver the highest quality of care [3, 4]. This teamwork involves cooperation and coordination that must characterize the relationships between the professions delivering patient-centered care.

In recent years, many fields of health care have recognized the importance of interprofessional collaborative practice and have instituted guidelines, standards, and mechanisms to facilitate widespread implementation of this lofty aim. Examples abound in many fields and include teams for palliative care, rapid response, primary care, and the operating room. Specialized "teams" have become the routine in rehabilitation medicine and in complex surgery. Certain fields have even defined an interprofessional team as the "standard of practice." For example, intensive care settings such as modern neonatal intensive care units (NICU) have set standards to define the need for and the roles of each of the professions that are required [5]. These include, but are not limited to, neonatologists, highly trained nurses and nurse practitioners, physiotherapy, occupational therapy, social work, psychology, speech therapy, dietary services, pharmacy, lactation counseling, and others.

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N. Dickman, B. Schuster (eds.), *Active Education for Future Doctors*,
https://doi.org/10.1007/978-3-030-41780-2_11

Mechanisms of implementation include multidisciplinary ward rounds (sometimes cumbersome, but nevertheless functional), dedicated social work rounds, defined protocols for developmentally focused care, and detailed discharge planning modules. It is now standard for the NICU staff to inform all the parallel services in the community before the discharge of infants with complex health-care needs.

Establishment of ICP requires the acquisition and implementation of certain core competencies in the fields of patient- and family-centered care that include recognition of relevant values and ethics, together with the roles and responsibilities of health-care professionals, appropriate interpersonal communication skills, and development of the required relationships and collaborations for the development of functional teams. These competencies clearly need to be developed both with and between the relevant health-care professions in each setting. Furthermore, in the postgraduate setting, training of teams demands further refinement of the required competencies that include features such as team leadership, mutual performance monitoring, backup behavior, adaptability to changing situations, and orientation to team goals that may supersede individual goals [6].

However, although today's health professionals are increasingly aware of the importance of ICP, universal appreciation and implementation of this vital concept will only result from the dedicated development of interprofessional education (IPE) for tomorrow's health-care professionals. Thus, interprofessional education is defined as students from two or more professions learning about, from, and with each other to enable effective collaboration and improve health outcomes [2].

Acquisition and implementation of the concepts of IPE is not a passive process handed down in ivory tower lecture halls. Students from each profession need to be actively exposed to and learn to understand the roles, responsibilities, and needs of each of the collaborating professions at each situation. Medical and other schools for health-care professionals have invested in recent years in the establishment of appropriate frameworks for the learning of IPE and transitioning to ICP. For example, the Interprofessional Education Collaborative (IPEC) is a multidisciplinary organization encompassing medicine, nursing, osteopathy, dentistry, pharmacy, public health, podiatry, physical therapy, occupational therapy, veterinary medicine, optometry, social work, and physicians' assistants. Core competencies for the development of ICP were defined and published in 2011 and further refined and developed in 2016 [3].

Core Competencies for IPE

In the 2016 update of the IPEC statement, the four previously defined core competencies were expanded to add a focus on patient- and family-centered care and population health awareness. This admirable document sets a standard that many will aspire to, although much work will yet be required before these may be achieved universally.

In a condensed form, the four main competencies required of a student who has received IPE training are:

1. Values and Ethics for Interprofessional Practice

   To work with individuals of other professions in order to maintain a climate of mutual respect and shared values. The primary aim of this collaborative practice is maintenance and improvement of the health of both individual patients and populations. The required teamwork is a central secondary aim. Examples of issues that need to be addressed at the pre-licensure level include an early recognition of the rights of the individual to privacy and dignity in all care. Sensitivity to cultural, ethnic, and religious differences in patient populations should be attained before and enhanced during clinical clerkships. Ethical principles may be introduced in the classroom but require expansion and understanding in real-life clinical settings.
2. Roles and Responsibilities

   To use the knowledge of one's own role and those of other professions to appropriately assess and address the health-care needs of the patients and populations served. Communication and development of alliances between caregivers are critical to this aim. Recognition of the limits of one's own knowledge and skills is sadly often timed together with the appearance of gray hairs. However, early exposure and shared learning with other professions may bring this process forward to undergraduate days allowing for a degree of humility, particularly among medical students. A mature graduate should be able to describe in detail the roles of each profession in specific team collaboration settings.
3. Interprofessional Communication

   To communicate with patients, families, communities, and other health professionals in a responsive and responsible manner that supports a team approach to the maintenance of health and the treatment of disease. Learning of basic communication skills must appear early in any curriculum employing both passive and active teaching methods. During clinical training, the student learns effective communication with patients, other providers, and relevant community members. Alongside advancing clinical responsibility comes fine-tuning of modes of communication that promote collaborative practice. However, in order to succeed, this commitment demands much dedication and persistence on the part of all involved professionals. One factor which often blocks constructive and effective communication is the unspoken role of power between the professions. Hierarchies exist and may be inflexible or, at best, inertial. Professions such as aviation have improved safety by developing a culture of open communication that supersedes considerations of power and rank. The health professions have improved in this field, but the road ahead is long.
4. Teams and Teamwork

   To apply relationship-building values and the principles of team dynamics to perform effectively in different team roles to plan and deliver patient- and population-centered care that is safe, timely, efficient, effective, and equitable. Much of the establishment of actual teams is in the postgraduate domain. However, the pre-licensure student may learn from the example of high-functioning teams.

Studies of Approaches to Interprofessional Education

Awareness of the importance of interprofessional education at both pre-licensure and postgraduate levels has gradually increased over the past 2–3 decades [7]. In the postgraduate domain, numerous factors have contributed to this development, including the widespread recognition of medical errors as an important cause of both mortality and severe morbidity and the growth of risk management systems that have emphasized the centrality of teamwork in preventive measures [8, 9]. Most modern health-care facilities now include risk management centers or teams that identify, study, and aim to prevent adverse events. However, although logical and feasible, correlation of these efforts with improved clinical outcomes and/or reduced malpractice litigation remains scarce.

Implementation of interprofessional education at the undergraduate level is inconsistent, and a variety of approaches have been employed. Research studies aiming to assess the impact of such courses or interventions in the field of interprofessional teamwork have been reported in recent years. A systematic review of studies of *pre-licensure* programs that appeared in the literature up to and including 2014 identified 17 studies with sufficient data to describe approaches and results [10]. The most common design was pre-post single group studies, followed by randomized and nonrandomized studies. The quality and validity of the research methods was both modest and inconsistent and mostly focused on short-term measures of team function such as communication skills based on techniques such as crisis resource management adapted from the field of aviation or the situation, background, assessment, and recommendation (SBAR) tool that is in common use in the postgraduate setting. A majority of interventions employed didactic lectures, while many also utilized active learning techniques such as role play, problem-solving activities, nonmedical team building, and cases studies. These activities included both single profession teams such as medicine or nursing and multiprofessional teams. Overall, despite the methodological limitations, the majority of the studies did find that team training initiatives had a positive effect on team knowledge, communication, and skills at the undergraduate level. However, it is important to point out that the authors did not include the term interprofessional education in their search strategy as this returned too many reports. Thus, it is possible that the systematic review discussed here is not truly representative of current work in this field. Another limitation is that these studies did not look at long-term effects of IPE at the undergraduate level either for the students or for the health of patients.

Examples of Specific Programs

Many medical schools have developed programs for teaching interprofessional education. At the Azrieli Faculty of Medicine, Bar-Ilan University, Israel, the importance of interprofessional education has been recognized in the training of

health-care professionals, particularly medical students. A number of examples of integration of interprofessional education are described here and include both classical teaching methods together with active education techniques that, in recent years, have been extensively integrated in all phases of the curriculum.

Population Health and Social Determinants of Health

In order to construct a basis of awareness of the importance of IPE, medical students at Bar-Ilan University are exposed to a number of pedagogic interventions early in their first year of study (Chap. 8).

1. Public Health Course

   This course is designed and organized by a combination of a public health physician, an organizational sociologist, and an expert in health promotion [11, 12]. In addition to the formal didactic teaching, the students are required to participate in three forms of teaching related to interprofessional education.

   (a) Small group community project. The students visit and conduct a project at a variety of community organizations that serve vulnerable populations such as at-risk children, the elderly, intellectually disabled, and the mentally ill. The staff supervising each project includes nurses, social workers, and professional educators. The projects include identification of health needs and designing of an intervention to improve the person's health that may involve any number of professions.
   (b) Workshops on disability. Students are exposed to the health issues of people with disabilities such as hearing and visual problems and severe mental disability. The sessions are run by the people with the disabilities, with support from the relevant health professionals. The students are challenged with recognizing the health-care needs of the people with varying disabilities.

2. Nonclinical Community Placements

   In this form of experiential learning, the students spend at least 1 hour per week throughout their first year designing and implementing a health improvement project under the supervision of a social worker, community worker, or educator within their assigned organization. Each student is required to interact with each relevant profession as required. This program is a form of a limited longitudinal integrated clerkship, albeit presented at an early stage of the medical school curriculum.
3. Student-Delivered Care Transition Service

   In this course, students are required to provide a dedicated service for identified socially disadvantaged patients from before discharge and continuing throughout their transition back to life in the community. The student prepares an abbreviated and language-appropriate discharge summary that is approved by

the clinician. The student then reviews the summary with the patient. Following discharge, the student visits the patient at home and mediates with all relevant health services, contributing to the provision of optimal possible health care for the patient. This process requires detailed learning of the roles of each of the health professions in the community.

4. Joint Medicine-Nursing Study Day

   This one-day experience combines examples of successful multidisciplinary teams together with practical hands-on shared learning of standard basic procedures. Medical and nursing students learn together and experience both functions in role-playing exercises.

These interventions prepare the basis for interprofessional education that the students will encounter in later clinical clerkships. Many clerkships include elements of interprofessional education, and two examples are provided here of departments in which clinical multidisciplinary teamwork is particularly relevant.

1. Geriatrics

   During this rotation, the students meet with each of the relevant health professions and are assigned a complex patient. Each student presents a seminar in which they are required to delineate and review the necessary interventions and follow-up required from each involved health-care professional.

2. Neonatology

   As mentioned above, modern-day neonatal intensive care demands effective teamwork between a large number of practitioners. During the rotation, the students are exposed to a variety of multidisciplinary-type rounds (general, social rounds, etc.) and have dedicated sessions with some or all of the professionals caring for the patients to whom they have been assigned. They are also required to present a seminar that includes both clinical and research aspects of multidisciplinary care.

Longitudinal Integrated Clerkships (LIC)

Longitudinal integrated clerkships exist in a variety of forms, ranging from a full-year attachment in a rural health service in which all core disciplines are involved simultaneously to shorter or partial attachments in a specific setting such as the nonclinical community placements described above. In these settings within the community, the student is exposed to a wider range of disciplines and professions and learns their interaction and roles in a manner that may be superior to rotating clinical hospital clerkships. Longitudinal integrated clerkships are not new but have become more popular in recent years with the recognition of the limitations of health services to provide answers for varying health needs particularly in remote or less well-served areas.

Student-Run Clinics

These clinics were intended originally to provide free health care for uninsured persons in the USA. The student works under a form of supervision and becomes part of a larger team providing multidisciplinary care over time. It is, however, unclear whether this initiative contributes to better functioning in team frameworks at the postgraduate level.

Universities with Coordinated, Multiprofessional IPE Programs

As described above, interprofessional education interventions may involve a single profession, such as medicine, offering exposure to other professions or may be based on shared learning and experiences between students of a number of health-care professions. A number of universities whose campuses include a broad range of schools of health care have established a variety of approaches to interprofessional education including a didactic program, a community-based experience, and an interprofessional simulation experience [13]. Three American universities, Rosalind Franklin University, the University of Florida, and the University of Washington, have recently described their experiences with multiprofessional IPE programs that include up to six different schools in coordinated programs. The programs were generally successful with high student and faculty satisfaction. Common elements of collaborative practice found in IPE courses focus on responsibility, accountability, coordination, communication, cooperation, assertiveness, autonomy, and mutual trust and respect.

Many challenges exist in establishing and running interprofessional education programs. The involved schools and their departments need to enshrine a deep commitment to the program in order to resolve diverse calendar conflicts and to share curricular mapping and mentor and faculty training. Resources must be made available to provide adequate space and technology, together with the required financial support. Establishment of an office dedicated to IPE that is supported by each of the schools will undoubtedly enhance the success of such programs.

IPEC Resources

The IPE Collaborative, as part of the Association of American Medical Colleges (AAMC), has now made available a variety of useful resources that are available at www.mededportal.org/collection/interprofessional-education. These include simulations of complex situations such as advance health-care planning, issues in care of LGBT individuals, ethical issues in modern genetics, and error reporting. Each simulation

includes detailed guidance and materials. In addition, there are standardized case presentations that emphasize IPE issues. These materials are freely available and may be used or adapted to the ethno-cultural settings and needs of different medical schools.

Limitations

Interprofessional education continues to face major obstacles [14]. Implementation is complex and requires budgets whose justification is not obvious to financial directors. Matching interventions with the developmental phase of the students is challenging. Most importantly, until power-based conflicts are resolved, health-care systems may remain in inertia despite well-meaning educational interventions.

Summary

Interprofessional education is important. It may contribute to improved health of patients and better satisfaction among health-care providers and may even reduce health-care costs. Although awareness of the importance of interprofessional education has increased, implementation is spotty and often restricted by limited resource support from academic institutions and funding sources including governments. Much work remains.

Take-Home Points

1. The four core competencies of interprofessional education for health-care students include values and ethics for interprofessional practice, roles and responsibilities of collaborative professions, skill in interprofessional communication, and principles of team dynamics.
2. Active learning techniques especially experiential learning can facilitate interprofessional education.
3. Challenges in the development of successful interprofessional education include resolving calendar conflicts, curricula demands, developing mentors, faculty development, and fiscal resources.

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Chapter 12
Developing Lifelong Learners

Barbara Schuster

Lifelong learning is the cornerstone of all professions. It is defined as the "ongoing, voluntary, and self-motivated pursuit of knowledge." [1] Formal education is but the beginning of a commitment that never ends as long as one continues to practice in a health profession. How learners tackle the vast scientific and clinical knowledge at the earliest stages of their medical career can portend how they will continue throughout their life.

The principles of adult learning include the desire to learn. Adults are usually self-directed to learn only what they feel they need to learn. Adults learn best by doing and their learning is more often stimulated by a real-world problem that must be solved or a skill needed for their job or career. Adults learn best in informal situations and adults desire guidance but not absolute direction [2].

The Skill Set for Lifelong Learning

Medical students enter their formal education after completing secondary education or, in addition, a first degree from an accredited college or university. Although medical schools throughout the world continue to seek applicants that have demonstrated qualities of humanism, social communication skills, and an understanding of the rigors of a medical career, academic achievement often remains the initial screen in the admission process. Academic achievement is most often demonstrated with success on a competitive written examination and/or ranking in one's graduating class. Thus, the successful medical school candidate has learned the skills required to achieve their academic ranking which may or, more usually, may not be consistent with the skills and attitudes for the lifelong learning necessary for continued

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N. Dickman, B. Schuster (eds.), *Active Education for Future Doctors*,
https://doi.org/10.1007/978-3-030-41780-2_12

expertise in their medical career. Entering medical students have mastered "learning" in environments where the student is a passive observer rather than an active participant. Large group lectures or "frontal teaching" has dominated their secondary and university experience. By the time students begin medical education, much of their childhood curiosity has been drained replaced by completing assignments in order to achieve a result that allows for promotion or acceptance. What are the lifelong learning skills and attitudes to achieve initial mastery and subsequent continued competence in a medical field?

The competency of lifelong learning was addressed in the report of a 2007 Josiah Macy Foundation conference on continuing education. The components of this competency included: "the ability to reflect on one's practice and thereby determine learning needs; the ability to efficiently and accurately search for learning resources and critically appraise them; skills in applying these resources to clinical and other questions; the management of large and changing bodies of evidence; and the ability to evaluate one's competencies and practice based on external feedback." [3] If the above components are widely acceptable, then medical educators must consider methods to best develop and support the growth of these components from the onset of medical education. The milestone subsets of the components will change as the physician moves from student to house officer through specialty training and finally to practitioner and consultant, but the core skills are trackable to a basic skill set.

Lifelong Learning and the Medical Student

Lifelong learning tasks for medical students are not well defined. If, as the Macy report suggests, determining one's learning needs is the first task, then the ability to differentiate what one knows from what one does not know is the first step. Acknowledging a gap in one's knowledge or technical skill is rarely praised in the competitive environment of pre-health higher education programs. Admitting what one does not know makes the student vulnerable. Too often, the delivery style of the curriculum is punitive for not knowing. A student who may admit that they do not know an answer to a question asked in a lecture may be publicly humiliated by the tone of the lecturer's response. If the student admits to not feeling the abdominal mass on clinical rounds, the student may be answered with, "you must work harder and study more" rather than the response, "let's go back to the bedside and help you feel the abdominal mass." The negative effects of punitive responses are detrimental to developing a willingness to reflect on one's weakness and admit knowledge or skill deficits. If fearful of a negative retort from an instructor, the student is more prone to hide their weakness, missing an opportunity to improve. If a medical student admits to not hearing a cardiac murmur, being told that he probably needs a new stethoscope is much more humiliating than having the instructor confirm the murmur and assist the student until the murmur is recognized.

Faculty who are able to admit to junior learners that they "do not know the answer or best next step in patient management" while on clinical teaching rounds

demonstrate a professional honesty and human fallibility. Attending physicians who pursue the answers to clinical questions and return to teaching rounds with the information needed to facilitate the care of the patient become influential role models and can subsequently reinforce the same expectations for students. Faculty who review student evaluations that describe the ability to admit a weakness and demonstrate steps to improve performance should recognize this skill as a positive, not a negative.

The art and science of knowing what information is needed to correct a personal knowledge deficit and what resources to use to find currently accepted knowledge and its supporting evidence and then to appraise the information and data are major components of lifelong learning that should begin in the first year of medical education. The speed of scientific discovery, the changing environmental influences on health and disease, and the public availability of vast amounts of information dictate that health providers have the skills to use current information for the diagnostic challenges encountered and to facilitate conversations with patients to engage them as active participants in their own healthcare. To achieve beginner mastery in this group of tasks is difficult and requires guidance and practice. Health librarians and media specialists can be particularly helpful in developing, teaching, and implementing an active curriculum to achieve this goal. Skills in the utilization of information technology are part of the essential learning for both research and care delivery [4].

Searching for answers to scientific or clinical questions is a learnable skill. Although students enter medical education having used the web to find information, utilized hard cover or electronic textbooks, and read scientific articles, few have had guidance on how to write a searchable question and which database is most likely to yield the best information. Many pre-health students are now required to take a course in statistics or biostatistics, but the diversity of the courses cannot assure the entering student has sufficient skill in understanding relative risk, number to harm, or number to treat, let alone the sophistication in interpreting meta-analyses. Thus, emerging courses in what are often labeled "evidence-based medicine" must minimally teach information on study designs, basic statistics, basic concepts of epidemiology, the mechanics of writing searchable questions, the basics of risk and harm, and the statistical concepts of chi square, positive outcomes, and confidence limits. However, to enable a student to transfer the newly learned information to a patient-centered clinical decision, the student must learn to integrate the new knowledge into all that is known about the patient's current medical issues, the patient's overall health status, and the patient's personal values. The task of applying evidence-based information must be routinely practiced through patient case discussions, either in vivo or through simulation. By applying the gleaned information to a "specific patient," the learning becomes more "patient centered," more integrated with one's prior knowledge, and more likely to be remembered for future application.

A Successful Medical School Approach: Athens, Georgia

New medical school campuses allow for innovation, so in 2008 when the Medical Partnership Campus in Athens, Georgia, was begun, the vision for educating the class of 40 students included a curriculum that explicitly integrated basic and clinical science predominately using an active learning case-based methodology with outcome competencies that included student mastery of the tasks of lifelong learning. The Partnership Campus was accredited by the Liaison Committee on Medical Education as a 4-year campus extension of the Medical College of Georgia. Students accepted to the Medical College of Georgia had input into their campus of choice, and there were no demographic or academic differences in the incoming cohorts of the two campuses. The pedagogical approach, however, did differ.

The First 2 Years

Throughout the first 2 years of medical school, the Athens students met in teams of eight students and two faculty, usually one basic science (PhD) and one clinical science (MD), to "roll out" a clinical case over the five-day workweek in three 2-hour blocks. Students and faculty were assigned to a team that was maintained for a 15-week semester after which team membership was resorted for the next semester. The locally written cases presented over the 2 years (one case a week in year one and two cases a week in year two) incorporated a broad group of disease entities presenting in patients with diversity in age, gender, ethnicity, and socioeconomic backgrounds. Since the overall Medical College of Georgia curriculum was system based, the diseases selected were representative of the important groups of common diagnoses in each system area. In Athens, it was expected that both basic science and clinical science would be learned during the case study discussions. A few large group (full class) presentations using techniques to activate what would have previously been a traditional lecture (Chap. 3) were included throughout the week emphasizing basic science and socioeconomic issues.

Every Monday, the small groups were presented with a new case and spent 2 h carefully reviewing the history and physical examination information for each new patient and discussing every salient piece of information. With faculty facilitation, students learned to recognize what they did not know and admit their knowledge gaps. Often, someone in the group knew the answer to basic questions such as "what is a hematocrit" and "what is the relevance of a grandfather who was bald or colorblind?" If no one could respond to the question, including the faculty member, the question was recorded to be considered later.

Students quickly began to understand that every detail in the patient history was a clue or "data point" with some relationship to the overall case. For example, (1) the young man presenting with cough diagnosed with suspicion of old histoplasmosis on a chest X-ray grew up in the state of Ohio in the USA where histoplasmosis is common. (2) The pregnant Mexican woman who presented to the emergency room in labor had no prenatal care because her husband was a seasonal farm worker in the USA and received no family health insurance benefits from his employer.

The cases were written to conform to the traditional style of chief complaint, present illness, past medical history, social and personal history, family history, and review of systems. The pattern of writing a history and physical examination became embedded in the student's skill set having worked with it every week for 2 years. In addition, repeatedly finding and admitting personal and group knowledge gaps without embarrassment or negative feedback set a positive versus negative environment for learning.

At the end of the first 2 h of "small group learning," the students posted their "differential diagnoses" either digitally or on a wall-mounted board, decided on what laboratory and radiologic studies they would request, and then reviewed the unanswered question list. The questions were merged when appropriate and reduced to a list of eight. Each student accepted the responsibility for researching the answer to one of the questions. The students had 36 h to complete their research, synthesize their answers, and digitally post their syntheses on the electronic learning system. The individual synthesis could be no longer than one written page and could contain pictures, charts, algorithms, or diagrams. The flexibility in synthesis presentation allowed students to use the format that was most consistent with their personal learning style.

The second class of the week, usually Wednesday morning, began with 3–5-min student presentations of their questions and answers. Since the presentations had been posted online, the other students in the group were expected to have reviewed the upcoming presentations prior to class and to be prepared to seek clarity on issues that remained confusing. After resolution of day one's questions, a class member presented a review of the case, followed by the unfolding of laboratory results and radiologic investigations. Internet connections allowed the students to find visual examples of pathologic results and radiologic investigations. The remainder of day two's session involved further discussion integrating new data from the laboratory and imaging and ongoing probing of the basic and clinical science needed to fully understand the diagnoses being considered. Again, unanswered questions were held for further investigation, or if an answer was of immediate need, one or two members of the group did a quick search online. By the end of the session on day two, the group was to have a prioritized differential diagnosis, a diagnostic plan, and any other orders for subspecialty input. Again, after developing a list of eight unanswered questions, each student accepted responsibility to research an answer.

The third session of the week, most often Friday morning, began with students again presenting the synthesis of their research already posted for review on the digital learning system. The session continued with a case review, followed by the results of additional laboratory or consultant input. A discussion integrating new case information as well as information from the week's large group activities led to development of a more definitive differential with a single most likely diagnosis and then initial therapeutic intervention. The patient's diagnosis and medical status was revealed with a final integrated case review. Patient outcomes such as an unexpected death which brought out emotional responses in members of the team allowed for group discussion of ethical and professional issues. Figure 12.1 outlines the weekly case development.

The small group case method was the core pedagogical approach bolstered by an "information and skills curriculum" using whole-class and divided class activities.

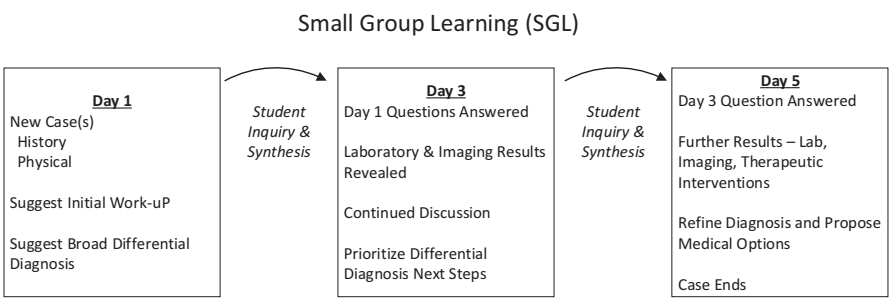

Fig. 12.1 Depicts the gradual implementation of a locally written clinical case over 1 week in a faculty-facilitated student seminar

The small group case discussions were expected to integrate the learning from basic and clinical science large group presentations, humanities in medicine sessions, community and population health experiences, evidence-based medicine exercises, and clinical skills activities including simulated patient encounters. Anatomy, histology, and pathology were integrated through the case-related laboratory and radiologic studies. Figure 12.2 displays the curriculum elements that were melded into the locally written case. Cadaver dissection throughout the year paralleled the systems curriculum as did physical examination skill development where possible. The goal of the small group case was not the "right diagnosis" alone but the integration of basic science knowledge, patient history and physical examination "data points," and current medical evidence, with the patients' socioeconomic issues and personal preferences in constructing a broad differential diagnosis and then a therapeutic plan. Table 12.1 shows how student small group case activities are paired with lifelong learning tasks.

Clinical Clerkships

The clinical faculty quickly began to differentiate the Partnership Campus students from other students based on their approach to patients, the ability to engage in clinical decision-making, and their abilities to self-educate and integrate information. The clinical faculty who underwent basic faculty development in clinical teaching and giving feedback were urged to encourage students to ask questions on rounds and to regularly seek answers to questions no one could satisfactorily answer.

The continuation of mastering the skills of lifelong learning is both easier and more difficult in the core clinical year. Patients are no longer simulated, and the reality of patient histories is much more difficult. In addition, the faculty, more often clinician educators, including many volunteer community-based practitioners, burdened with the responsibility of caring for patients have limited teaching time and often lack the self-confidence to display their own knowledge gaps. Wishing to maintain control, clinicians may be less likely to promote an environment that

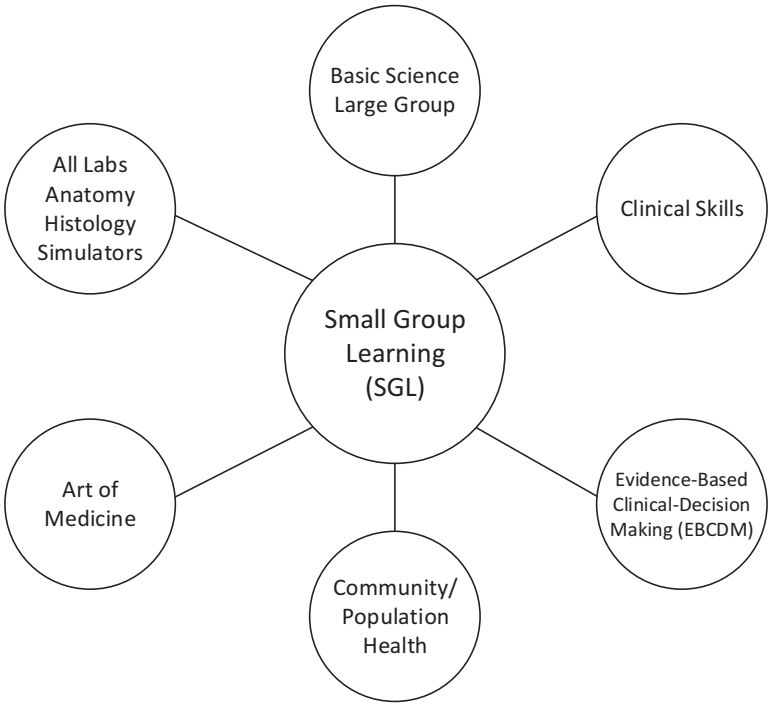

Fig. 12.2 Depicts the centricity of small group learning to integrate other elements of the curriculum through locally crafted clinical cases

Table 12.1 Lifelong learning and small group learning activities for medical students

Lifelong learning task	Small group activity
Recognizing and admitting the knowledge gap	In-depth case discussion; developing question list
Constructing searchable questions	Constructing questions to be answered based on knowledge gaps
Finding the information to inform the answer	Individual work of finding appropriate resource material
Synthesizing the information	Writing/constructing a one-page response to the question
Connecting and incorporating new knowledge	Teaching student colleagues the "answer" to the question
Applying the answer/ knowledge	Final discussions of patient management

accepts acknowledgement of deficiencies and possibly uncomfortable exposing their own. Not every medical student will have experienced a curriculum that promoted curiosity and questioning, emphasized skills to analyze clinical data, and coached students to effectively present a data-driven, patient-centered differential.

Thus, the learning venue in the clinical environment with a diversity of students and clinical faculty may be a major challenge for students and supervising physicians.

However, the clinical environment is invigorating and challenging for students who are prepared for the process of integrative thinking, information synthesis, and succinct and clear communication. It is also a pleasure for clinical faculty who are stimulated by energetic students and who understand that the more the students interact with patients and become part of the healthcare team, the more the students can expand the skills and knowledgebase developed during the first 2 years of study.

To support students and faculty in the clinical setting, all students on a specific specialty rotation (i.e., surgery, internal medicine, etc.) might meet with the local clerkship director to review cases and discuss core curricular material. A student meeting with the clerkship director releases the community teacher of the total responsibility for reviewing the entire clerkship curriculum with every cycle of students. The specialty clerkship director, by gathering weekly all the students assigned to the rotation, can enable active case-based learning through a team-based learning protocol (Chap. 4).

Assessing the influence of an active, integrative medical curriculum remains difficult, but anecdotal reports demonstrate positive outcomes in both knowledge and performance. One fourth year student on a "visiting" rotation at a traditional academic center was asked to report on a question brought up on work rounds. The next morning, the student presented a one-page synthesized answer to the question. The attending, unfamiliar with the Athens medical campus, was surprised and impressed. "How did you learn to do this?" the attending asked. The student answered, "Through practicing this process weekly for more than 2 years."

Lifelong Learning Skills in Graduate Medical Education

Graduate education is a time of exponential learning through doing. As house officers progress perfecting technical skills and acquiring clinical judgment, less supervision is required. A core competency for continuance and progression to senior positions in postgraduate programs is the ability to realize one's gaps in medical knowledge, clinical management, and technical skills and the willingness to request assistance. Safety and quality of patient care are linked to a physician's acknowledgement of their limitations, not the breadth or depth of the minutiae of their medical knowledge. Generally, the young physician is also taking on the role of teacher for medical students. Caught between wishing to appear confident and "in control" but struggling with lack of experience, clinical judgment, and not wanting to appear weak, young physicians may have significant difficulty admitting their deficiencies. Overwhelmed with patient care, the competencies of lifelong learning fade into the background as the new physician struggles to complete the immediate responsibilities of the day. Asking questions, searching for answers, integrating new knowledge, considering a broad differential, and developing a plan consistent with patient preferences influenced by medical evidence may be reduced to what the first

physician to see the patient decided and which consultant to call. Learning is reduced to occasional lectures and what needs to be learned for licensing examinations. Curiosity is gone [5]; the goal is to get home. How can practicing lifelong learning competencies empower more thoughtful, efficient, and happy house officers? Answers lie in transferring the practice of lifelong competencies into the daily work of young physicians [6] (Table 12.2).

Postgraduate education in every specialty is the time of learning in the inpatient and outpatient settings. Working long hours with little control over their work schedule, young physicians are confronted with patients presenting with a breadth and depth of disease against a backdrop of disparities in education, socioeconomic status, and cultural microcosms. The simplicity of the simulated case whether on paper, video, or in vivo is now overridden by the reality of a patient presenting with symptoms and signs, who feels poorly, and whose request for help must be addressed within time limitations since additional patients are awaiting attention. It is through presentations to the supervisor that the house officers first demonstrate the extent of their basic clinical skills in addition to their acknowledgement of skill gaps. With gaps exposed, the supervisor can both intervene to aid the resident with the immediate care of the patient and also help the young physician to develop a query based on an essential clinical knowledge gap for research before rounds the following day (Chap. 5). Expecting house officers to present the result of the query the next day allows the supervisor to probe the new physician's ability to access data and critically evaluate evidence and guidelines. Using the new information to reassess and broaden the differential diagnosis on a diagnostic dilemma and proceeding to explicitly design the diagnostic and management plan help to develop the lifelong skills of information synthesis and incorporation. Bringing into the management plan the patient's preferences develops the skills of patient-based medical care. This continuous process of data gathering, identifying gaps in knowledge, finding and incorporating new evidence and knowledge, reassessing management, and merging plans with patient preferences, when expected as standard performance in both inpatient and outpatient settings, builds the competencies of lifelong learning. Excellence in supervision can push the inquiry beyond the initial diagnostic and management issues to the underlying biologic mechanisms and new scientific discoveries, thus continuing to spark the learner's curiosity. The preceptor must

Table 12.2 Lifelong learning and learning activities for postgraduate physician trainees

Lifelong learning task	Learning activity
Recognizing and admitting the gap	Supervised patient care; encouraged to admit gaps in knowledge and skills
Constructing the searchable question	Building patient-based questions that need answers
Finding the information to inform the answer	Finding/evaluating the appropriate medical evidence
Synthesizing the information	Reassessing/broadening the differential dx
Connecting and incorporating new knowledge	Constructing the diagnostic/therapeutic plan
Applying the answer/knowledge	Implementation of patient management plan

continue to ask the young physicians the "why questions" including: "Why did the patient present now?" "Why might the chronic condition be exacerbated?" "Why is the patient concerned?"

Continuing Medical Education (CME)

It is often assumed that if undergraduate medical education programs and graduate medical education programs have been rigorous in their evaluation of learners, then licensed physicians are competent in the skills of lifelong learning and can apply these skills to continuous learning throughout their chosen careers. The challenge to those who work to facilitate lifelong professional learning is to develop learning options that merge the elements of adult learning with lifelong learning competencies. As an example, the number of pharmaceutical agents for the therapy of diabetes has dramatically increased. How can one best facilitate changing not only physician knowledge but the integration of the knowledge into a change in medical practice? Increasing knowledge is considerably easier than practice change. Changes in knowledge can be documented through pre- and post-surveys after conferences or general reading. Retention of new information is better if learning is more active as can occur in traditional small group journal clubs where active professional discussion allows one to challenge the information and conclusions presented. This can also occur in an organized large group activity which incorporates audience interaction. However, the study of successful continuing education programs has demonstrated that practice change is more successful if a learner is involved in a study group interacting with a body of new knowledge several times over several months. This technique is consistent with what educational psychologists refer to as "distributed practice." [7] Core to all continuing education is the principle that adult learners must feel a "need to know" and acknowledge a "gap in their skill set." Unlike medical students and young physicians, practicing physicians do not routinely have "a coach" to push them toward continuous learning although one goal of maintenance of certification or continuous competency programs have been to "push" physicians to maintain updated knowledge [8]. Talati has described the latter as "learning through the life span" with the prime focus being vocationally driven and spaced rather than continuous [9]. Whether the physician is a continuous lifelong learner or a learner more directed to fulfilling certification or licensure requirements, the goals should include updated, quality, and safe patient care.

How might the practitioner best use the skill set learned as a student and resident to be a continuous learner? Table 12.3 suggests outcome measures of licensed physicians' lifelong learning skills [10, 11]. Included in Table 12.4 are daily activities that help the practitioner with the learning task.

Developing quality continuing education programs is challenging. There are many costs with CME programs including faculty and staff time, facility fees, fees for maintaining the ability to grant CME credit accepted for licensure, and light refreshments. Often less considered are the direct and indirect costs for physicians.

Table 12.3 Lifelong learning and measurable professional outcomes for the licensed physician

Lifelong learning task	Professional activity
Recognizing and admitting the gap	Admitting need and deciding to search for a learning activity
Answering the unknown issues	Active participation in the learning activity and finding the answers
Synthesizing the information	Ability to teach what has been learned
Incorporating and applying new knowledge	Improving daily patient care management

Table 12.4 Lifelong learning competencies and activities through which professionals can maintain the competency [12]

Competency	Activities
Recognizing gaps in knowledge/skills	Questions from learners and patients Reflecting on unusual patient presentation Feedback from a consultation Skimming the medical literature—Journals, online reports, professional alerts Review of practice data Identified error or near miss
Filling in the gaps	Selecting a learning approach Literature search, current text, podcasts Weekly hospital-organized conferences Professional organization medical conference Interactive workshop Regular journal club
Synthesizing new information	Teaching at any level—student, resident, colleague, office staff, mid-level professionals Teaching in any setting—inpatient/outpatient, formal/informal, small or large group Writing a journal article, a comprehensive report, or new practice protocol Developing patient information handout
Incorporating and applying new knowledge	Change in practice/patient care: process, patient flow, therapeutics, diagnostic testing

A weekday event may involve closure of one's office with a sacrifice of patient care revenue. An evening or weekend event means loss of time with family. With the ability to obtain continuing medical education digitally or reading journal articles at times less disruptive to family and patient care, why develop local CME programs? Part of the reason is to offer education more directed to the needs of the local community using teaching modalities that are active and engaging for the attendees. The targeted community, therefore, should participate in the "what, when, and how" of local CME programming.

A Successful Local Continuing Medical Education Program (Dayton, Ohio)

Topic: Updates in Diabetic Care: Reasons for this topic selection included (1) rapid changes in oral and insulin therapies and management guidelines, (2) subspecialty care not an option for the increasing number of diabetics, (3) changes in the technology of glucose monitoring and insulin delivery, and (4) increasing costs for diabetic care.

Targeted Audience: Predominantly physicians; appropriate for advanced practice nurses and nurse practitioners, physician assistants, and pharmacists.

Faculty: All faculty were local and not offered any honorarium; faculty included endocrinologists, diabetologists (internists with special training and interest in diabetes); diabetic nurse educators (nurses with additional education in diabetes); dieticians.

Mode of Pedagogy: Small group case-based 30-min interactive discussions.

Program Agenda: The initial program offered a choice of six sessions with topics that included starting a patient on insulin—how and when; use of new oral agents; lifestyle changes; specific nutritional counseling; current management guidelines; home glucose monitoring technology; when to consider an insulin pump; and how to teach a patient to use insulin.

Course Structure: When participants registered for the CME event, they were asked to rank order their choice of sessions. Each topic would be offered two to three times during the 2-hour conference, and each participant would be assigned to three different topics. After each 30-min session, there was a 10-min break. When the participant arrived at the conference, they were given their assigned sessions—topics, room number, and time.

Course Resources: To accommodate 120 participants, 20 participants/room/session, six conference style rooms were needed with IT support for PowerPoint presentations. In addition, modest healthy snacks were provided. An administrative staff person to organize the course was essential with two additional "helpers" on the day of the course.

Outcomes: Outstanding feedback from the attendees who commended the choice of topics and the active realistic case-based discussions with local experts. Both session choice and active learning were consistent with adult learning principles and the 30-min session time was consistent with adult attention span. Attendees requested additional similarly organized conferences and suggested both topics and presenters.

Lifelong Learning and Technology

Handheld technology and electronic medical record systems have not only facilitated quick answers to questions of immediate need in patient care but also allowed the physician and student learner to access information that extends differential diagnoses and suggests cost-effective management at the point of care. For lifelong learners, the ability to quickly access information increases the efficiency of learning and helps avoid medical errors. In addition, technology is engaging, almost begging the user to dig a bit deeper to answer the next question or suggesting another site with information that might inform more updated guidelines or alternative therapeutic modalities.

The challenges for the practicing physician are keeping pace with the advances in technology, learning to use technology efficiently and wisely, evaluating the information obtained, and continuing to patient-base their final clinical decisions. The additional challenge is understanding that many patients will also be using modern technology to better understand their medical complaints including presenting with more self-diagnoses and, in some instances, a very sophisticated understanding of current medical science. Learning to dialogue and communicate with a well-informed patient becomes a new skill for the lifelong learner.

Exercises for Medical Educators

1. Review the curriculum for the medical students and the residents at your institution. Does the curriculum explicitly emphasize lifelong learning skills? If yes, are the skills of lifelong learning clearly described and matched with programmatic activities and expectations?
2. Review the last five continuing medical education courses your institution has offered. Were the courses designed with the understanding of adult learning principles?

Summary

Lifelong learning is a defining attribute of a profession. Given the constant changes in medical science, it is essential that lifelong learning be a daily practice for maintaining physician expertise. As with many skills, some physicians may more naturally obtain and practice the skills of continuous learning than their colleagues. However, formal education at all professional levels should be cognizant of adult learning principles and specifically focus curriculum to develop the skill set for efficient, effective, and personally satisfying lifelong learning.

Take-Home Points

1. Active learning techniques are consistent with adult learning principles and lifelong learning.
2. Lifelong learning principles should be explicitly incorporated into educational curricula and programs throughout the continuum of health professionals' education.

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Chapter 13
The Ethics of Teaching

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Contemporary Philosophical Ethics

Normative Ethics

"Normative" in philosophy is a technical term that is distinguished from "normal." A normative statement is one that instructs people what behavior is expected of them. It is not a theoretical exercise in rational argumentation for or against a philosophical proposition; rather, it is a guide to life, particularly the "good" life. The normative position proposed may indeed derive from logical arguments or alternatively from some preexisting code of behavior. It is common today for professions and organizations to compose codes of ethics that reflect their particular traditions, moral philosophy, and sociopolitical context, without arguing each paragraph anew. They also reflect the accumulated wisdom of the organization; practical wisdom is known as *phronesis* in the trade and was given pride of place in normative ethics, alongside analytical reasoning, by Aristotle. Those familiar with modern medical ethics will recognize the "Georgetown principles" as a commonly used normative framework for clinical research and decision-making—respect for autonomy, beneficence, non-malfeasance, and justice. They have been applied to the ethical challenge implicit in the use of sick patients for teaching purposes. In line with current opinion, autonomy is given pride of place, as a basic human right. The deeper philosophical justification for ethical codes and frameworks may indeed commonly rest on some form of "natural" ethics, assumed to be constitutionally part of what makes one human. Other justifications would be the revealed divine will or, on a more pragmatic basis, principles or rules that lead to the greatest happiness in the world. All of these systems are normative and impose obligations on those who subscribe to them. Teachers, too, increasingly find themselves subject to local codes

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N. Dickman, B. Schuster (eds.), *Active Education for Future Doctors*,
https://doi.org/10.1007/978-3-030-41780-2_13

of ethics, at the level of the medical school, the university, the healthcare organization, or the profession. Codes make it easier for management to control practitioners.

Virtue Ethics

Admitting that real life is too complex and messy to be reduced to a series of rules or laws, Aristotle, followed by St. Thomas Aquinas, and in our times Alasdair MacIntyre, proposed that we focus not on behavior but on the virtues of the moral "agent"—that is, the person charged with moral responsibility for the results of her actions. Virtue instructs us what sort of person to be, rather than what to do. Virtue ethics requires us to try our honest best but does not spell out how to behave in any particular situation. As always, Aristotle does not seek extremes of virtue but rather tries to set a realistic human mean somewhere in between the extremes of virtue and vice, towards which we should strive. If foolhardiness is one extreme, and fear is the other, then courage would be the virtue in between towards which we should aspire. Each practical context will have its own set of appropriate virtues. Candidate virtues for teaching might include intellectual honesty, courage, care, fairness, and practical wisdom. The reader will note that rights are not part of this system, only duties. Autonomy, which so dominates Western normative ethics, enshrining the rights of the subject, is simply ignored. A virtue ethicist will deny that human autonomous rights have any solid philosophical basis. In their place, the virtuous practitioner will nurture her own tendency to respect the dignity of others. In the context of teaching, respect for the dignity of students is a virtue situated at the mean position between the extremes of authoritarianism and disinterest. The environment of active learning may tempt the teacher to disengage from the students and simply let them "get on with it" themselves. That is as disrespectful of them as the old paternalism of the punitive frontal lecturer who tells the students what they need to know, without discussion or feedback.

Care Ethics

More recently, a newcomer has joined the club of "metaethical" theories—care ethics. This is based, to a large degree, on insights from nursing care and the influential formulations of Carol Gilligan. This, too, is a duty-based philosophy but not one of duty to improve oneself as in virtue ethics but rather the duty of care of others that is incumbent on us all. Avoiding the issue as to where the origins of this duty might lie, suffice it to say that in a medical context practitioners are by definition carers. Patients as objects of care are vulnerable, and this vulnerability places an added weight of responsibility on the carer. Students, too, are in many ways a vulnerable

population, a point to be developed further in the next section, which by analogy with patient care devolves a responsibility of care on the teacher. The crucial issue as seen by care ethicists is the imbalance of power between the carer and the subject. Awareness of structurally determined imbalances of power and conscious efforts to ameliorate their consequences is what constitutes the duty of care. From a feminist perspective, we would also be required to oppose and try and correct the root causes of such imbalances in society, and one can imagine situations where the teacher might find herself challenging existing structures within the medical school in support of the well-being of the students entrusted to her care and their ability to learn most effectively. An example might be poorly coordinated curricula where each course coordinator adds assignments for the students without being aware what other courses require of them at the same time. The teacher who cares will advocate on behalf of the students in order to redress the resulting unreasonable workload. Nonetheless, the central feature of care ethics is the focus on the asymmetrical relationship between the carer and the subject.

Relational Approach

One contemporary trend in philosophy is to deny the very concept of individual identity but to see each and every one of us as fundamentally defined by the nexus of relationships within which we live. Emmanuel Levinas has famously asserted that it is in the meeting between two people that both identities are defined and that moral responsibility of one for the other is created. Taking into account that most if not all meetings are asymmetrical, Levinas generalizes them in the host-guest relationship. The guest, entering the sphere of the host, generates in him the duty of care. It is the presence of the guest that makes the host into a host. In other situations, possibly even coexisting with this meeting, the host himself may be a guest to someone else. Personal identity, then, is contingent on the various relationships that engage a person. Personal responsibility is aroused in asymmetrical relationships, with the more privileged party duty bound to protect and care for the more vulnerable party. The role of the teacher places on her a responsibility for the students. It is they who form her identity as a teacher, not the medical school, or teacher training courses. She sees herself as a teacher mirrored in the pupils of her students' eyes, when their gaze meets. Ethical teaching challenges the teacher to meet the students' gaze honestly, to develop sensitivity to the students' vulnerability and their needs, and to develop herself professionally and morally in the light of what she sees reflected back from them.

Having moved from the rights of the learner subject, to the duties of the teacher carer, and then to the relationship between them, we will now examine a series of ethical issues that relate primarily to the learner and the teacher, respectively.

Issues of Learners

Student Vulnerability

Students often do not look vulnerable. As late adolescents, they may exhibit physical and intellectual prowess that conceals their insecurity. Mature students may bring to the class their years of life experience, but they may never have reflected critically on this experience, and an active learning environment may be the first opportunity they have to expose their opinions to scrutiny. The student role is one of subjugation—to the rules, conventions, and expectations of the medical school. Teachers are representatives of the school, whether or not they have reservations concerning school policies. Based on their experience and the depth of thought they have afforded to the subject matter, they represent knowledge, even when students may have more technical knowledge than them. Students are eventually subject to summative assessment to test their preparedness to practice medicine; teachers are often assessed much less formally and sporadically for their competence to teach. Students pay for the privilege of learning; teachers are paid for the privilege of teaching. The onus is clearly on the teacher to promote relationships with the students to enable them to develop into mature practitioners. The reticent, noncooperative, or strategically-oriented student is a sign of the failure of this relationship. We all fail some of the time. Active learning at least provides more opportunities for the students to interact with teachers and thus to develop intellectually and emotionally than the passive frontal teaching approaches.

Beyond the structural asymmetry between teacher and student, there is the emotional milieu within which learning to become a doctor happens. As a profession that meets human suffering, medicine is confronted on a daily basis by emotional tasks. Acquiring vast amounts of sophisticated biomedical knowledge is not enough to equip the doctor with the skills needed to confront suffering of the ordinary kind, much less so to cope with particularly sensitive issues. Sensitive issues such as abortion, rape, domestic and sexual abuse, terrorism, gender issues, racism, and social policy arouse strong emotional reactions among students, sometimes based on their personal biography, and learning becomes a fundamentally emotional task. Teaching these issues is also emotional labor for the teacher of the sort she is rarely trained to perform. Using common sense and sensibility, teachers may expose their own experience or opinions in these fields only to be surprised by the students' negative reaction seeing it as inappropriate since they felt uncomfortable in challenging the teacher's position. The ethical challenge here is inseparable from the pedagogic challenge—how to create a safe space for students to learn and to examine their opinions without making moral judgments. It is hard to foster emotional learning without loss of academic control in the class. Unfortunately, teachers are rarely supported in this task by institutional structures such as supervision.

Balance of Individual and Class

Class size is a critically important factor in the ethics of teaching. It makes no sense to speak of MOOCs and Oxbridge-style one-to-one tutorials in the same breath. The relational approach can only apply where there is sufficient personal contact with the individual student. The larger the class size, the more the teacher bears responsibility for the academic performance of the community of learners, rather than the development of the individual student. The tension arises when teaching medium-sized groups. Dinner parties are said to be most successful when six people sit round the table. As soon as there are eight people, two parallel conversations develop, often interfering with each other. You can fit six students round a hospital bed, and you can give individual attention to each of the six. For classes of 40–50 students, special techniques are needed to make the learning active—such as time-out for pairs or triplets of students to discuss a point and then come together again in the large group. Similar techniques may be used to turn active learning into interactive learning in out-of-class activities in PBL or TBL. It is the rare and charismatic teacher who can form meaningful relationships with a class of 40 students. At best those requiring special attention—the outstanding and the floundering students—may benefit from the teacher's personal investment. In all contexts, however, the teacher must make a value judgment how high to set the academic standard. If too high, some students will fall by the wayside who could otherwise have been nurtured to success. If too low, the best students will not be sufficiently challenged to progress as much as they could. Either approach is not impartial, and impartiality must be a core virtue in teaching. A structural solution could be for the institution to provide remedial learning for the slow students and advanced coaching or fast tracking for the outstanding students. There seems little the individual teacher can do other than speak to the mean. In the absence of a relationship-based ethics, other approaches are needed to guide the ethical teacher, such as emphasizing such virtues as fairness, impartiality, and respect for privacy.

Challenges

Free Speech

The issue of the freedom to express your opinion has a long and fraught history in universities. The classic dilemma—"do you have the freedom to speak out against freedom of speech?"—remains enigmatic. Adult learners rightly demand the freedom to express their opinions on their studies, as well as on any other topic on earth. Their opinions on their medical school, its curriculum, its staff, and its management may be acutely uncomfortable to the teacher. It is, however, generally not too difficult to find the path that affords the students a dignified hearing, on the one hand,

but does not disrupt learning, on the other hand. Many issues, not absolutely requiring immediate attention, may be appropriately referred to the relevant authority or committee for discussion. Typically, this applies to criticism of curriculum design. Other issues may be allowed a fair hearing, where clearly defined borders are set to protect the management of the class process, i.e., the right of the class as a whole to continue learning, and to protect absent objects of criticism who cannot defend themselves. John Stuart Mill limited freedom to not harming innocent or uninvolved others. An example of inappropriate expression of opinion might be where a student tries to turn a class discussion away from the subject matter to a political argument. There may be classes where this is appropriate, such as when learning about population health and health policy. The teacher is expected to behave likewise provided that any opinion she expresses which is not purely technical is presented as a position for discussion and not as ex cathedra truth.

Fear of Reprisal

Having talked about students who want to express their opinions and sometimes have to be restrained, we must also consider the converse situation. Sometimes students have good reasons to feel aggrieved, but they are reticent to say anything. Other times, they will be concerned that patients they meet are not being treated appropriately, professionally, or personally. They may feel, rightly or wrongly, that they will be seen as troublemakers if they speak up and that they will suffer reprisal from the medical school. Students from ethnic minorities may feel that they are already at risk of discrimination and that it would not be prudent to rock the boat. The teacher bears the obligation to reassure them that this will not be the case and to act towards this end. Anonymous expression of opinion is sometimes canvassed as a solution, but there is the countervailing danger of students hiding behind anonymity to express unwarranted damaging criticism of other students or of teachers. A firewall may be erected where the teacher knows the identity of the complaining student but passes on the complaint without revealing the identity of the complainer.

Privacy and Confidentiality

We may distinguish between privacy, which is the right to conduct one's life protected from the gaze and interference of others, and confidentiality which is the right to limit access to one's information to specified persons only. Thus, the teacher may not pry into the private lives of her students. Confidentiality is more difficult in the context of active learning. Students are expected to share knowledge, which implies exposing their work to some of their peers and at some stage to the teacher. This is part of the culture of a learning group. The teacher must therefore beware of accepting information on condition it remains confidential unless it is absolutely

necessary for the welfare of the student. Students must be made aware of the policies of the medical school as to passing on information from the individual teacher to the academic managers. A student whose grades are unexpectedly falling cannot confide in the teacher that he has personal problems at home, or personal health issues, and expect the teacher to make allowances on a one-to-one basis, without taking the case to the relevant committee that deals with such cases.

A new dimension has been added to the nature of intellectual property rights by the widespread use of the Internet and social media to underpin active learning. Web-based fora and groups, cloud-based document sharing, computer-based examinations, and assessment forms all involve sharing of information. They should all have well-defined access limitations which must be clearly understood by students and teachers. Unfortunately, not all users of these technologies are sufficiently sensitive to this, and some unscrupulous students with computer know-how are prepared to break into these closed groups, in order, for example, to reveal examination questions or to copy the work of the more talented students. The ethical teacher must rigorously observe the bounds of confidentiality and actively work against students who may try to breach them. The moral virtue underlying the protection of privacy of students and of their confidentiality is respect for their dignity.

Dignity and Discipline

If autonomy is about individual student rights, dignity is about the students as human beings. They may sometimes clash—it is sometimes right to override someone's autonomy where they are unwittingly causing themselves harm. It is respectful of a student's dignity to require the completion of course assignments even if the student prefers not to do so, if she still wants to be a doctor one day. This is not paternalism but due concern for the student to fulfill her freely chosen obligations in the context of her medical studies. For this to be the case, the teacher must make sure of maximal transparency in everything concerning the course—its requirements, the assessment methods, and the grading criteria. It is disrespectful of the students to subject them to unforeseen tasks or to nonuniform or inconsistent grading. Having given all students an equal opportunity to learn, assessment of their achievements must be uniform, without positive discrimination. Factoring up the grades of some of the students to take account of personal circumstances is disrespectful of their persons. Grades should reflect academic achievement, not reasons for academic underachievement. This goes for totally normal personal circumstances, such as illness, childbirth, bereavement, learning difficulties, compulsory military service, and the like. These circumstances justify specially tailored compensatory learning opportunities but not falsified achievement grades. They may also require specially tailored assessment methods such as added time or language translation for written examinations or oral in place of written exams. However, in all cases, the test difficulty and the grading systems must remain uniform.

Integrity

Academic

The teacher should do whatever possible to protect and promote the integrity of the students. Academic integrity is a foretaste of professional integrity and must therefore be diligently observed. There are those in the research community who claim that falsification of results, biased analysis, and even straight plagiarism are on the rise and have reached truly worrying proportions. Students may become aware of this and allow themselves to be corrupted while in the setting of the university. Or they may simply be under such pressure to pass their courses that they resort to cheating. Of course, there is no ethical ambiguity here and no doubt that any form of academic dishonesty is deplorable. The problem is what to do about it. On the one hand, one could argue that the safety of future patients requires that any student proven to act dishonestly in her studies be suspended. On the other hand, there are different grades of dishonesty—a brief conversation with a neighbor during a low-stake test is not the same as submitting a fictitious report of a clinical case. There may be room for punishment and remediation for first-time offenders at the milder end of the spectrum. A clear medical school policy and a robust mechanism for handling such cases relieve the individual teacher of much of the responsibility. However, she must have the courage to report on any student suspected of cheating, and she must have good reason to trust the medical school's structures for dealing with the problem. Where this is not the case, the teacher must decide her own course of action and make it totally transparent to the student and the school management. The important thing is not to be manipulated into collaborating with concealing such misdemeanors. Teachers who demonstrate integrity in their own behavior are positive role models for their students.

Psychological

Not all students are psychologically robust enough to withstand the pressures of medical school. We have already mentioned that cheating might be an expression of moral collapse under excessive pressure. Other expressions might include poor attendance, lateness in completing assignments, excessive argumentativeness, withdrawal, depression, substance abuse, and, unfortunately, too frequently self-harm. Most teachers are not trained clinical psychologists and cannot be expected to bear the burden of responsibility for all these emotional manifestations. Teachers can, however, be expected to recognize them for what they are and, after an initial exploratory confidential conversation with the student, to refer her to the appropriate service. Most commonly, this will be the school's student counselor who should be available to provide confidential counseling and therapy where necessary. The teacher should be aware that her own response, if inappropriate, may exacerbate the situation, such as naming and shaming, anger, or showing personal affront. Students under stress need support, not more stress.

Physical

The teacher may have occasion to show concern for the physical integrity of his students. This is the teacher's ethical business only insofar as the issue at stake involves the learning context. Along the way, the involved teacher may well become aware of extraneous issues, such as writing desks for left-handed students, the medical school's facilities for physical exercise, the availability of healthy snacks and meals, enforcement of no-smoking rules, sexual health advisory service, and sexual abuse reporting protocols. More immediate are such issues as the students' safety especially in the dissection room, in learning laboratories, and in various clinical facilities where students may be exposed to infectious diseases and workplace violence from distressed or psychopathic patients. The teacher must be sure that the students have been sufficiently prepared in risk avoidance before exposing them to such potentially dangerous environments. This preparation is primarily the responsibility of the medical school management, but the individual teacher working in one of these potentially dangerous environments must still take personal responsibility to ensure that the students are fully informed, vaccinated, and insured before allowing them access to these important learning experiences.

Manners

Both medicine and the universities are institutions with special social status and long histories. They have developed traditions of conventional behavior that reinforce their continued institutional identity and social status. These include dress codes, accepted manners of speaking, and internal hierarchical relationships. Since Hippocrates, this etiquette has been enshrined and protected both formally and informally. Entering medical school has always involved a process of socialization to the new environment, welcome to most students but resisted by some. In our generation of students—the Y generation—more and more students resist succumbing to tradition. They are highly motivated, sometimes by less altruistic and more self-serving values, and resistant to the old hierarchies. Their clothing, their body language, and their verbal styles of self-expression may offend even the X-generation teacher who is just a few years older. Their contributions to academic fora and to feedback sites sometimes resemble the shocking culture of blog talk-backs. They may well be perceived as impudent and offensive. Once again, where there are clear and enforceable school rules, the teacher may be satisfied with them and take no further personal interest in the students' manners. If, however, the school chooses not to formulate useable and enforceable rules, the teacher cannot avoid the confrontation. It may be helpful to make the distinction between what is an infringement of professional etiquette and what behavior might be disrespectful or offensive to patients. One may tolerate a greater degree of freedom in testing the boundaries within the medical school itself than in the clinical departments. Even the more adventurous student is likely to understand that the teacher is concerned for the

well-being of the patients—and if not, sanctions may well be appropriate. However, it is too easy to get drawn into a cross-generational conflict situation.

Teacher Issues

Active learning stresses the individual effort of the student in order to learn, rather than the efforts of the teacher to transmit knowledge. Nonetheless, the teacher's role is not restricted to a mere technical learning facilitator. Theoretically, at least, no content expertise is needed for that. In fact, the teacher remains a learning resource in her own right, often the main learning resource. Some ethical issues are specific to this side of teaching.

Academic Freedom

A well-entrenched right of university teachers is their academic freedom. This means that they are not told what to teach, within the confines of the syllabus of their course. They are also not told how to present their material. So teaching remains a creative enterprise, and course material prepared by the teacher is, by right, her intellectual property. Some teachers are therefore unwilling to make their presentations available online for the totally realistic fear that they will lose control over its free dissemination. This is, however, to the detriment of the students who want to access the material at their own convenience. In this digital age, students see no difference between photographing the lecture theater screen on their smartphones and uploading the file from the university server to their hard disks. Technology has indeed made the debate quite obsolete. The teacher should consult her own university as to the local rules on intellectual property rights over teaching materials. Many universities claim the rights for themselves, and prevent the teacher from using her own materials without their permission when teaching at another academic institution. As for the content, we have already discussed politics in the classroom, and teachers must resist attempts by the university to influence or to limit the content of their classes, as long as they stay within the bounds of relevance to the course and preserve a critical and balanced approach to the material.

Indoctrination Versus Nurture

Medical teachers are often passionate about their job—that is why they chose to teach as well as practice and/or pursue research. They may see it as their pedagogic function to transmit their enthusiasm to their students, and indeed it is these teachers who are likely to be remembered years later. This passion may easily lead to special

pleading in support of their own path in medicine. A general practitioner may be tempted to deride specialist care as unidimensional and narrow in scope. Alternatively, the superspecialist may be tempted to stress that she alone knows in detail everything needed to solve clinical problems in her field. It is easy to cross the line from enthusiasm to indoctrination. When discussing politically loaded subjects, such as public health or health education, the teacher's own deeply held political beliefs may also spill over into indoctrination. An example would be promoting a competition-driven market economy for medicine as opposed to a socialized, welfare-based healthcare system. Education in general and active learning in particular require the teacher to open the vistas of knowledge for the students to find their own way to their own conclusions. Arguing one's case and defending it in the light of criticism is permissible and admirable. Requiring the students to subscribe is not.

Assessment

Assessment is commonly divided into formative and summative. Both students and teachers must be absolutely clear in advance on the goal of any given assessment. It is quite in order for the teacher to want to nurture the students by testing them and giving constructive criticism of their work. That is precisely what is meant by formative assessment. The grades from this sort of assessment should not contribute towards a final course grade. There is sometimes the temptation to meddle with the grades in summative assessments, in order to help a student along the way. This is known as score pollution and is not acceptable. There may well be totally legitimate causes for a student to underperform, but that does not change the fact of underperformance. Smoothing over the awkward reality does not contribute to intellectual and professional nurture. On the other hand, there will be cases where it is appropriate for the grades to be factored up or down for the whole class. This is the case where the difficulty of the course or of the examination is inconsistent with the stage of student learning. It would be wrong to penalize the students for the teacher's miscalculation.

Personal Example and Self-Awareness

Effective teachers may be remembered by students throughout their professional lives. Although the role model should relate purely to the academic and professional arena, there is always the possibility that other aspects of the teacher's personality and behavior will be incorporated in the student's overall picture of the teacher as model. In a humanistic discipline such as medicine, it is indeed difficult to draw the line between professional and general demeanor, and it may even be inappropriate to do so. The teacher is therefore required to remain aware of her own behavior, in

class and outside it. No one is a paragon of virtue, but the teacher must remain alert to the possibility of becoming an example for the students to emulate. Especially during late adolescence, some students may project onto the teacher some of the parental characteristics from which they have so recently separated.

Diversity Among Students and Teachers

The massive population transfers the world is witnessing in our generation are reflected in the cultural mosaic of our medical schools. Both teachers and students represent an increasingly wide spectrum of cultures. Ethics in general and teaching ethics in particular have developed primarily in the Western Euro-American tradition. Even within this tradition, there is no monolithic school of thought, rather a variety of different gradations. Some schools of thought focus on the individual, and others on the community; some stress rights, and others stress duties. Feminist ethics is an example where the emancipation of women in the Western world has contributed new and challenging insights to which the earlier male hegemony had remained blind. This has generally been welcomed, although it is by virtue of the power of women in our society that their contribution has found such space in the marketplace of ideas. Other more disempowered groups may have their own insights to contribute but do not succeed so well. Religious ethics of various denominations, oriental conceptions of society, the ethics of poverty, and family-based values are among the sets of ideas often quite foreign to the Western mind. Both teachers and students may represent ethics that deviate from the Western norm. To take family-centered ethics as an example, there may be cultural norms that allow families to actively promote their grown children's interests by having prominent public figures telephone the medical school to give them special treatment or advancement. In the other direction, it might be perfectly acceptable for the teacher to contact the parents about a student's difficulties, without the student's knowledge. These two examples would be totally unacceptable by Western standards. Pragmatically, it seems reasonable to suggest that a public university should be governed by the ethics of the dominant culture and that both teachers and students from other subcultures defer to the dominant culture while within the confines of the university in all matters salient to the studies. This rule respects the dignity of all concerned and avoids insoluble conflicts. In other areas, such as dress codes, it would be good to tolerate alternative habits, such as the hijab or the kippah or, for that matter, shorts, open sandals, and miniskirts, each of which expresses something about personal identity but does not impinge on the business of learning.

Patient Welfare

Teaching medicine is a special case. It does not simply demand the regular attention to ethics, but it must keep in mind constantly that one day these students will be caring for patients. Patient welfare is the eventual outcome of medical education, so teaching medicine is a moral endeavor as well as a pedagogic process. Passive forms of teaching only allowed for preaching about ethics, and preaching is rarely effective in molding human behavior. Active learning is predicated on individual effort and personal responsibility of the learners. In facing the challenges of learning medicine, the student has to grapple with all the facets of the medical enterprise, ethics being not the least among them. Using the techniques of active learning enables the teacher to bring to the surface ethical dilemmas the students encounter and to create for them a safe space in which to examine their reactions. Students who do not take this opportunity may become nonreflective practitioners. At best, they will abide by the professionalism guidelines; at worst, their patients may truly suffer from their behavior.

Afterword

This chapter may make the ethical teacher look like a very severe person. Indeed, the subject matter, moral sensitivity, is a weighty issue. However, this may not necessarily be the case. The therapeutic potential of laughter is proven. Humor lubricates many a sticky doctor-patient relationship. A teacher blessed with a healthy sense of humor will easily find a common language with her students. The teacher's main asset is her personality, and there is no more authentic and successful way of teaching than the judicious use of it.

Further Reading

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Correction to: The Power of Experiential Learning in Essential but Challenging-to-Teach Subjects

Sivan Spitzer-Shohat, Jumanah Essa-Hadad, and Mary Rudolf

Correction to:
Chapter 8 in: N. Dickman, B. Schuster (eds.),
***Active Education for Future Doctors*,**
https://doi.org/10.1007/978-3-030-41780-2_8

The published version of the book had unclear figures in chapter 8. This has been corrected, and the Figures 8.1, 8.2, and 8.3 have been updated in the book.

The updated online version of this chapter can be found at
https://doi.org/10.1007/978-3-030-41780-2_8

N. Dickman, B. Schuster (eds.), *Active Education for Future Doctors*,
https://doi.org/10.1007/978-3-030-41780-2_14

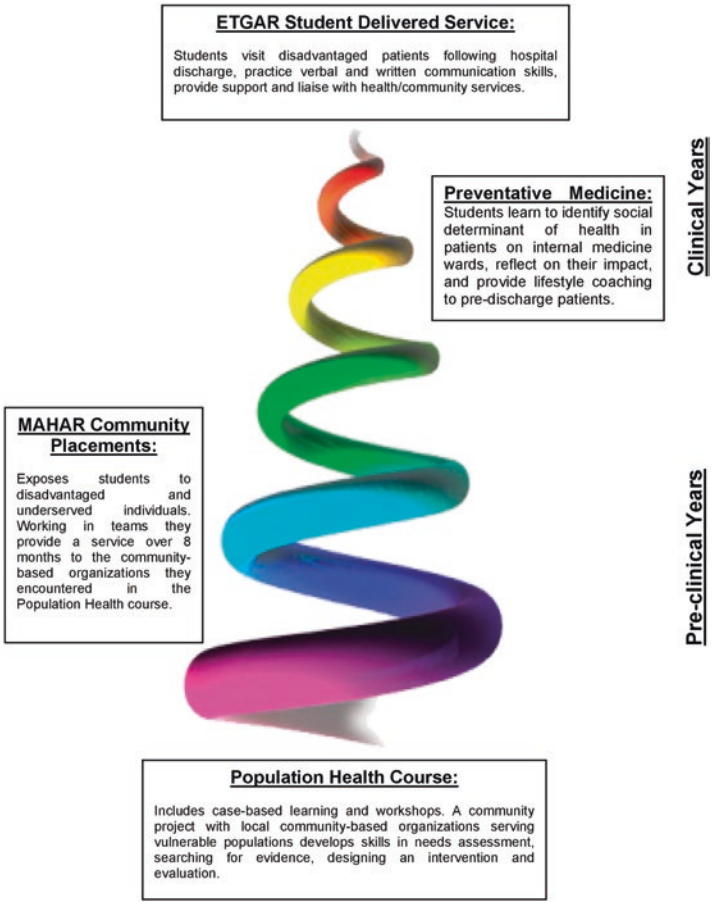

Fig. 8.1 Shows the spiral curriculum. It comprises four discrete required courses—two delivered during preclinical studies and two through the clinical years

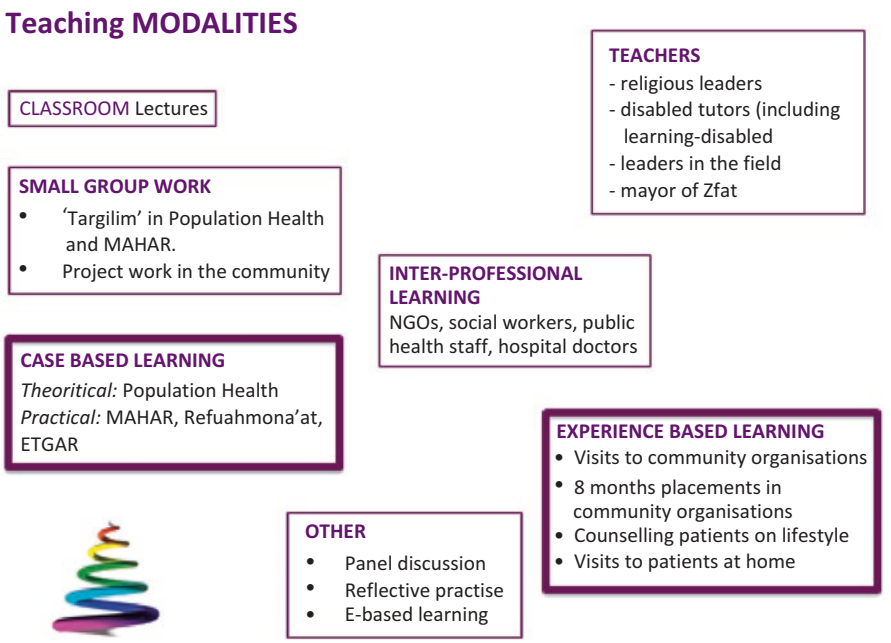

Fig. 8.2 Illustrates the variety of teaching modalities that were eventually employed in the Social Determinants of Health spiral curriculum

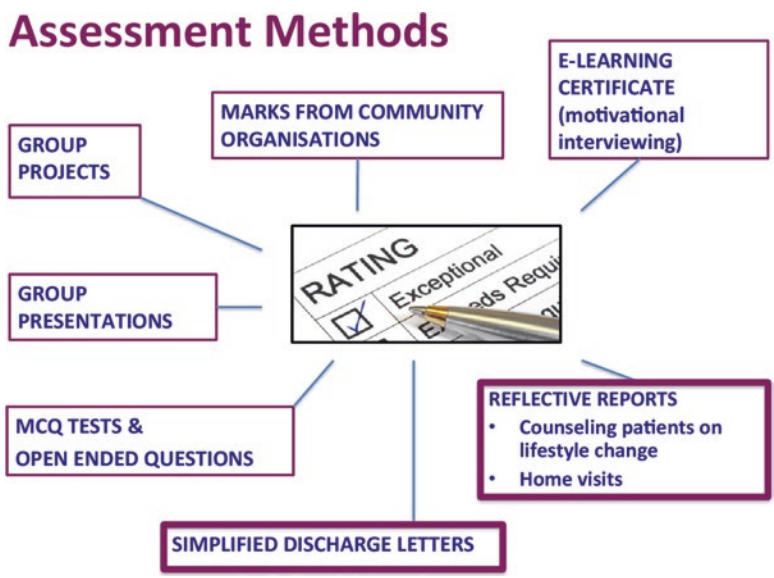

Fig. 8.3 Displays the variety of assessment methods employed over the course of the spiral curriculum reflective reports and simplified discharge letters are highlighted as they were the most reliable in assessing the practical skills

Glossary

Attachment A place or person to which a student has been assigned for an experiential learning opportunity

Clerk A verb: to take a full history, perform a physical examination, record one's findings in the patient's notes and write a problem list and care plan

Clerkship A clinical experience for a student of the health professions in which he is introduced to the practical care of patients

Clicker A device that clicks; Small 'clickers' are used by a group of students to individually choose their answer to a question posed by the instructor. Computers and handheld devices can be used as 'clickers'.

Clinical placement The physician or institution where a student has been assigned for a clinical rotation

Concept inventory A test designed to help determine whether a student has an accurate working knowledge of a specific set of concepts

Concept map A diagram to depict relationships between concepts; a medical student may draw a concept map to help them understand and organize pathways in cardiac physiology

Faculty of Medicine Equivalent to a School of Medicine which has the authority to grant a doctor of medicine degree

First degree An undergraduate degree or first professional degree after secondary school

Frontal teaching A teaching method where the teacher stands in front of a class and imparts knowledge; giving a lecture is frontal teaching

Helsinki Obtaining a Helsinki is equivalent to obtaining permission from the ethics committee to do human research; the Declaration of Helsinki is a document on human research ethics

Hijab A head covering worn in public by some women of the Muslim faith

Houseman Also referred to as a House Officer—both refer to a junior doctor usually in a British or Irish hospital. Houseman is the equivalent of a resident in a US hospital.

N. Dickman, B. Schuster (eds.), *Active Education for Future Doctors*,
https://doi.org/10.1007/978-3-030-41780-2

Kippah A brimless cap traditionally worn by Jewish men to fulfil the customary requirement to have their head covered

MOOC 'Massive Open Online Course' An online educational course with open access on the internet

Oriental culture Near Eastern and Far Eastern societies

Oxbridge-style A tutorial system of education still practiced at the University of Oxford and the University of Cambridge in the United Kingdom

Phronesis Practical wisdom

Practitioner A physician who is actively involved in patient care

Preceptor An instructor teaching medical students in a clinical environment

Resident A postgraduate physician involved in a specialty training program in the United States involving hospital and ambulatory patient care; position is similar to a Houseman in the United Kingdom

Study buddy A partner, friend, and/or colleague with whom one studies

Tutor A teacher who transfers knowledge and skills to students; in a clinical environment, a preceptor may be considered a tutor

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