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Tredinnick-Rowe, JF

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The Role of Pedagogy in Clinical Education

John Tredinnick-Rowe

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04

Abstract

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This chapter introduces the role of pedagogy in the tuition of clinical subjects. After which an overview of the two types of pedagogy that underpin it are explained. Research on the role and function of pedagogy in clinical subjects is in its infancy; as such, different examples of approaches are presented. Specifically, I look at public health, Widening Participation and Public and Patient Involvement (PPI). The chapter will highlight that there is a need for more academic work that investigates the role pedagogy plays in clinical subjects. In short, despite that fact that there is a pressing need in most Western countries to train clinical staff, there is an unfortunate lack of pragmatic texts in all areas of clinical education. By highlighting what publications exist, I hope to instigate discussions about the type of publication and style of approaches that are required for the study of medical pedagogies. Because of the variety of stakeholders involved in medical education, not all will uniformly accept new approaches to pedagogy, causing possible tensions. This chapter covers pedagogies relevant to allied healthcare education. Its content may be of interest to tutors who want to know more about clinical pedagogy and curriculum design.

Keywords: medical education, clinical education, healthcare education, medical pedagogies, Public and Patient Involvement (PPI), public health, Widening Participation (WP)

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1. Introduction

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This chapter will look at substantive approaches from undergraduate and postgraduate medicine and allied health education from UK curriculums. Here we discuss the role pedagogy plays in these clinical areas. Medical education exists across a continuum, including the core curriculum of undergraduate, post-graduate education, and continuing professional development (CPD) once a doctor qualifies. However, medical students also have to take many

01 elective units during their education, the inclusion of material drawn from elective courses,
02 and Student Select Units (SSUs) in medical schools is often missed in medical education text,
03 as such, I will provide examples of pedagogies from these areas as well, in an attempt to
04 showcase the different roles pedagogy plays.

05 One can find texts that connect pedagogy to different clinical areas, for example, nursing [1, 2],
06 which has had a focus on narrative pedagogical strategies [3, 4], but also has been approached
07 from feminist, postmodern, and phenomenological perspective, see Ironside [5]. Equally one
08 can find texts in dentistry that address matters of pedagogy [6], including works in sub-spe-
09 cialities like paediatric dentistry [7, 8]. Other clinical areas that have papers connecting them
10 to pedagogy include social work [9], podiatry [10], and paramedic care [11] amongst others.
11 Across the spectrum of medical subjects, one can find publications connected to pedagogy,
12 which are taught as elective modules like the medical humanities [12] or more quintessentially
13 'medical' areas such as anatomy [13]. As well as specific techniques used within medical edu-
14 cation such as simulated learning [14].

15 However, one format in which only a few key publications exist, which connects pedagogy
16 with clinical education is the production of textbooks or monographs. This is significant
17 because books provide in-depth and multiple author platforms to debate issues of pedagogy
18 in a way that the length of an academic paper does not permit. Secondly, while research
19 should be encouraged, it is not always obvious how to translate it directly into the actual
20 practices of medical education. Therefore, while there are many research papers that one can
21 read, there is a lack of practically-minded, in-depth monographs that connect clinical areas
22 to pedagogy. Of the texts that exist I would specifically point to the recent work on nursing
23 by Dyson [15]. However, there are also more specialised text like Sataloff [16] who connects
24 pedagogy to the medicine of professional voice care.

25 Despite the fact that research about pedagogy in clinical areas is not as prevalent an area of
26 academic activity as perhaps it might be (even though works do exist), there are still some
27 reasons to be optimistic about its future. For example, currently the timing and situation is
28 fortuitous, as the regulator of doctors, and nurses, the General Medical Council (GMC) and
29 Nursing and Midwifery Council (NMC) respectively (circa 2017), mandate that doctors and
30 nurses actively participate in CPD activities in order to retain their licences to practice medi-
31 cine/nursing [17, 18]. Meaning that, presently, there is an imperative for clinical professionals
32 to engage in learning that did not previously exist and this opens up a new opportunity for
33 the subject of clinical pedagogy to gain some relevance.

34 Also, from 2016 the British government has announced a 25% increase in the number under-
35 graduate medical school places [19]. As such, there is currently a need for clinical tutors and
36 academics to revise and reconsider their curriculums and approaches to pedagogy to accom-
37 modate 25% more students. More widely, I was felt that this chapter will be of interest to any-
38 one involved in the development of healthcare professions. Primarily because most education
39 and regulatory developments in other allied healthcare professions are predicated on issues
40 that first occur in medicine.

41 For the sake of brevity, in this chapter, we will specifically look at some emerging themes and
42 subjects in medical education, including Public and Patient Involvement (PPI), public health

01 and Widening Participation (WP) as clinical areas that have seen some developments in terms
02 of the pedagogical strategies they employ. Other areas like the growth of simulated learning
03 are also important in medicine, but due to the restrictions in word limits here, I will not go
04 into this issue, see Ziv et al. [20] for more details.

05 Lastly, this chapter has some international salience. Although the exact approaches for teach-
06 ing medicine in European and Anglophone countries are different, issues related to how to
07 educate medical students and their interaction with other clinical professions remains broadly
08 the same. Hence, the themes identified here will speak to issues present in North America,
09 Australasia as well as in Europe and the UK.

10 2. Rationale for the chapter

11 While there are several monograph series that draw upon both theoretical and practi-
12 cal issues in medical education [21, 22], the literature on pedagogy is almost exclusively
13 confined to papers in academic journals; there are few book series dedicated to pedagogy
14 in medicine or other clinical areas. Consequently, the author felt that there is a clear need
15 for a book chapter to examine current issues and evidence related to pedagogy in medi-
16 cine from a more practical standpoint. In this chapter, then, I aim to present the works of
17 those who have attempted to construct evidence-based pedagogies in clinical areas. Also,
18 to present some of the literature as it exists for readers and to signpost them to particular
19 areas of interest. I collected this body of literature by drawing from purposive sampling
20 techniques. According to Sparkes and Smith ([23]: p. 70) “sampling in qualitative research
21 is best described as purposive or purposeful in which an attempt is made to gain as much
22 knowledge as possible”. Purposeful sampling involves the selection of data “from which
23 one can learn a great deal about issues of central importance to the purpose of the inquiry”
24 ([24]: p. 230).

25 The need to develop pedagogy within medical education to facilitate changes in the way
26 medicine is taught has been clearly identified. For example, the Lancet Commission in their
27 report on medical education opined that medical school curricula were currently not fit to
28 meet societal demands, and were “outdated and static” [25]. Developments in the pedagogy
29 of clinical subjects can help to create the medical schools (and so curricula) fit for the twenty-
30 first century [26], through the dissemination of evidence-based pedagogies for instruction,
31 for which there is clearly a demand both in terms of societal pressure and but also regulatory
32 requirement. One of the key features of pedagogy’s function within clinical subjects is that
33 they can be co-produced with patient partners or with input from the public perspective, or
34 from other clinical professionals [27–29]. However, medical educators perpetually have to be
35 cognizant that their work and its content adheres to the stipulations of the General Medical
36 Council, Medical Schools Council, the Anatomical Society and the College of Paramedics etc.
37 who have a role in determining what the clinical students are taught. It is important in medi-
38 cine and allied healthcare professions that pedagogies be developed in a highly inclusive
39 manner and that are representative of a variety of stakeholders in medical and health profes-
40 sions education [30]. I hope to shine some light on these points in this chapter.

01 3. Types of pedagogy in clinical education

02 There are essentially two different investigative positions one can employ to analyse peda-
 03 gogy in relation to curriculum design and teaching methodologies within the environments of
 04 medical schools. That is to say, we can look at the variance of pedagogical strategies between
 05 subjects, or within subjects themselves. In a very basic manner, one can simplify these areas
 06 down to the following binary set:

07 1. Pedagogies of individual subjects taught as part of a curriculum or elective

08 a. Example: Pedagogies for Teaching Anatomy

09 2. Pedagogies of topics or themes taught across clinical or medical curriculums

10 a. Example: Pedagogies for teaching gendered issues in medicine

11 Included within these two categories are both the traditional subjects that students will have
 12 to learn which will typically draw upon standard pedagogical formats, lectures, group work
 13 etc. However, this dyad also reflects subjects that medical schools are currently adapting
 14 to incorporate. I.e. the themes are driven by innovations in medical schools to produce the
 15 doctors of the future [26]. For example, the increasing role of patient centred medicine, the
 16 increasing use of technology in the teaching of MOOCs, or other online/distant teaching plat-
 17 forms, in addition to mobile applications and E-health, i.e. health technology methodologies.
 18 This is why the division between subject and theme when providing an overview of a disci-
 19 pline is useful, as it shows not just what exists but also the struggle institutions face in adapt-
 20 ing to new disruptive technologies [31] and so societal pressures.

21 3.1. Individual subjects

22 A variety of medical education texts exist that cover both generic subject areas, such as Under-
 23 standing Medical Education—Evidence, Theory and Practice [21] or the Routledge International
 24 Handbook of Medical Education by Bin Abdulrahman, Mennin [32]. However, fewer books
 25 exist on subject-specific areas of medicine, for example, *Medical Physiology: Principles for Clinical*
 26 *Medicine* by Rhoades and Bell [33]. While a useful repository of medical knowledge for trainee
 27 or practising doctors about physiology, it does not offer new methods for teaching the subject
 28 or development of new material from within the subject itself. Consequently, as already iter-
 29 ated, while there are many papers on individual subjects there does seem to be space to explore
 30 new and innovative areas of medical pedagogy in book-format.

31 3.2. Thematic texts

32 In addition to pedagogical strategies that focus on individual areas of the curriculum, one
 33 could focus on themes that might emerge in several areas across a curriculum. For example,
 34 introducing social justice concerns, ethics or gender-related issues in medicine. Given the
 35 political and social environment within which medicine and medical education function, it is
 36 to be expected that there is a significant scope for the development of pedagogical strategies
 37 across thematic areas.

01 Moreover, there is scope for research about clinical pedagogy to provide a focus on new
 02 teaching pedagogies that are present across different areas of medicine, and or other clinical
 03 subjects combined, such as simulation [34]. There is also scope for subjects that simply
 04 address the use of pedagogical techniques that are less used in medicine, such as the flipped
 05 classroom models of teaching [35]. In addition, other cross-curriculum themes that cannot be
 06 ignored include: the connection of pedagogy to assessment format within medical schools,
 07 the role of reflection, feeding back and feeding forward [36]. In the next section, we will look
 08 at some specific examples of how pedagogies have been developed in clinical subjects both in
 09 terms of individual subjects but also in thematic areas.

10 4. Emerging pedagogical perspectives

11 4.1. Pedagogies in population health

12 As a discipline public health is concerned with influencing and understanding health and
 13 wellbeing at the level of populations [37]. Given the wide reaching nature of public health
 14 practice, it involves more clinical staff than simply doctors, with undergraduate and post-
 15 graduate programs producing a multidisciplinary workforce including nurses, dentists, car-
 16 ers, aid workers, biostatisticians and epidemiologists amongst others.

17 Literature exists that gives an overview of population health such as Young [38], however like
 18 many, Young investigates the subject from a quantitative, epidemiological perspective. There
 19 is a distinct lack of literature that connects the qualitative aspect of education (including peda-
 20 gogy) to public health, primarily qualitative works on public health are based in a social sci-
 21 ence approach [39], that contextualise populations health issue in relation to a societal issue,
 22 for example, *Public Health and Social Justice* by Donohoe [40].

23 In recent years, the subject discipline has risen to prominence, but there has not been a con-
 24 current increase in the teaching of the subject within medical schools. Therefore, it remains
 25 under-researched in terms of developing an evidence-based pedagogic strategy for teaching
 26 the subject. In addition, the teachers of the subject can be under-resourced in terms of the
 27 literature from which they can draw to successfully engage students.

28 One of the most practical ways to expose medical students to public and population health is
 29 to engage them with community health initiatives, especially disadvantaged or marginalised
 30 communities. I recognise, however, that public engagement happens across a spectrum, as
 31 Ellaway et al. [41] has highlighted:

- 32 1. "Community-based medical education that takes place in traditional academic settings.
- 33 2. Public health engagement that involves teaching in community settings, but does not in-
 34 volve the community in its design or any other activity.
- 35 3. Community-based public health education that directly involves directly members of a
 36 community in the design, conduct, and evaluation of engagement, and meets the needs of
 37 the community as well as the students"

01 Although population health is a more recent addition to medical school curriculums and there
 02 is only a sparse literature of pedagogical methods used in the subject area. One can see that
 03 each of these three levels represents a different pedagogical strategy across the continuum of
 04 medical education. Moreover, they have the potential to become bespoke pedagogies in their
 05 own right, depending on the level of engagement a course uses. One of the main vehicles for
 06 the development of pedagogical innovations in this area is the Public Health Educators in
 07 Medical Schools (PHEMS) network, see Vyas, Rodrigues [42].

08 The PHEMS network, in partnership with the Faculty of Public Health, has identified the
 09 core public health content knowledge to be achieved by any UK medical graduate, irrespec-
 10 tive of curriculum design [43, 44]. This learning, of course, must be mapped to the General
 11 Medical Council's 2015 document *Outcomes for Graduates* [45] and be in accordance with the
 12 Faculty of Public Health's conceptions of the subject discipline. Within this framework, I
 13 feel that that the works of the PHEMS network can highlight public health topics and peda-
 14 gogical suggestions for tutors to further the integration of population health teaching within
 15 medical education.

16 PHEMS have devised four innovative pedagogical approaches for engaging medical students
 17 in public health. These are (1) social accountability and community engagement, (2) making
 18 the course clinically relevant, (3) sticking to a core content, and recognising that assessment
 19 drives learning, and (4) use technology-enhanced learning [42]. Highlighting these four peda-
 20 gogic approaches will help healthcare systems support the inclusion of population and public
 21 health in their curriculums. I would suggest that this is a good example of how collaborative
 22 working in an emerging subject within medical schools can start to form a consensus about
 23 the best pedagogical strategies for teaching a discipline.

24 Looking at innovative approaches for engaging medical students on the subjects of popula-
 25 tion and public health. One can see that through dialogue with like-minded professional and
 26 mediation/support of a professional body, subject areas can start to come to a consensus on
 27 the best approaches to pedagogy within their discipline.

28 4.2. Pedagogies for Widening Participation in medicine

29 Widening Participation (WP) is the process through which students from under-represented
 30 groups, be it in relation to gender, age, ethnicity, sexuality or another protected character-
 31 istic are facilitated to study medicine [46, 47]. Medical unions such as the British Medical
 32 Association support this position:

33 *"Doctors should be as representative as possible of the society they serve in order to provide the best*
 34 *possible care to the UK population"* [48].

35 However, also the Medical Schools Council [49], and the General Medical Council [50], and
 36 NHS Health Education England has a Widening Participation programme and a Talent for
 37 Care strategy, which it uses to promote the WP agenda. More specifically, NHS Health
 38 Education England has four specific pre-employment programmes:

- 01 • Project SEARCH
- 02 • Princes Trust
- 03 • Inspiring Futures
- 04 • Brightside Charity

05 While also running work experience programmes with schools, an integrated apprentice-
 06 ship scheme—different aspects of healthcare, careers days/fayres, healthcare experience pro-
 07 grammes, preparation for work and employability courses. As such, it is fair to say the WP
 08 agenda is extensive in medicine, and many different strategies are used to engage people with it.

09 Consequently, there is currently a drive within the profession and government to help widen
 10 participation in medicine and enhance social mobility. We are also entering a recruitment cri-
 11 sis in healthcare [51, 52]. The government is currently funding an increase in medical school
 12 places and is prioritising applications that specifically address Widening Participation. For
 13 these reasons, it can be argued that the sharing of pedagogical practice and expertise is a
 14 much-needed area in relation to WP in medicine.

15 Medicine and dentistry specifically as a way to widen participation use 1-year pre-medical
 16 gateway courses, that students might take to enter medicine if they have not met the specific
 17 requirements for directly entering a degree programme [53]. Some universities such as the
 18 University of Birmingham accept up to 10% of each year's cohort from Widening Participation
 19 schemes [54]. Particular pedagogical approaches are used for students on gateway schemes,
 20 but also when they are mixed in with other students in their undergraduate years.

21 Widening Participation is not just an activity that happens in universities however, Widening
 22 Participation initiatives begin at the selection stages for those applying to medical schools,
 23 and in the schools themselves. However, much activity in terms of aspiration building, raising
 24 academic attainment, career planning and developments occurs in primary and secondary
 25 education in terms of WP long before a student applies to medical school. Schools will design
 26 pathways for learning specifically for those students who want to study medicine, as well as
 27 for those who enter specialist medical and healthcare studio schools.¹ It is key if we are going
 28 to create a more diverse workforce in medicine to encourage students at these younger ages,
 29 to consider a career as a doctor as a real option. Research has shown that inclusive pedago-
 30 gies should be sensitive to the complexities of diversity, and the ways in which teachers' and
 31 students' identities might influence academic engagement [55].

32 From a UK perspective, some of the key networks for the development of pedagogy are the
 33 Northern Admissions Network of Medical Schools (NAMNS) and the National Widening
 34 Participation Group in Medicine, which is run by medical school leads for Widening
 35 Participation in the UK. This group aims to promote best practice in Widening Participation
 36 in UK medical schools, and to act as a problem-solving forum for WP leads.

¹These are specialist schools and colleges that prep students to gain entry to medical school.

01 Despite the presence of the WP agenda in all medical schools and schemes to promote it,
 02 there is not a rigorous evidence-based approach to implementing these initiatives. Frequently
 03 approaches are simply seen as a form of community engagement; thought is not often given to
 04 the pedagogy or the best way in which we might help different groups access medical educa-
 05 tion, or how the selection process to universities might disenfranchise certain groups. As was
 06 the case for pedagogic textbooks in public health, currently, there are no monographs concern-
 07 ing Widening Participation in medicine, let alone from a pedagogical perspective. As far as
 08 the author is aware. If one wants to learn about WP in medicine, you may find single chapters
 09 in more broadly themed books about WP in Higher Education, such as ' The right to Higher
 10 Education: Beyond Widening Participation' by Penny Jane Burke, and Fuller, Heath [56], and
 11 then attempt to apply its lessons to medicine or a healthcare related subject. Further work
 12 needs to be done, I feel, in this highly important area.

13 4.3. Pedagogies of patient and public involvement

14 A thematic area that cuts across all clinical disciplines is the role that patients plays in the
 15 education of students. Naturally, the focus of the different caring professions is the same, to
 16 help patients, and consequently patient-interaction features regularly within the education of
 17 nurses, doctors, dentists, etc. What has been less prevalent is a debate about the best and most
 18 appropriate ways to work with and for patients from a pedagogical perspective, in what is
 19 known as Patient and Public Involvement (PPI) [57].

20 Rees et al. [58] describes Patient and Public Involvement in medical education as the *condicio-*
 21 *nes sine quibus non* of a quality education in medicine and the clinical professions more widely.
 22 The idea of a partnership between the patient, public and clinician has been echoed by many in
 23 medical education from clinical and non-clinical researchers [59], patients themselves and the
 24 General Medical Council as a medical regulator [45]. The PPI agenda is also present in a vari-
 25 ety of other clinical areas outside of medicine such as health service research, but also health
 26 and social care, see Hayes et al. [60]. It is also worth noting the patient involvement in medical
 27 education happens both in the core modules for students but also in their elective courses.

28 But yet, as Towle et al. [61] highlights in their review of PPI literature, there remains a lack of
 29 theory, application and evaluation of PPI schemes. It has also been noted from a pedagogic
 30 perspective, by critics of PPI in its current state that students often learn about patient-centred
 31 medicine from other doctors rather than from patients themselves [58, 62]. Once more, there is
 32 a clear need for a publication that connects pedagogy and PPI. I also feel PPI is often treated as
 33 a monolithic subject area, even though it involves a variety of ontologically distinct roles. For
 34 example, patients, the public at large, patient representatives and lay representative occupy
 35 different roles within PPI, as well as being heterogeneous in their own right. In short, there is
 36 no typical patient. The specificity of these roles needs to be accounted for, and tailored to indi-
 37 vidual situations when developing pedagogy if it is to be fit for purpose. This issue in itself I
 38 feel is further justification for the need for additional work on the subject:

39 *"Rather than attempting to simplify these matters, however, we would argue that ambiguity and com-*
 40 *plexity in PPI is precisely why medical education should demand more consideration of ontological and*
 41 *epistemological matters in PPI scholarship and research."* ([63]: p. 85).

01 Efforts to increase the patient voice in medical education are also occurring in other Western
 02 nations; PPI is an agenda that is profligate throughout the Anglosphere and in Western
 03 Europe. This is particularly the case in Canada—see the case studies in Spencer et al. [64].
 04 Consequently, medical education, policy and legislation about PPI are generalizable across
 05 many Anglophone countries. It is built chiefly around an evidence base and legislation in the
 06 UK, Canada and Australia. Patient and public involvement is paramount for doctors from the
 07 beginning of their training but also throughout the entire duration of their clinical practice.
 08 Previously, publications have highlighted this:

09 *“the field of medical education could have much to gain from crossing the boundaries between those*
 10 *seemingly different spheres and developing a cogent, context-specific approach to embedding PPI as*
 11 *both formal education and education-through regulation for all medical professionals.”* ([63]: p. 80).

12 Currently there are a small number of books that relate to PPI in medicine, but they tend to be
 13 confined to very specific areas of medicine or health, such as: health technology assessment [65],
 14 a critique of the underlying philosophy of PPI [66], a comparison between European nations
 15 policies on PPI [67]. Narrative stories of PPI in palliative care [68], and PPI in the commission-
 16 ing of Primary Care Trusts [69] etc. As this list details, the books currently in circulation about
 17 PPI relate to niche areas, like health technology assessment for example. While publications
 18 exist in related topics, such as patient-centered medicine, there are no generic works on PPI in
 19 monograph format, and more specifically, no books exist with an explicit focus on PPI from a
 20 pedagogical perspective. Which has emerged, as a recurrent theme throughout this chapter,
 21 there is space for a pragmatic text on the role and function of pedagogies in PPI.

22 Frequently books on PPI state that their objectives are to empower patients through publish-
 23 ing accounts of their participation in medical services design or education. As such, many
 24 books like Rhodes and Small [68] are a collection of narratives from the patient perspective. I
 25 find such collections worthy, but they are categorically distinct from works that connect PPI
 26 to pedagogy.

27 The different pedagogical approaches to PPI can then be broken down into three different
 28 areas, in relation to the different needs that they serve: societal need, regulatory need and
 29 educational need, for example.

30 4.3.1. Societal need

AQ1

31 There is a societal need for patient’s voices to be heard in medicine so that patients can
 32 become an active participant in the design of medical education and clinical services. This is
 33 also a thoroughly modern way of working, that accounts for patient needs, as Sullivan ([70]:
 34 p. 1595) stated:

35 *“The physicians’ job description will be changed to focus on patients’ lives rather than patients’ bodies.”*

36 Further to this, there is also a need for hard to reach sections of society, such as LGBTQI+,
 37 military veterans and disabled groups to be more fully represented in clinical education sys-
 38 tems. Fundamentally, I believe that pedagogies for patient-centered medicine and PPI need
 39 to have their genesis in collaboration and partnership if they are to meet societal needs. I.e.

01 where patients, lay representatives, students, doctors, and researchers work in collaboration,
02 this helps to produce pedagogies that reflect the needs of wider societal groups, and not ones
03 simply formed by doctors or academics in isolation.

04 4.3.2. Regulatory need

05 The GMC as a medical regulator is pushing for more patient-centered medicine and patient
06 engagement—see GMC [45], GMC [71], GMC [72]. Although there is only scant PPI literature
07 in relation to its role in UK regulation [73]. It is essential that medical educators comprehend
08 the perspectives and wishes of medical regulator’s priorities for patient involvement in medi-
09 cal education.

10 4.3.3. Educational need

11 Effective educational strategies for engaging medical students with patients and members of
12 the public in medicine and medical assessment has been an aspiration in medicine for a long
13 time. However, this agenda was diminished in the twentieth century due to the rise in popu-
14 larity of statistics and biomedical technology in medicine, replacing opportunities for patient
15 contact. Prior to this medical reformer, William Osler in 1905 wrote:

16 *“for the junior student in medicine and surgery, it is a safe rule to have no teaching without a patient*
17 *for a text, and the best teaching is that taught by the patient himself”* ([74]: p. 332).

18 There is still a need for tutors and other staff to increase patient and public involvement
19 in their student’s education. We would also point to the Soar and Ryan ([75]: p. 80) who
20 commented:

21 *“The General Medical Council recently issued advice about patient and public involvement in all areas*
22 *of medical education, including curricular design, but it is not immediately clear how this should be*
23 *incorporated.”*

24 Steps need to be taken so that we can more clearly explain how PPI can be used in curricu-
25 lum design and clinical teaching more widely, for which there is clearly an educational need
26 and a regulatory agenda. In 2018, the problem remains, how do we progress from aspiration
27 to delivery of a truly patient-centred form of medical education? More specifically how can
28 we provide a variety of PPI solutions, both bespoke and generic that other PPI stakehold-
29 ers can replicate or ruminate upon? Medical educators recognise that medical education is a
30 spectrum (undergraduate, post-graduate and continuing professional development); conse-
31 quently, the development of a pedagogy of PPI in medical education must also reflect this.

32 5. Discussion

33 The different approaches to pedagogies given in this chapter hang together as a cohesive whole
34 rather than as separate individual approaches. This is because the unifying theme amongst
35 approaches is that they aim towards increasing the patient-centeredness of medicine, patient
36 benefits, and the role and voice of the public in medical education. I agree with the World Health

01 Organisation that medical schools need to be more accountable, and have obligations to the
 02 health concerns of the communities that they serve [76, 77]. I feel that this aim is reflected in the
 03 different areas of pedagogy that I have presented in this chapter. For example, the pedagogies
 04 used in Widening Participation activities in medical schools are designed to create a medical
 05 workforce that is more receptive to all the needs of patients regardless of age, gender, sexuality
 06 and income. Pedagogies used to disseminate health technologies highlight how the dissemina-
 07 tion of health technologies to clinical professions and patients through apps, mobile solutions
 08 and distance learning not only democratises medical knowledge, but also personalises the peda-
 09 gogical approaches to education, and leads to its diffusion globally [78]. Pedagogies used to teach
 10 population health talk speak to how the subject is being reformed to be taught as a transforma-
 11 tive learning experience, which is cognizant of social justice concerns, and social accountability
 12 [42]. Lastly, the pedagogies used to further Patient and Public Involvement in medicine directly
 13 informs clinical tutors and others how to involve patients in all areas of medical education.

14 However, co-production is not without tensions, for example, not all stakeholders uniformly
 15 accepted new approaches to education within medicine, and that differing voices still need
 16 to be heard. This position recognises that the interests of students, staff, clinicians, medical
 17 schools and their regulators are not always aligned, but all have a role to play in the delivery
 18 of effective medical education and ultimately better care for patients. A readily identifiable
 19 example of this tension would be the methods used for Widening Participation activities.

20 Regulators of medical schools have on-going concerns about the use of outcome measures to
 21 determine the effectiveness of pedagogical techniques used to teach undergraduate medicine.
 22 Such institutions need to understand what are the most beneficial indicators to determine
 23 the effectiveness of teaching a subject, while also highlighting the limitations (variance) of
 24 indicators that are available. In short, there are difficulties of evaluating medical education
 25 pedagogy in terms that are relevant to patient outcomes for WP activities.

26 As such, while Widening Participation activities must be delivered, there is not always robust
 27 psychometric tests that can be used to substantiate the value of the teaching methods in quan-
 28 titative and ultimately legally defensible terms. Which is not to suggest such activities lack
 29 value, but rather the measurement of value that medical institutions and regulators deem as
 30 valid and robust cannot easily be accounted for in terms of diversity or issues of social justice,
 31 but they are concomitantly expected to engage with such activities nevertheless. Equally, one
 32 might also highlight the work of Greenbank ([79]: p. 141) who suggested that WP in Higher
 33 Education frequently appears to be “lacking a cohesive, evidence-based rationale”. It seems
 34 then that the values behind pedagogical exercises and techniques used may at times be at
 35 odds with institutions and the data-driven *modus operandi* of academic and regulatory bodies.

36 6. Conclusions

37 Looking at the development of the population and public health based pedagogies by the
 38 PHEMS group, one of the conclusions of this chapter is that through dialogue with like-
 39 minded professionals and support of a professional body, newer clinical subjects can start to
 40 come to a consensus on the best approaches to pedagogy within their area.

01 We can also conclude that there may be instances where because of the variety of stakehold-
02 ers involved in medical education: patients, public, clinical staff, medical schools, medical
03 regulators etc. not all the stakeholders will uniformly accept new approaches to education
04 within medicine, due to the perceived lack of statistical evidence-base, and this can lead to
05 tensions. As such, teaching approaches in more politically sensitive parts of clinical subjects
06 like Widening Participation may face opposition in certain quarters.

07 In addition, one can also see that the external policy decisions about medical student numbers
08 and regulatory pressures to increase the patient-centeredness of medicine act as drivers in
09 terms of how tutors approach teaching their classes. As such, in medicine, there are external
10 factors outside the medical school itself that act as drivers for how and which pedagogies are
11 implemented in clinical teaching.

12 Lastly, the chapter has also highlighted that while research about pedagogy in clinical areas is
13 not as prevalent an area of academic activity as it might be, even though papers on the subject
14 do exist. What is required going forward is the production of textbooks or monographs which
15 provide in-depth long form and multiple platforms to debate issues of pedagogy in a way that
16 academic paper length does not permit.

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18 I state that I have no conflicts of interest, and I am not associated with, or a member of an
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21 **Author details**

22 John Tredinnick-Rowe

23 Address all correspondence to: john.tredinnick-rowe@plymouth.ac.uk

24 Faculty of Health and Human Sciences, University of Plymouth, Plymouth, UK

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