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Title	Experience based learning (ExBL): Clinical teaching for the twenty-first century
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Publication date	2019-08-06
Original Citation	Dornan, T., Conn, R., Monaghan, H., Kearney, G., Gillespie, H. and Bennett, D. (2019) 'Experience based learning (ExBL): Clinical teaching for the twenty-first century', Medical Teacher, 41(10), pp.1098-1105. https://doi.org/10.1080/0142159X.2019.1630730
Type of publication	Article (peer-reviewed)
Link to publisher's version	https://www.tandfonline.com/doi/full/10.1080/0142159X.2019.1630730 - 10.1080/0142159X.2019.1630730
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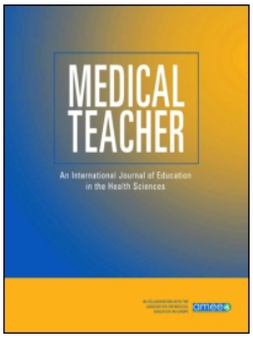

Medical Teacher

ISSN: 0142-159X (Print) 1466-187X (Online) Journal homepage: https://www.tandfonline.com/loi/imte20

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To cite this article: Tim Dornan, Richard Conn, Helen Monaghan, Grainne Kearney, Hannah Gillespie & Deirdre Bennett (2019): Experience based learning (ExBL): Clinical teaching for the twenty-first century, Medical Teacher, DOI: 10.1080/0142159X.2019.1630730

To link to this article: https://doi.org/10.1080/0142159X.2019.1630730

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MEDICAL TEACHER
https://doi.org/10.1080/0142159X.2019.1630730

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Experience based learning (ExBL): Clinical teaching for the twenty-first century

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ABSTRACT

The problem: Clinical practice commonly presents new doctors with situations that they are incapable of managing safely. This harms patients and stresses the new doctors and other clinicians. Unpreparedness for practice remains a problem despite changes in curricula from apprenticeship to outcome-based designs. This is unsurprising because capability depends on learning from practical experience in supportive learning environments. To assure the care of patients and well-being of residents, the pedagogy of medical students' practice-based education is in urgent need of an overhaul.

This Guide: Experience based learning (ExBL) is a 21st century pedagogy of practice-based learning, derived from best current theory and evidence. ExBL specifies capabilities that medical students need to acquire from practical experience. It exemplifies how clinicians' behavior can help students gain experience. It explains how reflection converts real patient learning into capability and identity. It identifies desirable features of learning environments. This Guide advises clinicians, students, placement leads, faculty developers, and other stakeholders how to make new doctors as capable as possible. ExBL is a comprehensive model of medical students' practice-based learning, which complements competency-based education to prepare new doctors to deliver safe, effective, and compassionate care.

Importance of the topic to international medical education

This Guide addresses medical students' learning from supervised experience in practice settings. Opportunities to gain such experience are changing rapidly. There are more students and more specialties. Clinical practice is becoming ever more technical, its intensity is increasing, and work hours are reducing. Students have shorter attachments to fragmented teams, making it difficult for them to integrate into practice. Meanwhile, the patient safety agenda has made healthcare systems less accepting of students delivering care. A drive to quality-assure competence before students take responsibility for patient care has moved curricula to competence-based (or outcome-based) medical education (CBME) and assessment (Harden et al. 1999). At the same time, simulation has become a dominant part of the medical education landscape. These trends have led some people to question the importance of practical experience.

Training and assessing students is not sufficient to make them capable clinicians because context matters every bit as much as content. Scholars of workplace learning estimate that practitioners acquire over 80% of their knowledge "on the job". The skill set they acquire is called capability, which is more adaptive but less easy to standardize than competence. (Neve and Hanks 2016) On-the-job learning has an inescapably important place in medical education.

Practice points

- "Clinical teaching for the 21st century" is not about teaching: it is about supporting students' learning from real patients within clinical practice
- The skill of facilitating ExBL is to help students step outside their comfort zones without striding so far that they are a danger to themselves and others
- Participation doesn't just happen: students rise to the challenges of participating in practice in welcoming, well-organized learning environments where clinicians share their expertise
- In summary, supported participation in practice resulting in real patient learning equips medical students with the identity and capabilities of safe, effective, and compassionate doctors, who can continue to learn lifelong

To become capable, learners need to feel psychologically safe. They must not feel too safe, though, because they learn by stepping outside their comfort zones. It is relatively easy, in simulated training environments, to adjust the level of psychological safety so that learners experience just the right balance of challenge and support. Practice-based learning is different because patient care poses unpredictable challenges, which can abruptly turn a safe situation into an unsafe one and vice versa. ExBL helps

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students learn in practice by defining in fine detail how clinicians can balance challenge and safety, on the fly, to the mutual benefit of students and patients. It helps students make the most of any contact time with patients and clinicians in any type of curriculum.

Aims and objectives

The aim is to provide clinicians with practical answers to the question: "How should I teach medical students when they are placed on my unit, during the procedures I perform, on our ward, or in my consulting room?" To achieve that aim, the objectives are to provide practical guidance about how:

- Medical students can participate in practice;
- Members of the clinical workforce and patients can support students' participation;
- Clinicians can help students learn reflectively from real patient experience;
- This leads to the capability and identity of a safe, effective, and compassionate doctor.

Readers who are impatient for answers to the questions above may wish to turn directly to Figure 3 and Table 2. Those who would like to understand principles as well as practice will find explanations for what we recommend in the next section.

Experience based learning (ExBL)

The Experience based learning (ExBL) pedagogy is the product of 20 years of work, surveying workplace learning theory, extracting evidence from nearly 300 published articles, conducting a program of research, and publishing a series of articles.

Figure 1 illustrates ExBL, according to which students need to have established the foundations of a doctor's identity in order to perform as new doctors. To lay these foundations, students need to develop capability. Real patient learning (RPL), which results from reflection on experiences of participating within the triad of clinician, patient and student, equips them with capability. Clinicians' supportive behavior creates the conditions for participation, RPL, and the development of capability. Clinicians: (1) model good practice and engage students into its provision; (2) encourage students to extend their current capability; (3) empower patients to co-participate in students' learning. Clinicians engage students into workplace conversations, help them interact with patients receiving clinical care, and support their reflection on experience. SPaRC summarizes ExBL: Support; Participation; Real patient learning; Capability. The all-embracing outer arrows in Figure 1 emphasize that support is a core condition for ExBL.

The scope of ExBL

In scope: activities whose conjoint purpose is direct patient care and student education.
Not in scope: high stakes assessment; simulation.

Capability

Experience gives graduates three types of capability: intellectual (knowing), practical (being skilled), and affective (feeling), each of which has subtypes. The types of capability have fuzzy boundaries because they are complex, individual, different on different occasions, overlapping, and evolving throughout clinical life. The labels we use are archetypes rather than definitions that precisely distinguish one (sub-) type of capability from another.

Intellectual capability

The knowing that results from reflecting on experience and real patient learning is an integrated understanding of how to become and be a doctor, the contexts in which doctors practise medicine, and how practice is organized. Its subtypes are applied knowledge and reasoning skills.

Practical capability

This is a set of observable behaviors: clinical skills (behaviors that directly affect patients) and self-management skills

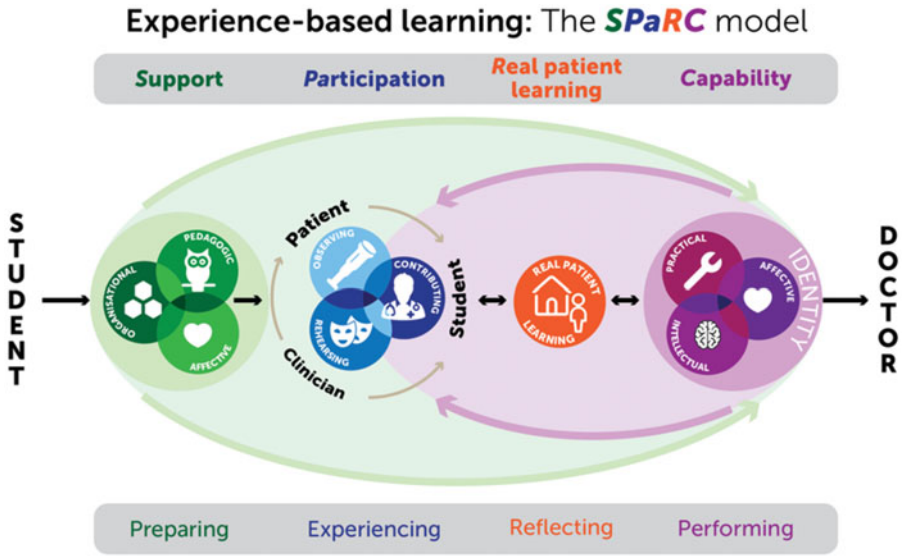

Figure 1. Experience based learning model.

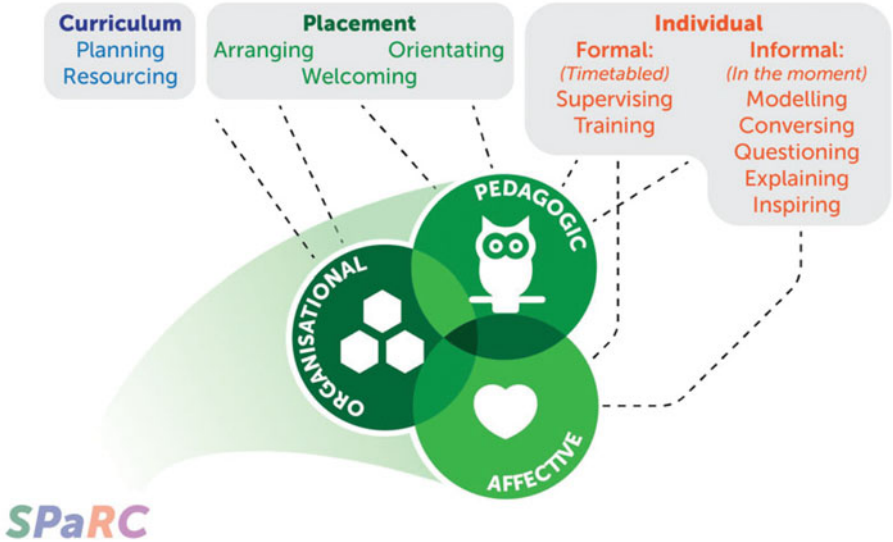

Figure 2. Support.

Table 1. Affective capabilities.

Subtype	Topics	
Mood	Positive moods: Feeling …	
	• Happy	• Reassured
	• Honored	• Rewarded
	• Inspired	• Safe
	• Proud	• Satisfied
	Recognizing and responding appropriately to ambiguous or negative mood states such as feeling …	
	• Anxious	• Frustrated
	• Conflicted	• Sad
	• Depressed	• Stressed
	• Frightened	• Vulnerable
Motivation and confidence	• Feeling:	
	• Accomplished	
	• Confident	
	• Motivated	
	• Self-efficacious	
Other-directed emotions	• Feeling:	
	• Empathic	
	• Compassionate	
	• Recognizing/responding to fear, dislike and other negative other-directed emotions.	
Attitudes and values	• Being:	• Being:
	• Caring	• Respectful
	• Collaborative	• Responsible
	• Nonjudgmental	• Self-aware
	• Recognizing:	• Demonstrating:
	• Boundaries	• Personal values
	• Limits	• Positive attitudes

(behaviors that help students and doctors organize their work and learning).

Affective capability

Affective capability includes values and emotions. This is important because graduates need to feel they are doctors and relate emotionally to others and their work. It is not primarily an observable behavior but does influence behavior. The subtypes are mood (e.g. satisfaction, reward, anxiety, anger), confidence and motivation, identity (e.g. feeling you are becoming a doctor, that you belong in clinical settings, and that you have the right to care for patients), attitudes and values (e.g. being idealistic, respectful, collaborative, and having a sense of responsibility), and affects towards others (e.g. empathy, compassion). Affective capability has traditionally been underemphasized; Table 1 elaborates it.

Participation

Supported experience of participating in practice helps students become capable doctors. Students participate as members of the triad of patient, clinician, and student. There are three types of participation:

- Observing: being present at and learning from practice without being hands-on involved.
- Rehearsing: performing tasks of practice without contributing to patient care.
- Contributing: being given responsibility to (co-)perform tasks of practice.

Observing, rehearsing, and contributing are rungs on a ladder that leads to independent practice. Students' ascent of the ladder is anything but linear, partly because possibilities for participation vary greatly, and

sometimes very fast, as dictated by patients' clinical needs. Table 2 explains how clinicians promote participation.

Observing

Observing is a rung on the ladder, which students must step onto because it gives them the breadth of experience

Table 2. Supporting participatory learning.

Relating to students

The tips that follow emphasize clinicians' social skills as their most important asset.

- Get to know students, acknowledge them as individuals, make them feel invited and valued, and don't allow them to feel uninvolved, in the way, or a burden.
- Reduce hierarchical distance between clinician, student, and patient.
- Use relationships with students to create a comfortable and relaxed climate for patients.
- Use language that students and patients understand and causes them minimal discomfort.
- Be generous with time: listen, explain, question, make suggestions, chat.
- Observe students: are they happy, sad, or anxious? Ask how they are feeling. Don't be afraid to say how you are feeling. Model emotional awareness and openness.
- Relate intellectually as well as socially: think out loud; scaffold students' understanding of what they are experiencing.
- Treat students as junior colleagues; inspire them with your enthusiasm and love of learning.

Briefing students

- Find out their capability (often they will understate it) so you can meet their learning needs.
- Help them choose learning goals and ways of achieving these.
- Tell them what to expect of you and what you expect of them.
- Orientate them before participation begins.

Practising within the educational triad

- Obtain patients' consent for a student to be present and ensure the student knows you have done so.
- Handle sensitive consultations carefully so you involve students (if patients are willing) to patients' benefit rather than harm.
- Be open, willing, friendly, kind, and helpful towards patients.
- Model the attributes of a good doctor: be clinically skilled, respectful and well mannered; demonstrate positive attitudes towards patients' families and fellow staff.
- Empower students and patients to co-participate by, for example, giving a student a task and asking a patient to join you in giving constructive feedback.
- Use physical examination as an opportunity for students to come close to patients and overcome inhibitions.
- Ask students to present patients' problems, propose and justify different explanations for and approaches to these, and choose between them; think out loud about your own approach.
- Seize "teachable moments."

Managing the dynamics of observing, rehearsing, and contributing within the educational triad

Some general rules

- Tailor your education to students' capability and patients' problems.
- Observing provides breadth; rehearsing provides depth; contributing confers legitimacy
- Use rehearsal for students to learn how to participate
- Whenever possible, turn observing to rehearsing, and rehearsing into contributing; involve students at the highest level their capability allows, given the situation at hand
- Respond flexibly to changes in clinical situations so students participate, throughout, at the appropriate level.

Managing interactions

- Broker students' interactions with patients and other clinicians
- Judge which rung of the ladder of participation gives the appropriate degree of challenge and agree this with patient and student.
- Match the challenge with the appropriate support.
- Encourage students to participate in pairs so they learn simultaneously and support each other's learning.

Observing

- Use observation to give students a breadth of learning.
- Encourage students to observe situations they are not yet ready to perform or are too complex for any students to rehearse or contribute.
- Consider giving students written guidance about what to observe, when, and how.
- Make it possible for the student to be present and comfortable about being there.
- Activate observation by engaging students in talk, scaffolding their learning, inviting them to think out loud, asking them questions, and probing their thoughts and feelings.
- Arrange the furniture so everyone can make eye contact and feel included.
- Ensure conversations are triadic, in which both patients and students speak and know they are listened to.
- Detail students to observe how you, residents, and other professionals practise; ask students to report on this.
- Promote active participation by, for example, asking a student to follow up a patient's investigations and discuss their results with you.

Rehearsing and contributing

- Task a student to, for example:
  - Carry out part or all of a patient interview and/or physical examination.
  - Conduct complete outpatient consultations or review inpatients then present provisional management plans for the patients.
- Provide opportunities for students to assist in operating theaters.
- Provide opportunities for students to summarize previous records and/or investigations of complex patients.
- Find opportunities for students to perform procedures they have been trained to do.
- Detail students to assemble information, organize aspects of care, and communicate with patients and professionals on your behalf.
- Manage time pressures by, for example, using students' attentive communication with patients to buy yourself time to disengage, seek information, and make essential phone calls.

Debriefing students (See Table 3 for ways of encouraging reflection)

- With due regard to patients' sensitivities, stimulate students to reflect while participating in practice.
- Support students' reflective learning by helping them verbalize RPL.
- Help students identify new capability and identity; reinforce this.
- Encourage students to put their thoughts and feelings into words so they turn partially formed impressions, questions, anxieties, and positive emotions into concrete and explicit thoughts and feelings on which they can continue to reflect.
- Ask students to interpret patients' problems, propose and justify different approaches, and choose between them.
- Invite students to comment critically on your practice.
- Summarize your conversation and reinforce take-home messages.
- Advise students how to structure future experience and learn from it; suggest alternative ways of rehearsing tasks and transfer capability into authentic practice.
- Ask students about their study habits; suggest alternatives.

and is a precursor to being active participants in patient care, but they should not linger there too long. It is most useful, when clinicians use techniques listed in Table 2, to make students active rather than passive observers.

Rehearsing

Table 2 lists a range of activities that allow students to go through the motions of being a doctor, in context, without taking responsibility or contributing to a patient's care.

Contributing

The top rung is making some hands-on contribution to patient care, no matter how small. This must, of course, be safe so it is influenced by students' capability and the nature of patients' problems. Students learn best when they are involved at the highest level; their capability allows them to make as complete a contribution as possible.

The dynamics of participation

Clinical workplace learning is dynamic by nature so clinicians need to respond dynamically, maintaining a level of participation that gives students the most educative amount of challenge. That means giving students slightly harder tasks and slightly more freedom to perform the tasks than the student might expect whilst making it clear that they are legitimate, their learning is important, and both they and patients will be safe. This comes more naturally to some clinicians than others. The following Table 2 and the implications section, give practical tips.

Real patient learning

RPL is the reflective process by which students link prior learning to memorable patients and restructure, consolidate, reinforce, and contextualize what they have learned into nascent capabilities. Reflecting on experiences of participation helps students understand the scope and complexity of illness and disease and link theory with practice. The more experience and RPL the students have the better, because this builds up the repertoires of mental images and schemas on which doctors rely. RPL thrives on clinicians supporting students' reflective learning in ways that are listed in Table 3. Above all, clinicians must listen

Table 3. Examples of RPL that turn experience into capability.

Experiences of:
Activities and events
Interactions with patients, their families, and health professionals.
Illness, disease, death.
Caring and clinical management.
People
Patients as whole people, not just diseases.
Patients' and their families' reactions to disease.
Relationships with patients and staff.
The temporal dimension of medicine
How diseases progress and/or respond to treatment.
How diagnoses unfold.
How doctors revise investigation and management plans over time.
Students' states of mind:
Feeling involved in practice.
Being trusted.
Being confided in.
Being responsible.
Being useful.
Identifying with patients and professionals.
Rewards and challenges of caring for patients.
Consolidating and applying to real life:
Intellectual capability.
Affective capability.
The language of practice.
Self-reflective topics:
Oneself.
One's reactions to others.
One's professional identity.
One's practical and affective capabilities.
One's aspirations.

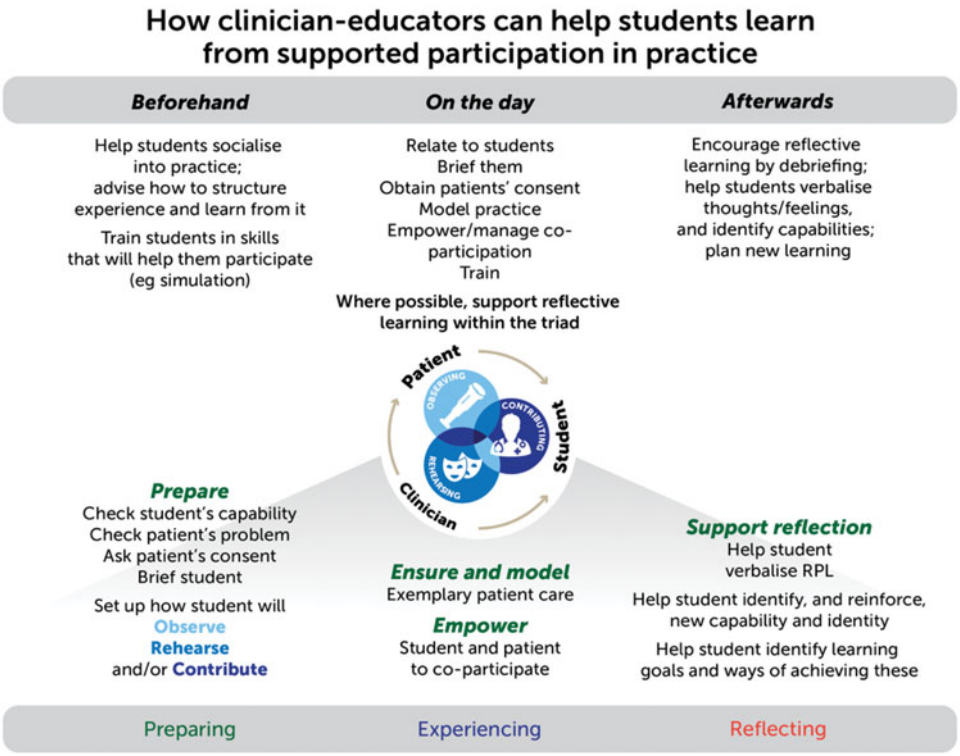

Figure 3. Supporting participation.

well and judiciously prompt students to talk about their whole kaleidoscope of experiences.

Support

Three conditions help students step out of their comfort zones and co-participate with patients and clinicians. The conditions are the same whether the experience is a placement, clerkship, preceptorship, clinical visit, elective, or internship, and whether this lasts for fleeting moments, months, or years. There are three types of support:

- Organizational: facilities, resources, and the organization of students' experiences.
- Pedagogic: clinicians' formal and informal support of students' learning.
- Affective: the display of positive attitudes and values in students' learning environments.

Support is not mollycoddling students and it is not an optional extra. It enables students to rise to the challenges of practice. Figure 2 illustrates it and Table 3 in the full Guide gives more detail.

Organizational support

This brings students, patients, and clinicians together so that clinical practice and education proceed alongside one another to the greatest benefit of all three parties. Clinicians' leadership, which fosters three-way interactions between themselves, patients, and students, is the most important component of organizational support.

Pedagogic support

ExBL uses the phrase "formal pedagogic support" in preference to "teaching" to refocus the process on students rather than teachers and emphasize its supportive rather than didactic nature. This means modeling good practice, engaging students into clinical activities, and advising them how to structure and learn from their experiences. Clinicians provide informal support by thinking out loud, helping students think along with them, explaining, asking questions, listening, and conversing about practice. Clinicians help students, reflectively, turn participation into real patient learning and capability.

Affective support

Clinicians provide essential support by having positive attitudes towards educational and clinical practice and relating positively to students at group and individual level. Affective support is hard to define but easy to recognize. Whilst it is most easily observed in personal interactions between students and clinicians, it exists at all curriculum levels because being affectively supportive towards students makes placement and curriculum leaders most effective.

Evaluating ExBL

Well-designed learning environments help students find energy within themselves to learn. There are various ways of evaluating how well placements do this, all of which ask students to rate items on numerical scales. The Manchester Clinical Placement Index (MCPI) was developed specifically to evaluate ExBL (Dornan et al. 2012). It is short (just eight items) and invites students to write comments, which can suggest ways of improving placements. Despite being simple for students to complete, MCPI has at least as good reliability as an alternative widely used scale (Kelly et al. 2015). The mean of five of MCPI's eight items measures the quality of the learning environment and the other three items measure the support given to students' rehearsing and contributing. MCPI is a logical first choice for evaluating ExBL.

Pitfalls and solutions

Not all clinicians have positive attitudes towards students' education and not all are capable of making ExBL work well. Clinical practice can be demanding at the best of times, which can make it hard for clinicians to balance patient care and student education. Not all patients are willing for students to participate in their care, which may be more of a problem in private than public healthcare. Students may find it difficult to adapt to learning environments, particularly when they rotate between different ones. ExBL addresses students' passivity by transforming them from burdensome bystanders into (potential) contributors to healthcare teams. The Guide suggests how faculty development could help clinicians give extra support upfront, which encourages students to take responsibility for their learning and participate actively in practice. It suggests, also, how to help patients co-participate. Quality improvement also has an important part to play. Educators wishing to optimize ExBL can evaluate and adapt it to local circumstances and resources.

Implications

Implications for clinicians

Our answer to the question "How should I teach medical students when they are placed on my unit, during the procedures I perform, on our ward, or in my consulting room?" is this: "Support students' participation in clinical practice; help them step outside their comfort zones, learn reflectively from doing so, and become more capable." Your most important contribution may be informal and apparently small: such as being willing to relate to a student. Model good practice, engage students in conversation, ask them questions, explain what you are doing and inspire them to follow your example. Make clinical placements supportive by welcoming students, orientating them to clinical learning environments, and arranging relevant clinical learning opportunities. Exercise leadership and take an active interest in your curriculum.

Clinicians following ExBL principles empower students and patients to be active participants in practice-based learning, which is a far cry from "teaching by humiliation." Another big difference from traditional clinical teaching is that the subject matter of students' learning is always closely related to practice rather than arcane knowledge. ExBL stays within the "messiness" of real practice, where

Table 4. Making placements supportive.

Provide leadership
- Engender a supportive climate that prioritizes education and values students.
- Provide pedagogic expertise that optimizes students' ExBL.
- Ensure students have space and learning resources (books, elearning, etc).

Organize students' education
- Integrate students into your clinical team so they can participate in its activities.
- Arrange individual and group learning activities to support students' ExBL, for example:
  - Group briefing and debriefing.
  - Skills training.
  - Seminars and tutorials.
  - X-ray meetings and case conferences.
- Identify activities that provide participatory opportunities; particularly ones that allow students to contribute.
- Organize clinical schedules so they optimize learning opportunities.
- Ensure clinical staff are accessible to students; for example, list their contact details.
- Plan for students to socialize into your practice, including its language.
- Schedule students' activities and ensure this is communicated.
- Arrange for students to attend clinical activities in numbers that optimize participation.
- Ensure students have ample, supported 1:1 interactions with patients.
- Attach students to clinicians with appropriate attitudes and skills.
- Encourage students to present patients on ward rounds or at clinical conferences, attend operations or other procedures, and participate as fully as is feasible.

Welcome students and orientate them to:
- Clinical activities and the learning opportunities these provide.
- People who will support their learning and their roles.
- Intended learning outcomes and ways of achieving these.
- Sources of personal and pedagogic support and guidance (supervision and mentoring).

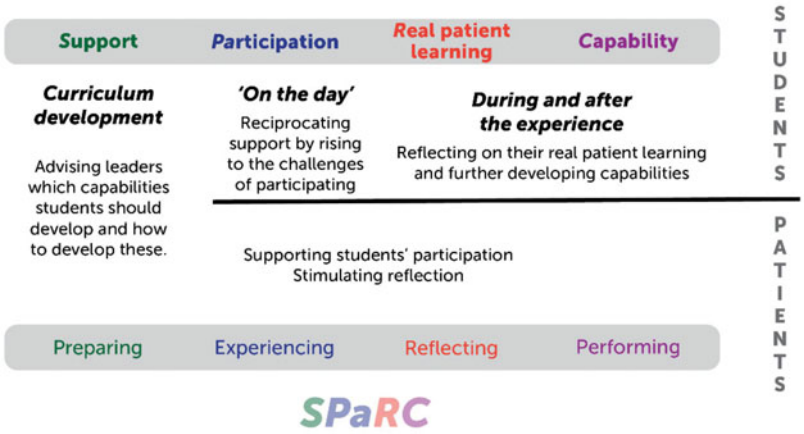

Figure 4. Patients' and students' involvement in ExBL.

"right answers" are often conspicuously absent and courses of action are chosen collaboratively between patients and those who care for them.

Figure 3 lays this out this advice along the timeline of a short encounter between a clinician and a student and Tables 2 and 4 specify many different ways of putting this advice into practice.

Patients' and students' involvement

Patients' main contribution is to co-participate with students during clinical encounters. Students' main contribution is to build relationships with clinicians, participate actively in practice, learn reflectively, and develop their capabilities as a result of this. Patients and students may, in progressive curricula, contribute to curriculum development (Figure 4).

Implications for placement leaders

Leadership is a key to the success of clinical placements. Leaders provide organizational, pedagogic, and affective support, but may do so at arm's length rather than at the individual level.

Key questions for placement leaders to answer are:

- What opportunities to participate can this placement offer?
- What capabilities can students develop from those opportunities?
- How can we support students' participation and development of those capabilities?

Table 4 lists a set of answers to those questions.

Implications for curriculum leaders and faculty developers

The full Guide contains these.

Conclusions

ExBL takes it as an axiom that medical students are preparing to start work as doctors and that, to be able to work, students need experience of work. To accommodate the

various curriculum designs and affordances for participatory learning that exist in different countries, ExBL provides a theorized, evidence-based set of principles that can be applied flexibly in different contexts. Perhaps even to residency and other health professions. Our advice to clinicians wanting to be better "clinical teachers" is to use the SPaRC acronym: Support students' Participation, reflective Real patient learning, and development of the Capabilities and identity of a doctor-to-be.

Notes on contributors

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Acknowledgments

We acknowledge with deep gratitude the contribution of our international panel of advisors, which included Drs: Mohammed Al-Eraky, Julia Blitz, Joseph Daka, Eduardo Durante, Louise Dubras, Tony Egan, Mall Eltermaa, Ajandek Eory, Walter Eppich, Zac Feilchenfeld, Harumi Gomi, Esther Helmich, Ibrahim Inuwa, John Jenkins, Takeshi Kimura, Stefan Kutzsche, Annalisa Manca, Walther van Mook, Hiroshi Nishigori, Brett Schrewe, Susan van Schalkwyck, Pia Strand, Pim Teunissen, Susan Wearne, Tim Wilkinson, and Huei-Ming Yeh.

Disclosure statement

The authors report no conflicts of interest. The authors alone are responsible for the content and writing of this article.

Glossary

Capability:

- **Practical capability:** Being capable of performing doctors' tasks, including learning in/from practice.
- **Intellectual capability:** Having practically useful knowledge and being able to apply this.
- **Affective capability:** Having emotions, attitudes and values that make a doctor capable.

Experience: Authentic (real as opposed to simulated) human contact in a clinical context that enhances learning of health, illness and/or disease and the role of health professionals.

The patient may be present by proxy [e.g. a student may discuss their X-ray with a doctor] but they must be real, not simulated. Provided the student is in direct personal contact with the patient and is learning within a supportive practice community, the doctor may be present by proxy.

Experience-based Learning (ExBL): Gaining real patient experience as a result of supported participation in practice within the triad of doctor, patient, and student, which results in a student developing the capabilities and identity of a doctor.

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