Graded autonomy and grounded self-determination in health professions education

H. Carrie Chen, Roberta I. Ladenheim, Daniel J. Schumacher, Fremen Chihchen Chou, Olle ten Cate

Abstract

A key goal in health professions education is to support trainee development toward readiness for unsupervised clinical practice. Curricula can use entrustable professional activities (EPAs) and entrustment decision-making to structure and optimize this development. Trainees begin at the periphery of the health care community and gradually learn to think, feel, and act as a professional as they increasingly engage with the work of the community, step by step and EPA by EPA. Learning in the classroom and in the clinical workplace should be approached as integrated rather than separate phases. Classroom learning aims to prepare trainees for clinical practice, and learning through clinical practice can start early, with full supervision that decreases over time. Clinical supervisors must balance supervision for patient safety and trainee support with trainee autonomy and practice of clinical responsibilities. Under- or over-supervision has negative implications not just for patient safety but also for learning and development. Various theories and models support the importance of graded autonomy, including self-determination theory, cognitive apprenticeship theory, and learning-oriented teaching. Curricula designed to support graded autonomy need to adequately prepare trainees to contribute to the workplace via classroom education and exposure to the workplace followed by clinical experiences that allow for increasing trainee contributions to patient care. Entrustment is a forward-facing decision. As trainees achieve levels of entrustment for patient care activities, this achievement is not just a completion of a learning stage but a start of the acquisition of more responsibilities as health care team members.

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Introduction

The purpose of health professions education is to prepare future health care providers who can respond to the health needs of society by providing safe, effective, quality care. Not only is this social responsibility an expected outcome but it also requires embedding in the process of health professional education. Learning to provide patient care and the development of competence requires practice. However, this practice must occur within a training environment that also meets the standards of safe, effective, high-quality patient care.

In all aspects of education, trainees develop over time. Rather than merely focusing on trainee acquisition of knowledge and skills, health professions curricula can deliberately focus on the development of trainees as emerging professionals and their preparation to bear increasing clinical responsibilities.[1] Upon commencement of their health professions education, trainees begin a journey of becoming (that is, thinking, acting, and feeling like) health professionals as they are encultured into the practice of health care.[2,3] This is particularly relevant for learning in the health care workplace environment, where learning happens through participation in patient care.

Various developmental frameworks describe the progressive development of trainee competence. Dreyfus and Dreyfus describe a general model of skill acquisition with novices progressing through five stages to achieve expert status.[4] In undergraduate medical education, RIME—an acronym for 'reporter–interpreter–manager–educator'—provides a framework for the progressive roles and activities of junior trainees in patient care.[5] Within both frameworks, trainees engage in deliberate practice to develop and eventually achieve the necessary competence. In health professions, trainees practice by participating and taking on ever greater responsibilities in actual care of patients. This contribution to patient care by individuals who are still learning and working toward readiness for unsupervised practice inherently carries risks for patient safety. However, trainees do not practice in the workplace on their own. They join a community of practice within the workplace, whereupon they are given limited roles and responsibilities that are commensurate with their level of development and supervised by members of the community who are granted supervisory responsibility. As trainees progress in gaining competence and further identifying with the community of practice, they are gradually awarded additional roles and responsibilities with increasing autonomy and decreasing supervision, moving from the periphery to the center of a professional community of practice (Figure 3.1). This process is not linear in nature; it can involve different developmental trajectories among different trainees and for various tasks.

Balancing autonomy and supervision

Adequate supervision is the solution to ensuring optimal patient care while also needing to train the next generation of clinicians.[6] The role of the clinical supervisor is, therefore, to make decisions about which activities and responsibilities to entrust to a trainee and with what degree of graded autonomy and supervision. Autonomy and supervision are not simply the opposite ends of the same scale. Providing autonomy is allowing an individual to act of their own volition and with their own behavioral choices. Thus, even a trainee who is being supervised can be allowed to let their own clinical decisions and plans prevail. This happens within an institutional context in which trainees are assigned tasks and where records exist to establish what activities each person can do and with what level of supervision.

Graded autonomy is ideally negotiated over time between clinical supervisors and trainees, balancing trainee competence and readiness, trainee learning needs, workplace needs, and patient safety. Trainees are encouraged to take responsibility for not just their own learning but for con-
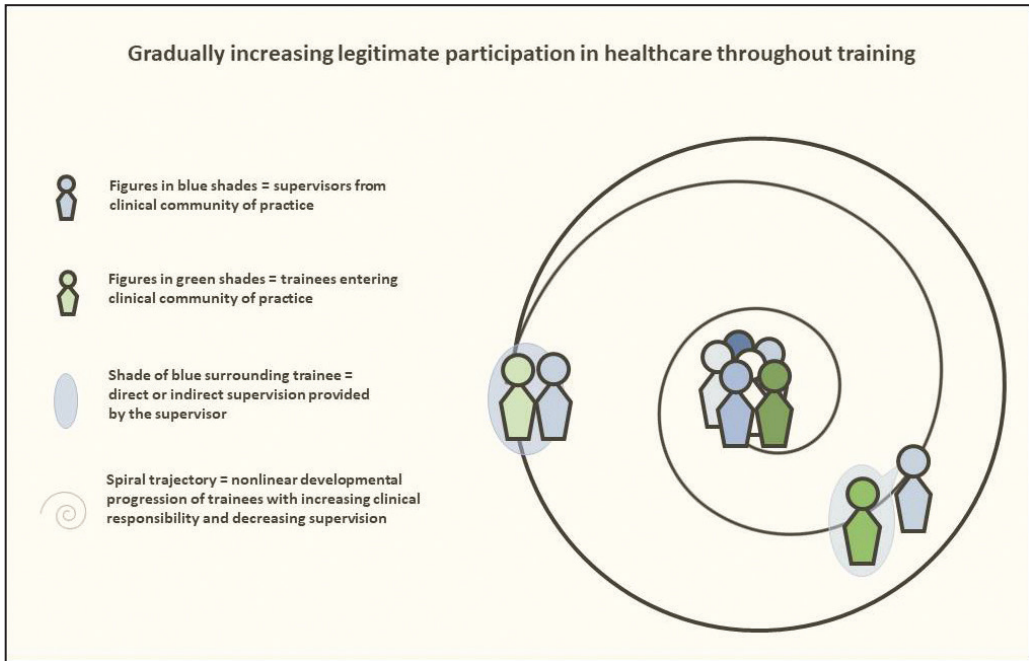
Figure 3.1: Trainee development in a professional community of practice.

tributing to the work of caring for patients and ensuring safe, effective patient care. Even as trainees achieve licensure and regulatory permission for unsupervised practice, they will face a need for continuing professional development as health care evolves. They must be able to recognize the need for ongoing learning and when to seek outside expertise. The determination of how much autonomy is granted and supervision is needed is ideally based on individual trainee's readiness and what the trainee is able to do with appropriate support. Providing an inappropriate level of supervision has implications not only for patient care but also for learning. Underestimating the level of a trainee's readiness for additional responsibility threatens their sense of competence, autonomy, and intrinsic motivation to learn. Overestimating a trainee's level of readiness places the trainee in situations where they feel they are not competent or do not have adequate supervision or support in place to act, resulting in suboptimal learning and patient care. Thus, matching levels of supervision and autonomy with levels of competence is critical for patient safety and driving trainees' desire to learn. Within competency-based education, entrustable professional activities (EPAs) seek to achieve this balance by linking entrustment decisions to a trainee's readiness to perform a given professional activity under a specified level of supervision.

In practice, decisions around autonomy and supervision are also influenced by factors beyond trainee readiness. The characteristics and experience of the clinical supervisor, their relationship with the trainee, the complexity or risk of the patient care activity, and the clinical and workplace context all impact a clinical supervisor's decision.[7] Furthermore, the desired levels of autonomy and supervision for trainee development and safe patient care may not always fully align with local regulations. Local rules and regulations often determine the limits of autonomy based on certifications or fixed stages of training (student, intern, senior resident, etc.) and are not tailored to specific trainees or for specific activities. Many regulations often demand continued high levels of supervision throughout training, limiting trainee autonomy even after trainees have demonstrated readiness for more autonomy. In addition to the negative impacts on learning noted above, this can result in trainees lacking responsibility experience and graduating less than ready for unsupervised practice. Recent graduates must then practice unsupervised in systems that cannot always ensure appropriate

levels of supervision, resulting in stress for the graduates and threats to patient safety. Therefore, the sweet spot in health professions education should ensure adequate supervision for safe, effective patient care and adequate autonomy for trainee development and eventual readiness for practice.

Theoretical support for graded autonomy

A variety of existing theoretical lenses support and provide context for understanding the importance of graded autonomy over time. Three important lenses to address include self-determination theory, situated learning theory, and the learning-oriented teaching model.[8] Self-determination theory (SDT), created by Deci and Ryan, posits that an individual's natural propensity for learning is driven by simultaneously fulfilling three innate psychological needs: sense of relatedness, sense of autonomy, and sense of competence.[9,10] Relatedness focuses on feeling part of a community and of a profession. Thus, allowing trainees to meaningfully contribute to patient care as a member of a health care team is important to their becoming a professional. Lave and Wenger, using situated learning theory, advocate 'legitimate peripheral participation,' where even the newest or most junior team members are given tasks and roles that are important to the team rather than merely serving as observers (Figure 3.1).[11] This fosters relatedness but also gives trainees meaningful work to advance their development in a relevant manner, promoting the second SDT psychological need to be satisfied, a sense of competence, defined as feeling that one knows and is able to do something. While a sense of competence naturally arises from experience and the development of one's abilities, it is important to note that even trainees early in their development can feel a sense of competence when their work is aligned with their abilities and when appropriate scaffolding is provided to push their continued development. In addition, a sense of competence and self-efficacy is also derived from feedback, i.e., from an environment that reinforces one's competence.[8] An entrustment decision is a powerful implicit confirmation of efficacy and competence. Finally, autonomy speaks to the importance of feeling that one is an individual acting of one's own volition. Autonomy, as it is defined within SDT, should not be confused with performing in the absence of a team or supervision as trainees can be allowed to act of their own volition and take responsibility for their clinical actions even while acting as a member of a team or being supervised.[12] Rather, it advocates for clinical supervisors allowing for trainees' plans or ideas to prevail when accompanied by a clear, reasonable, and well-supported rationale.

Situated learning theory, developed in the 1980s to 1990s, contends that learning is constructed from, and inextricably linked to, the environment, the situations, and culture surrounding an individual.[13] Trainees, as apprentices to health care professionals, acquire necessary skills and are socialized into a profession by participating in legitimate work activities and interacting with members of the profession. *Cognitive apprenticeships*, a concept within situated learning theory, structure apprenticeship experiences with a deliberate focus on learning the thought processes of the profession from someone who is part of the culture and context of the profession. The training of health professions trainees in the clinical workplace typically aligns with this model as trainees learn to think, act, and feel like health professionals. Here, trainees seek, and workplace supervisors choose for them, experiences and tasks based on both workplace needs and the learning needs and readiness of the trainee. Supervisors developmentally sequence tasks and provide coaching and guidance to support trainee contributions to the workplace and promote ongoing development. This tailoring of workplace learning experiences and tasks has been identified as a core principle in competency-based education.[14]

In 2004, ten Cate et al. proposed a learning-oriented model of teaching with a focus on the gradual transition from full guidance by the educational program (including teachers) to fully internalized guidance by the trainee; a model rooted in situated learning theory. Here, learning is defined at three levels: cognitive (the what of leaning), affective (the why of learning), and metacognitive (the how of learning). The teacher's role is to support learning at all three levels and

provide *constructive friction*.[15,16] Constructive friction occurs when trainees are placed into their zone of proximal development. The zone of proximal development is the space of development where a trainee cannot yet perform on their own but can perform with adequate guidance and assistance.[17] Constructive friction is where trainees experience slight discomfort, provoking deliberate learning efforts that lead to optimal learning.[3] Too little friction or too much support does not lead to effort to learn and develop; too little support creates too much friction and can be destructive when trainees experience learning and development challenges beyond their reach.

Entrustment as both a conclusion and a start

In conventional curricular philosophy, teachers set learning objectives for each course, clinical rotation, or training phase. Trainees, guided by teachers and clinical supervisors, strive to meet these objectives by completing assignments or tasks. Teachers and clinical supervisors, in turn, assess how trainees demonstrate their knowledge and skills and whether these tasks have been successfully completed. This focus in trainee assessment is exemplified by Miller's pyramid, which outlines the progression from knowledge acquisition to the application of that knowledge in practical scenarios. The preset learning objectives and assessment focused on a trainee's demonstrations of proficiency to date reflect a retrospective approach to both teaching and determination of competence where competence is the conclusion.[18]

The EPA framework introduces an alternate curricular and assessment model that is forward-facing. In this model, the curriculum is designed with a focus on the future professional responsibilities of trainees. Trainees are granted incremental autonomy, where they are increasingly entrusted with patient care responsibilities as they move closer to becoming unsupervised health professionals. Assessments are prospective and anchored upon entrustment decision-making. Rather than determining the competence of trainees based on retrospective assessments of proficiency demonstrated to date, assessors engage with trainees in a process of *determining readiness* for the next phase of learning and patient care responsibility—competence as a start. Trainees who are deemed ready are awarded increased responsibility and empowered to explore the next stage of learning with graded autonomy. This awarding or entrustment of responsibility is based on the estimation that the trainee can manage the associated risks with decreased supervision and whether their supervisors can bear the risks associated with the trainees' decreased supervision.

Accustomed to old paradigms of assignment completion and retrospective assessments, trainees and supervisors may reflexively view the attainment of an entrustment level as the 'end' or the completion of an assignment. However, entrustment with the need for less supervision indicates a move from the periphery to a more central position within the patient care community (Figure 3.1). This represents the opening, rather than the closing, of a door. A higher level of responsibility with more autonomy and less supervision for the same EPA corresponds to increasing levels of mastery. Entrustment by a clinical supervisor is therefore an acknowledgment of readiness to assume more patient care responsibility on their trajectory to becoming an unsupervised health professional.

Beyond supervisor and trainee—curriculum to support graded autonomy

Considerations of graded autonomy go beyond the discussion around individual supervisors and trainees. It is also key to curricular designs that support trainees on their developmental journey to becoming professionals—both preparing trainees for their graded responsibilities in patient care and actually providing increased responsibilities once trainees demonstrate their readiness. Health professions curricula do not always operationalize entrustment as a start of increased contributions to care or award increased autonomy with the awarding of entrustment.[19] This risks the adoption of an EPA framework becoming more of an administrative burden than a true change

in the paradigm of health professions education. Emphasizing achievement of entrustment levels as a start of rather than end of learning can help focus institutional, curricular, teacher, and trainee attention on the importance of advancing responsibilities along the continuum of learning.

There are three main types of educational activities that help prepare trainees and represent this continuum of learning and increased responsibility: classroom education, clinical education without contributions to patient care, and clinical education with contributions to patient care. Classroom or non-workplace-based/nonclinical curricula prepare trainees with the core knowledge and skills (or the canonical competence) required to participate in patient care activities.[20] This includes primarily foundational science and clinical knowledge, clinical reasoning skills, and professionalism habits. Clinical education without contributions to patient care include two things: (a) attention to communications and physical examination skills via role plays, peer practice, and simulation and (b) a focus on building understanding of the clinical workplace, health system, and the variety of professional roles and specialties. The latter is often accomplished by brief observerships or clinical exposure placements in clinics and hospitals. Both classroom education and clinical education without contributions to patient care should be designed to equip students with the knowledge and skills and contextual awareness to enter the clinical workplace as participants in patient care. Clinical education with contributions to health care is the final step, in which trainees engage in longer clinical placements and are ideally embedded within a health care team and given responsibilities for patient care. Here trainees practice applying their canonical competence and develop contextual competence.[20] The clinical placements are designed such that, as trainees develop and progress, they are provided with gradually increasing responsibilities, with greater autonomy and contributions to patient care.

An ideal design for curricula supporting graded autonomy is that of the 'vertically integrated' or 'Z-shaped' curriculum. This is in contrast with the more traditional 'H-shaped' curriculum (Figure 3.2). Vertical integration does not just mean early scheduling of clinical experiences.
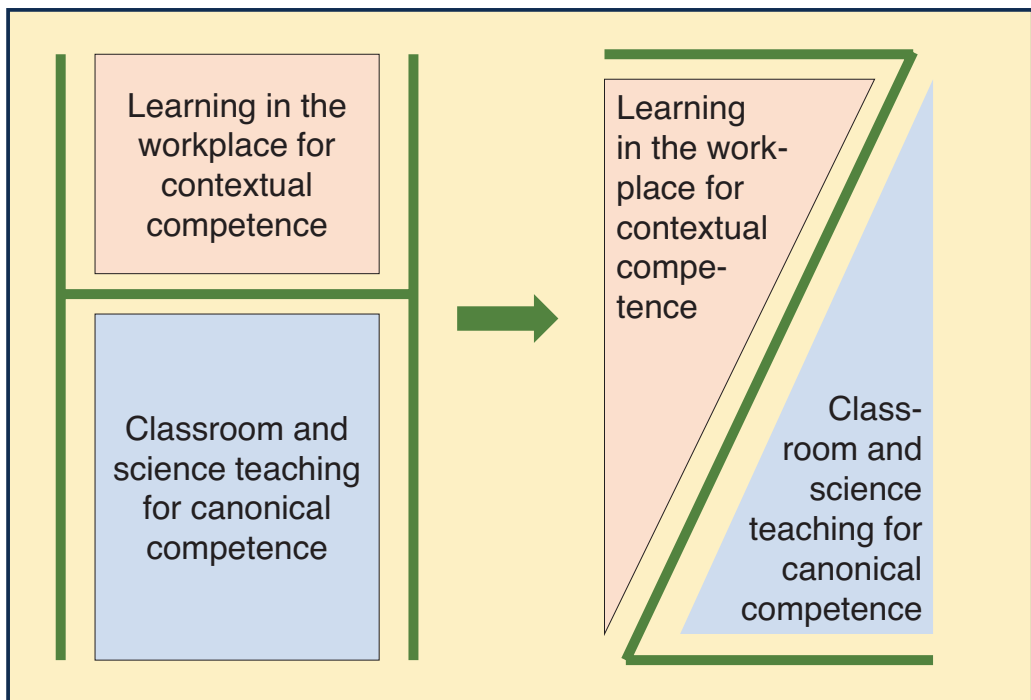

Figure 3.2: Modernization of health professions education toward vertically integrated or Z-shaped curricula with a focus on becoming a professional.

Rather, it involves a deliberate focus on the development of the knowledge, skills, and attitudes required for trainees to assume increasing clinical responsibilities.[1] It addresses the needs of trainees as emerging health professionals with a growing capability, responsibility, and right to care for patients.[2,3] This 'Z-shaped' design aligns with the multilayer model of canonical and contextual competence described above and with the application of entrustment principles.[20]

Conclusion

Health professions education aims to support trainee development toward readiness for unsupervised clinical practice within a professional community of practice. Ideally, an integrated curriculum would prepare trainees early for clinical practice and support that practice with supervision that decreases over time. Clinical supervision should balance supervision for patient safety and trainee learning with increasing clinical responsibilities and contributions to the clinical workplace. This graded increase of autonomy, responsibility, and identification with a profession is not simply an educational method or a different approach to clinical teaching. It is a philosophical frameshift that is supported by various education theories and models, and central to the mission of health professions training. EPAs and entrustment decision-making align with this philosophy and offer a framework that can structure and optimize the development of trainees, by explicitly advancing trainee autonomy, patient care responsibilities, and identification with and entry into the professional community.

Figure justification

Figure 3.2 was adapted with permission from Wijnen-Meijer M, ten Cate OThJ, Rademakers JJDJM, Van der Schaaf MF, Borleffs JCC. The influence of vertical integration in medical school on the transition to postgraduate training. *Med Teach*. 2009;31:11:e528-e532.

Competing interests

The authors declare that they have no competing interests.

References

1. Wijnen-Meijer M, van den Broek S, Koens F, ten Cate O. Vertical integration in medical education: the broader perspective. *BMC Med Educ*. 2020;20(1):509.
2. Cruess RL, Cruess SR, Boudreau JD, Snell L, Steinert Y. Reframing medical education to support professional identity formation. *Acad Med*. 2014;89(11):1446–1451.
3. Merton RK, Reader RG, Kendall P. *The Student-Physician: Introductory Studies in the Sociology of Medical Education*. Harvard University Press; 1957.
4. Dreyfus HL, Dreyfus SE. *Mind over Machine*. Free Press; 1986.
5. Pangaro L. A new vocabulary and other innovations for improving descriptive in-training evaluations. *Acad Med*. 1999;74(11):1203–1207.
6. ten Cate O. *Supervision and Entrustment in Clinical Training: Protecting Patients, Protecting Trainees*. WebM&M Case Studies; 2018;1. https://psnet.ahrq.gov/webmm/case/461
7. Hauer KE, ten Cate O, Boscardin C, Irby DM, Iobst W, O'Sullivan PS. Understanding trust as an essential element of trainee supervision and learning in the workplace. *Adv Health Sci Educ Theory Pract*. 2014;19(3):435–456.

8. Bandura A. Self efficacy: toward a unifying theory of behavioral change. *Psychol Rev*. 1977;84(2):191–215.

9. Ryan RM, Deci EL. Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *Am Psychol*. 2000;55(1):68–78.

10. ten Cate TJ, Kusurkar RA, Williams GC. How self-determination theory can assist our understanding of the teaching and learning processes in medical education. AMEE guide No. 59. *Med Teach*. 2011;33(12):961–973.

11. Lave J, Wenger E. *Situated Learning: Legitimate Peripheral Participation (Learning in Doing: Social, Cognitive and Computational Perspectives)*. 1st ed. Cambridge University Press; 1991.

12. Schumacher DJ, Bria C, Frohna JG. The quest toward unsupervised practice: promoting autonomy, not independence. *JAMA*. 2013;310(24):2613–2614.

13. Brown JS, Collins A, Duguid P. Situated cognition and the culture of learning. *Educational Researcher*. 1989;18(1):32–42.

14. Van Melle E, Frank JR, Holmboe ES, et al. A core components framework for evaluating implementation of competency-based medical education programs. *Acad Med*. 2019;94(7):1002–1009.

15. ten Cate O, Snell L, Mann K, Vermunt J. Orienting teaching toward the learning process. *Acad Med*. 2004;79(3):219–228.

16. Vermunt JD, Verloop N. Congruence and friction between learning and teaching. *Learning and Instruction*. 1999;9(3):257–280.

17. Chaiklin S. The zone of proximal development in Vygotsky's analysis of learning and instruction. In: Kozulin A, Gindis B, Ageyev VS, Miller SM, eds. *Vygotsky's Educational Theory in Cultural Context*. Cambridge University Press; 2003:39–64.

18. Schumacher DJ, Cate OT, Damodaran A, et al. Clarifying essential terminology in entrustment. *Med Teach*. 2021;43(7):737–744.

19. ten Cate O, Jarrett JB. *Would* I trust or *will* I trust? The gap between entrustment determinations and entrustment decisions for trainees in pharmacy and other health professions. *Pharmacy (Basel)*. 2023;11(3).

20. ten Cate O, Khursigara-Slattery N, Cruess RL, Hamstra SJ, Steinert Y, Sternszus R. Medical competence as a multilayered construct. *Med Educ*. 2024;58(1):93–104.