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Learning Across Pharmacy Placements Without Losing the Thread: How Conflicting Practice Norms and Dispersed Supervision Shape the Continuity of Professional Development

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Abstract

Pharmacy education increasingly depends on learning distributed across multiple practice environments, supervisors, professional teams, and assessment episodes. Sequence alone, however, does not ensure that experiences accumulate into coherent professional development. This article examines continuity as a multilevel educational problem involving the learner, placement environment, supervisor relationships, and programme-level structures that connect otherwise separate episodes of workplace learning. A Multilevel Continuity Model is developed to explain how learners carry prior understanding into new sites, how local practice norms shape participation, how supervisory relationships preserve or interrupt developmental knowledge, and how programme mechanisms can integrate experiences across placements. The analysis distinguishes productive contextual variation from unresolved norm conflict and treats distributed supervision as potentially developmental when information, interpretation, and responsibility are transferred effectively. The central contribution is an account of longitudinal professional learning in which continuity depends on connections across experiences rather than simple repetition or prolonged exposure. The model therefore predicts that educational fragmentation can occur despite extensive placement time, while coherent development can emerge across heterogeneous sites when linking mechanisms preserve developmental meaning. Longitudinal pharmacy education should consequently be designed around the quality of cross-level connections among experiences, actors, expectations, and developmental information.

Keywords: Pharmacy experiential education, Longitudinal learning, Workplace learning, Clinical supervision, Educational handoffs, Professional development

Introduction

Longitudinal professional education is often described through duration, sequence, or repeated exposure to practice, yet contemporary scholarship on longitudinal clinical learning places sustained relationships, integration, immersion, and connected participation at the centre of what makes an experience educationally longitudinal [1]. This distinction matters for pharmacy programmes in which learners may rotate rapidly among community pharmacies, hospitals, specialist services, ambulatory settings, public-health environments, and interprofessional teams. A succession of placements creates temporal continuity on a calendar, but developmental continuity requires some mechanism through which what was learned, questioned, attempted, corrected, and still unresolved in one environment remains meaningful in the next.

Placement learning is also embedded in context. Learners encounter combinations of workplace routines, social relationships, institutional expectations, patient populations, material resources, and professional priorities whose intersections can change what becomes

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visible and learnable [2]. Such variation can broaden professional understanding, but it can also generate discontinuity when learners receive incompatible signals without opportunities to interpret why practices differ. The educational problem therefore concerns the relation among contexts, not simply the quality of any single site. Evidence from pharmacy experiential education reinforces the importance of this distinction. Student pharmacists report uneven opportunities for practice-based interprofessional learning across placements, indicating that exposure depends substantially on the arrangements and relationships encountered within particular sites [3]. Pharmacy experiential education also contains interdependent challenges involving learners, preceptors, workload, motivation, feedback, and workplace culture, such that difficulty located at one point in the educational system can reinforce difficulty elsewhere [4]. These observations make a purely learner-centred explanation inadequate.

This article therefore asks how learner continuity, placement-level practice norms, supervisor continuity, programme integration, conflicting site expectations, and educational handoffs interact to fragment or integrate learning across pharmacy placements. The proposed Multilevel Continuity Model treats learner, placement, supervisor, and programme as analytically distinct levels while examining the mechanisms that connect them. The purpose is not to make all placements behave alike. It is to explain when variation becomes educationally productive, when it becomes unresolved fragmentation, and what kinds of cross-level connection permit professional development to remain coherent across distributed learning environments.

Continuity as a problem of professional learning

Longitudinal learning depends on more than persistence within a single environment. Graduates of longitudinally organised clinical programmes describe relationships, place, curricular integration, flexibility, and continuing participation as learning affordances, while research on social learning demonstrates that engagement is strengthened through connections among formal educational structures, informal workplace relations, professional communities, and local environments [5, 6]. These findings suggest that continuity is best understood as the preservation of meaningful relationships among experiences. A learner who moves between sites may therefore retain continuity when prior experience remains interpretable and usable, whereas a learner remaining in one setting may still experience discontinuity if feedback, responsibility, or developmental direction repeatedly resets.

For the present model, developmental continuity refers to the extent to which learning accumulated in one educational episode remains available for interpretation, extension, correction, or deliberate revision in subsequent episodes. The definition includes informational continuity, because prior performance and unresolved needs may need to travel; relational continuity, because some actors must understand the learner's trajectory; interpretive continuity, because experiences must be compared rather than merely remembered; and reflective continuity, because differences between sites acquire educational value only when learners can examine what those differences mean. Longitudinal structure should consequently be treated as an enabling condition rather than a guaranteed educational mechanism. Prospective investigation of longitudinal clerkship models shows that extended clinical arrangements can be associated with important developmental outcomes, yet such outcomes cannot be attributed simply to the passage of time or the existence of a longitudinal label [7]. The same caution applies to pharmacy placements. More weeks, more sites, or repeated assessment encounters may enlarge the material available for learning, but continuity emerges only when that material is connected.

This distinction also prevents the concept from collapsing into uniformity. A coherent developmental trajectory may include contradiction, changed judgement, replacement of previous routines, and exposure to competing professional practices. Continuity means that such changes can be situated within an intelligible developmental history. Fragmentation occurs when experiences accumulate without sufficient linkage for the learner, supervisors, or programme to determine how one episode should inform the next.

Learner-level continuity

At learner level, continuity concerns what can be carried across settings without assuming that appropriate action will look identical in every setting. Research on transfer shows that learners are better able to apply knowledge in unfamiliar contexts when they have access to underlying structures and have encountered meaningful contextual variation [8]. In workplace education, this implies that continuity requires more than remembering a previous site's preferred procedure. The learner must distinguish

portable principles from locally contingent routines and determine which previous understandings need adaptation.

That process is cognitively and socially demanding because clinical workplaces contain implicit rules. Ethnographic research shows that learners actively interpret expectations, hierarchy, credibility, participation opportunities, and the social consequences of appearing uncertain or overly confident [9]. A new placement therefore creates a dual task: learning the clinical or professional work and learning how that environment expects the work to be performed. When these local rules are not made explicit, learners may devote considerable effort to impression management and contextual decoding, leaving less capacity for deliberate integration with earlier experiences.

Professional development also involves changes in identity and responsibility. Transformational experiences and relationships with mentors can influence how trainees interpret their professional roles [10]. Likewise, the transition from student to practitioner may be experienced as education, employment, or an integrated process in which working itself becomes a principal means of learning, particularly when structured guidance is available [11]. Learner continuity therefore includes an evolving sense of professional responsibility, not simply accumulation of technical competence.

The learner-level problem can be expressed as a question of what remains available when the site changes. Prior experience may persist as a transferable principle, an unresolved question, a habitual routine, a confidence judgement, a professional value, or an expectation about how supervisors will respond. These forms of carryover are not equally reliable. A routine that was safe in one context can become inappropriate elsewhere, while an unresolved uncertainty can become highly productive if the next supervisor helps reinterpret it.

The analytical distinctions developed here are summarised in **Table 1**.

Table 1. Learner-carried continuity states across changing pharmacy placements

Learner-carried state	What is carried forward	What must be reinterpreted at the next placement	Signal of developmental continuity	Principal fragmentation risk	Educational response implied by the model
Portable principle	Underlying clinical, ethical, communication, or professional rationale	How the principle applies under different resources, roles, populations, and workflows	Learner can explain why action changes while the governing principle remains intelligible	Treating one site's implementation as the principle itself	Ask learners to compare rationale across sites
Local routine	Familiar sequence of actions or site-specific practice	Whether the routine is required, preferred, optional, or inappropriate elsewhere	Learner distinguishes local convention from broadly defensible practice	Uncritical replication of a previous site's norm	Make local assumptions and alternatives explicit
Unresolved question	Recognised uncertainty or incomplete understanding	Whether new evidence, context, or supervision changes the earlier interpretation	Earlier uncertainty becomes the starting point for further inquiry	Question disappears because the next site begins assessment from zero	Carry forward selected developmental questions
Feedback trajectory	Prior strengths, recurring difficulties, and developmental goals	Whether the pattern persists under new tasks or conditions	New feedback can confirm, refine, or overturn earlier interpretations	Isolated feedback episodes create contradictory labels without explanation	Compare feedback across contexts before drawing stable conclusions
Developing professional position	Emerging judgement about responsibility, standards, and role	How professional obligations interact with local authority and team practice	Learner can justify adaptation without losing professional reasoning	Compliance with local norms is mistaken for professional growth	Use guided reflection on agreement and disagreement across sites

Context-bound confidence	Sense of competence developed in a familiar environment	Whether confidence survives changes in task, team, autonomy, and supervision	Learner recalibrates confidence to the new context	Familiarity is mistaken for transferable readiness	Reassess capability under materially different conditions

Learner continuity is therefore neither perfect memory nor stable performance. It is the capacity to preserve a developmental thread while revising what that thread means under new conditions. This prepares the next analytical level: the placement itself may systematically shape which forms of participation, reasoning, and professional behaviour are encouraged.

Placement-level practice norms

Practice environments do not simply provide neutral opportunities in which already-formed learners demonstrate competence. Supervisors' ways of recognising readiness, sequencing tasks, enriching participation, and judging appropriate autonomy vary with specialty practices, situational demands, and individual clinical preferences [12]. Such differences form part of the educational environment learners must navigate. In pharmacy, equivalent variation may concern documentation expectations, counselling depth, escalation practices, prescription verification, interprofessional communication, workload management, or the acceptable balance between efficiency and teaching.

Workplace-learning research further shows that clinical environments may operate according to distinct teaching and learning regimes that reflect assumptions about membership, hierarchy, participation, reproduction of established practice, and professional development [13]. This matters because apparently contradictory instructions can arise from coherent local systems. One site may emphasise strict adherence to established workflow before allowing improvisation, whereas another may expect learners to justify alternatives early. One supervisor may value independent problem solving before intervention; another may equate early consultation with safe practice.

Placement context consequently changes both opportunity and interpretation. Evidence from rural and remote health-professions placements identifies supervision, participation, placement characteristics, relationships, and access to meaningful work as important influences on preparedness and learning [14]. Comparative work also indicates that interpersonal relationships and opportunities for clinical participation can differ according to clerkship arrangement and local setting [15]. These findings caution against attributing every difference in learner performance to the learner.

For the Multilevel Continuity Model, a placement-level practice norm is an explicit or implicit expectation about how legitimate professional work, learning, participation, communication, or supervision should occur in a particular practice environment. A norm may be technically justified, culturally inherited, operationally necessary, or simply taken for granted. Its educational effect depends partly on whether learners can recognise its local status and compare it with expectations encountered elsewhere.

Variation is therefore not itself a defect. Exposure to contrasting approaches can reveal assumptions that would remain invisible in a single site and can help learners understand that professional judgement often involves adapting common principles to different constraints. The continuity problem arises when the reason for difference remains opaque. Under those conditions, learners may conclude that one supervisor is correct and another mistaken, imitate whichever site is currently assessing them, or construct fragmented rules such as "this is how hospital pharmacists do it" and "that is how community pharmacists do it" without examining the underlying logic.

Supervisor-level continuity

Supervision introduces a second form of continuity because learning depends partly on whether another person can recognise change over time. Continuous supervisory relationships can support trust, tailored feedback, longitudinal judgement, and developmental closure, but they can also stagnate, deteriorate, or become so familiar that feedback loses sharpness [16]. Continuity of supervision is therefore not a simple dose-response relationship in which more exposure to the same supervisor necessarily produces better learning.

Supervisors themselves work within organizational conditions. Research on supportive teaching climates indicates that clinical supervisors rely on social cohesion, relationships with colleagues and trainees, managerial support, resources, and workable organizational arrangements to teach effectively [17]. A programme that

expects supervisors to maintain a developmental thread without giving them access to prior goals, protected educational space, or clear responsibility for follow-up may therefore create nominal continuity without practical continuity.

A further complication is that learners and supervisors may construct the same assessment episode differently. Large-scale analysis of workplace feedback has identified differences in the cognitive and affective framing used by trainees and supervisors, including patterns that raise questions about bias and interpretation [18]. Consequently, a continuing relationship cannot be treated as an uncontested record of the learner. Developmental continuity requires opportunities to compare perspectives and to revise previous judgements when new evidence appears.

Direct pharmacy evidence illustrates both the value and the tension of longitudinal supervision. In a two-year community-pharmacy specialization programme, repeated progress evaluations within sustained supervisor-trainee relationships supported continuing developmental feedback, while the study also identified limited score reliability and tensions created when the same supervisor combined educational, assessment, and employment-related roles [19]. The finding is important because it separates relational continuity from assessment validity. A supervisor may know a learner extremely well while still facing role conflicts or interpretive limitations.

Across these findings, the relevant question becomes: what kind of continuity should a supervisor carry? The answer is broader than memory of past performance. Supervisory continuity may include knowledge of prior goals, awareness of recurring difficulties, understanding of the conditions under which performance changes, and responsibility for revisiting unresolved issues. At the same time, episodic supervisors may contribute perspectives that a continuing supervisor no longer sees. The model therefore treats continuous and distributed supervision as potentially complementary when the programme connects them appropriately. The joint evidence on continuous supervision and longitudinal community-pharmacy supervision supports this conditional interpretation [16, 19].

Programme-level integration

When placements and supervisors are distributed, the programme becomes the only level capable of maintaining an overview across all educational episodes. Programme-level integration refers to the structures through which developmental information, curricular purpose, assessment interpretation, and reflection are connected across placements. Its role is not to eliminate local variation but to prevent every new site from functioning as an educational reset.

Longitudinal portfolio research illustrates the potential value of programme-level developmental memory. Repeated learner self-perceptions and feedback collected across rotations can reveal trajectories that are not visible within a single placement [20]. Such records should not be mistaken for a complete representation of professional identity or capability, yet they can allow patterns to be revisited over time rather than repeatedly rediscovered.

Pharmacy programmes also rely increasingly on structured assessment languages. Preceptors using entrustable professional activity-based assessment during advanced pharmacy practice experiences identify both facilitators and practical barriers to implementation [21]. Common assessment constructs can help supervisors communicate about development, but a shared form does not automatically create continuity. If successive supervisors interpret the instrument differently, lack access to relevant prior information, or use scores without contextual explanation, standardization can create only superficial comparability. The same caution applies to measurement of the learning environment. Reviews of instruments used across health-professions education show substantial variation in what is measured and in the strength of validity evidence [22]. Similarly, scholarship on workplace-based assessment emphasizes the interaction among the learner, assessor, tool, relationship, and clinical context [23]. Programme integration therefore cannot be reduced to a dashboard, portfolio, score, or standardized form. These instruments may carry information; integration requires someone to interpret that information across episodes.

In the Multilevel Continuity Model, the programme performs three linking functions. First, it maintains developmental memory by preserving selected information about prior learning without turning early judgements into permanent labels. Second, it provides interpretive connection by helping learners and supervisors understand why expectations may differ across settings. Third, it allocates follow-through responsibility so that unresolved developmental needs do not disappear when a placement ends. These functions become especially important when differences between

sites move beyond productive variation and become conflicting norms.

Conflicting norms across sites

Learners moving across practice environments may be asked to behave differently even when the underlying professional problem appears similar. Comparative research shows that participation can vary substantially across clinical settings and placement structures, demonstrating that opportunities to act are partly produced by the workplace rather than solely by learner ability [24]. A learner who is trusted to perform a task independently in one setting may therefore encounter closer oversight elsewhere without any true decline in competence.

The norm field extends beyond the named supervisor. Peers, near-peers, residents, technicians, other professionals, workflow structures, and informal team expectations can influence how learners reason and participate. Ethnographic evidence shows that peer-assisted learning in the clinical workplace depends on role configuration, workflow, facilitation, and the local acceptability of collaborative reasoning [25]. The practical norm encountered by a learner may therefore be distributed across a team.

Orientation can make these expectations more visible. Students entering clinical learning environments identify supervision, access to participation, orientation, and support as important to their ability to learn effectively [26]. Where orientation is weak, learners must infer rules through trial, observation, and the consequences of getting them wrong. This creates a particular continuity hazard: an expectation acquired in one placement may be carried into another before the learner realizes that its status has changed.

A cross-site norm conflict occurs when two or more placement environments attach materially different expectations to comparable professional situations and the learner lacks a sufficient interpretive bridge for understanding the difference. This definition separates genuine conflict from ordinary variation. Different sites may use different workflows while pursuing compatible professional aims; such variation can be educationally valuable. Conflict becomes developmentally significant when learners cannot determine whether expectations reflect contextual adaptation, alternative defensible practices, differences in authority, or incompatible standards.

Table 2 differentiates the principal configurations that can arise when learners encounter divergent practice norms.

Table 2. Cross-site practice-norm configurations and their implications for continuity of pharmacy learning

Cross-site norm configuration	Relationship between site expectations	Learner interpretation burden	Typical supervisory signal	Continuity consequence	Linking response suggested by the model
Contextual adaptation	Different actions are justified by different patient, resource, workflow, or institutional conditions	Moderate: learner must identify which contextual feature changes the appropriate response	"Here the conditions are different, so the principle is applied differently"	Usually productive if rationale is explicit	Compare the governing principle and the contextual modifier
Defensible professional alternatives	Sites use different approaches that are both professionally supportable	High: learner must tolerate legitimate plurality	"There is more than one acceptable way to manage this"	Can strengthen judgement and adaptive expertise	Require justification and comparison instead of selecting one universal rule
Implicit local convention	Difference reflects custom, efficiency, history, or preference more than explicit principle	High because local status may be invisible	"That is simply how we do it here"	Risk of mistaking convention for transferable standard	Label the convention explicitly and test its portability
Authority-dependent expectation	Behaviour changes because decision rights, supervision arrangements, or permitted scope differ	Moderate to high	"You may do this here only under these conditions"	Continuity preserved when authority differences are understood	Separate capability from permission and responsibility
Unresolved contradictory instruction	Sites provide incompatible directions without an articulated rationale	Very high	"The previous site taught you incorrectly" or equivalent	Strong fragmentation risk	Create an interpretive handoff and revisit the underlying evidence or standard

Repeated unexplained reversal	Learner repeatedly adapts to new expectations that overwrite prior guidance	Cumulative and potentially destabilizing	Each site treats its own expectation as self-evident	Development becomes compliance with the current assessor	Programme-level reconciliation of patterns across placements

These configurations produce different educational consequences. Contextual adaptation and defensible alternatives can enrich development because learners are required to reason about why practice changes. Implicit conventions and authority-dependent expectations require more deliberate explanation because their local character may otherwise remain hidden. Unresolved contradiction and repeated unexplained reversal pose the greatest risk to continuity because the learner receives no reliable method for connecting experiences.

The purpose of integration is therefore not to force consensus among sites. A programme can preserve useful diversity while requiring that important differences become interpretable. Once supervision is distributed across people and locations, however, interpretation cannot depend entirely on the learner. Information about the learner's developing trajectory must sometimes cross the same boundaries that separate the placements.

Distributed supervision and educational handoffs

Distributed supervision is inevitable in many pharmacy programmes. No single pharmacist observes every placement, professional role, patient interaction, or developmental transition. The central question is therefore whether supervision distributed across actors remains connected enough to support a coherent developmental trajectory.

Current pharmacy practice demonstrates that this connection is far from automatic. A national study of experiential education programmes found substantial reluctance to share prior advanced pharmacy practice experience evaluations with subsequent preceptors, with respondents identifying potential developmental benefits alongside concerns about bias, privacy, and pre-judgement [27]. These competing considerations reveal the basic handoff dilemma. Withholding prior information may protect the learner from anchoring and reputational carryover, but it can also cause recurring developmental issues to be rediscovered repeatedly. Sharing everything may create continuity of information while undermining fairness.

Educational handover scholarship addresses this problem by treating transfer of learner information as a deliberate educational process. Responsible handover has been described as learner-centred, purposeful, standardized enough to support interpretation, and oriented toward continuing improvement rather than merely transferring labels [28]. For pharmacy placements, the relevant principle is not unrestricted forward-feeding. The developmental value of a handoff depends on what is transferred, why it is transferred, how contextual limitations are expressed, and whether the learner can participate in interpreting the information.

Longitudinal research on professional identity further shows that relationships over time can support growing responsibility, belonging, and professional self-understanding [29]. Yet many pharmacy learners cannot maintain the same supervisory relationship across all sites. The educational system must therefore distinguish relationship continuity from continuity of developmental understanding. A new supervisor does not need to reproduce the previous relationship, but should be able, where appropriate, to understand selected unresolved goals and the conditions under which earlier judgements were formed.

Within the Multilevel Continuity Model, an educational handoff is consequently defined as the selective transfer and reinterpretation of developmental information across a boundary where responsibility for supporting the learner changes. Transfer alone is insufficient. A rating, comment, or goal removed from its original context may mislead the next supervisor. Effective handoff therefore requires both information and interpretation.

This creates four safeguards. First, information should be proportionate to its developmental purpose. Second, contextual qualifiers should travel with the judgement so that local performance is not converted prematurely into a stable learner trait. Third, learners should have a defined role in identifying ongoing goals and contesting inaccuracies. Fourth, programmes should distinguish issues requiring deliberate follow-through from issues that should be allowed to reset so that learners can be observed afresh.

Distributed supervision can therefore support continuity without eliminating fresh perspectives. The challenge is to preserve enough developmental memory for learning to accumulate while preventing early interpretations from hardening into reputational trajectories. This tension

becomes the bridge to the multilevel model itself: learner-carried understanding, placement norms, supervisory knowledge, and programme memory must be connected without collapsing their distinct functions.

Development of the multilevel continuity model

Continuity across pharmacy placements can be distributed even when no single person or setting accompanies the learner throughout the programme. Evidence on patient continuity suggests that continuity itself can take relational, informational, geographic, and reflective forms rather than requiring uninterrupted face-to-face contact with the same individual [30]. Applied cautiously to professional education, this distinction makes it possible to ask where the developmental thread is actually carried when learners change sites.

At the learner level, continuity resides in transferable principles, remembered feedback, unresolved questions, developing professional commitments, and the capacity to reinterpret earlier experience. At the placement level, continuity depends on whether local practice norms are made sufficiently explicit for learners to understand what is contextual and what is intended to transfer. At the supervisor level, continuity concerns developmental knowledge about the learner and the ability to relate current observations to prior or future learning. At the programme level, continuity resides in curriculum sequencing, assessment interpretation, longitudinal records, reflective structures, and responsibility for reconnecting episodes.

These four levels should not be collapsed into a single continuum. A learner may personally integrate experiences even when supervisors exchange no information. Conversely, a programme may maintain extensive records while the learner experiences each placement as unrelated. A supervisor may sustain a strong developmental relationship that nevertheless reflects one site's assumptions rather than the breadth of professional practice. The model therefore treats continuity as a configuration of linked but non-equivalent carriers.

Distributed judgement further requires protection against the assumption that one perspective represents the complete learner. Scholarship on fairness in assessment argues that human judgement becomes defensible through transparent procedures, appropriate sampling, multiple opportunities, and interpretation of perspectives rather than through elimination of subjectivity [31]. Applied to longitudinal learning, this means that developmental continuity should preserve relevant prior information while leaving room for new observations to revise earlier interpretations.

The proposed model therefore distinguishes between continuity of information and continuity of meaning. Information continuity occurs when previous goals, assessments, or concerns travel forward. Meaning continuity occurs when those data are interpreted in relation to changing tasks, practice environments, supervisory expectations, and learner development. Information without reinterpretation can anchor later judgement; reinterpretation without sufficient information can force each placement to rediscover the learner. Productive continuity requires both.

Cross-level mechanisms of fragmentation and integration

The model becomes analytically useful when continuity breaks at one level and the consequences appear at another. Fragmentation may begin with a small interpretive mismatch: a learner carries a routine into a site where that routine is treated differently, receives corrective feedback framed as if the earlier approach were simply wrong, and then enters the next placement without knowing whether the issue concerned competence, context, authority, or local convention. The immediate problem occurs between learner and placement, but its consequences can extend to supervisory confidence and programme-level assessment.

This process can be intensified when local supervisory knowledge is not connected across placements. Context-sensitive supervisory practice means that different educators may appropriately notice different aspects of performance [12]. Yet if those observations are transferred without their conditions, later supervisors may treat context-specific judgements as stable learner characteristics. Conversely, if no information travels, recurring developmental needs may repeatedly appear as new problems.

Participation also varies with clerkship structure and setting [15, 24]. The important implication is that inconsistent performance across placements may reflect changes in opportunity, responsibility, team relationships, or task configuration as well as changes in learner capability. A multilevel account therefore resists interpreting all cross-site variation as individual inconsistency.

The strongest counterweight to fragmentation is not standardization but realignment. Realignment occurs when actors make differences interpretable while preserving legitimate local variation. Learners may compare the rationale behind conflicting practices; supervisors may contextualize observations rather than forward isolated labels; and programmes may identify developmental patterns that persist across materially different environments. Connectivity among learners, educators, sites, and local communities can contribute to the sustainability of longitudinal educational arrangements [32], but connectivity is valuable only when it carries information capable of informing subsequent action.

Figure 1 represents the resulting fragmentation–realignment field.

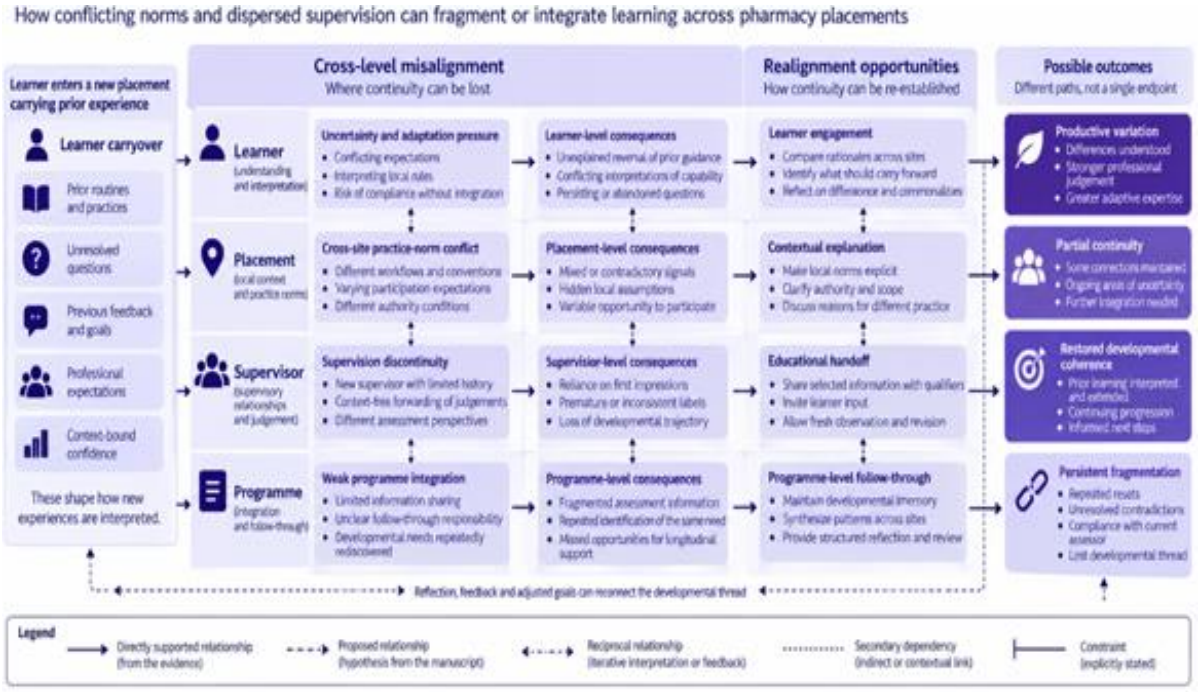


Figure 1. From Cross-Site Misalignment to Reconnected Developmental Meaning

Design principles for longitudinal learning

The model implies that programmes should design for **connection**, not simply duration. A longer placement can deepen relationships and observation, but continuity across multiple placements requires explicit structures for carrying and reinterpreting learning.

First, programmes should distinguish information that deserves continuity from information that deserves a fresh start. Selected developmental goals, unresolved questions, and recurring patterns may warrant handoff, whereas isolated judgements made under narrow contextual conditions may not. Second, handoff should transfer qualifiers with conclusions. "Needs more independence" is educationally weak unless the next supervisor knows the task, level of permitted autonomy, supervision available, and circumstances under which the judgement was formed.

Third, learners should participate in the continuity process. Guided comparison across settings can convert contradiction into professional reasoning rather than forcing learners to select whichever local rule is currently rewarded. Longitudinal research on skill development supports the importance of experience combined with reflection and guidance rather than experience accumulating automatically [33].

Fourth, programmes should create responsibility for follow-through. Developmental goals can disappear when everyone assumes another supervisor or placement will address them. Continuity therefore requires named opportunities—though not necessarily one named individual—for revisiting unresolved issues.

These principles are organized in **Table 3** around the discontinuities they are intended to prevent.

Table 3. Designing longitudinal pharmacy learning around preventable discontinuities

Preventable discontinuity	Continuity function that must be protected	Programme design move	Learner role	Supervisor role	Evidence boundary that must remain visible
Placement reset	Developmental memory	Carry forward selected goals and unresolved questions	Identify what should remain active	Reassess rather than merely inherit prior judgement	Prior information is contextual, not definitive
Local-rule substitution	Interpretive continuity	Require comparison of rationales across sites	Explain why approaches differ	Make local conventions explicit	Difference is not automatically conflict
Supervisor reset	Feedback trajectory	Provide qualified developmental handoff	Confirm, refine, or contest transferred information	Link new observations to prior goals when appropriate	Fresh observation must remain possible
Assessment without context	Fair longitudinal judgement	Attach task, autonomy, and setting qualifiers to important assessments	Provide contextual account where relevant	Separate observed performance from stable trait inference	Repeated ratings do not automatically establish causality
Unresolved contradiction	Cross-site reconciliation	Create structured opportunities for interpretation across placements	Compare evidence, norms, and professional reasoning	Explain the basis of disagreement	Consensus is not required for continuity
Diffused follow-through	Programme responsibility	Assign explicit review points for persistent developmental needs	Bring forward unresolved priorities	Document whether a concern persists under new conditions	Persistence must be demonstrated, not presumed
Over-continuity	Capacity for revision	Protect opportunities for independent fresh judgement	Enter new settings without permanent labelling	Reconsider earlier interpretations	Continuity should not become reputational lock-in

These design principles deliberately avoid prescribing complete standardization. Their purpose is to create enough connection for differences to become educationally interpretable while preserving the contextual diversity from which professional judgement develops.

Propositions

The model yields six propositions that distinguish developmental continuity from mere repetition.

Proposition 1. Increasing the number or duration of pharmacy placements will improve developmental continuity only when learners can connect prior learning to subsequent tasks, feedback, and contextual differences.

Proposition 2. Cross-context variation will contribute more strongly to transferable professional judgement when learners are helped to distinguish portable principles from site-specific routines.

Proposition 3. Cross-site norm differences will be more likely to produce fragmentation when their contextual rationale remains implicit and subsequent supervisors interpret adaptation as inconsistency.

Proposition 4. Educational handoffs will support continuity most effectively when transferred judgements include contextual qualifiers and remain open to revision through fresh observation.

Proposition 5. Continuous supervision will have conditional rather than uniformly positive value: developmental benefit will depend on relationship quality, role configuration, opportunities for recalibration, and access to alternative perspectives.

Proposition 6. Programme-level integration will reduce fragmentation when it connects learner reflection, placement norms, supervisory observations, and longitudinal developmental information without collapsing them into a single standardized account.

These propositions are intentionally nonquantitative. The existing evidence does not justify universal thresholds for placement duration, number of supervisors, handoff intensity, or degree of information sharing. Their value lies in specifying relational conditions that can be tested comparatively.

Results and Discussion

This article reframes longitudinal pharmacy learning as a problem of multilevel connection. Existing literature provides substantial evidence about placement context, workplace participation, supervisory relationships, assessment, and longitudinal clinical learning, but these elements are often discussed separately. The Multilevel Continuity Model connects them while retaining their different analytical functions.

The model's central claim is conditional. Repeated exposure may contribute to development, yet chronology alone cannot establish continuity. A learner can spend substantial time in practice while repeatedly resetting goals, adapting superficially to local expectations, and receiving feedback that is never reconciled across sites. Conversely, meaningful continuity can persist across different sites and supervisors when prior learning is selectively carried forward, contextual differences are made interpretable, and responsibility for unresolved development survives placement transitions.

The strongest rival explanation is that variation itself promotes learning. Evidence on transfer indicates that varied contexts can strengthen flexible application of underlying knowledge [8], and episodic supervision can contribute perspectives unavailable within one continuous relationship [16]. The present model accommodates that rival rather than treating it as noise. Fragmentation begins when variation is unlinked, not when variation exists. Differences among placement structures and clinical settings can alter participation [15, 24], but such differences may be educationally productive when learners can understand why expectations changed.

A second implication concerns educational handoff. Forward-feeding is neither intrinsically beneficial nor intrinsically harmful. Pharmacy programmes have legitimate reasons to worry that prior evaluations may bias later supervisors, yet complete informational resets can undermine developmental follow-through. The relevant design question is therefore what information should cross a boundary, under what qualification, and with what opportunity for the learner and next supervisor to reinterpret it.

The model also clarifies why programme integration cannot be delegated entirely to portfolios or assessment tools. Records can preserve information, but continuity depends on interpretation. Programme structures must support comparison across contexts and create occasions when different observations can be reconciled without requiring artificial consensus. This approach treats disagreement as potentially informative evidence about task conditions, authority, workplace culture, or professional judgement.

Several limitations constrain the current contribution. Much of the strongest longitudinal-learning evidence comes from medical education rather than undergraduate pharmacy education. Direct pharmacy studies support important elements of the argument, particularly experiential-learning variation, APPE assessment, longitudinal community-pharmacy supervision, and educational information sharing, but the complete four-level configuration has not been empirically validated in pharmacy programmes. Evidence across the selected literature is also heterogeneous in design, setting, learner stage, and outcome definition. The model should therefore be tested rather than treated as an established causal account.

Future research should examine transitions between placements directly. Useful designs could pair successive placement observations with learner interviews, supervisor accounts, longitudinal assessment records, and explicit documentation of educational handoffs. Studies should distinguish whether apparent inconsistency reflects changing learner capability, changing task difficulty, different authority structures, different opportunities for participation, or genuinely conflicting professional norms. Comparative programme studies could also test whether structured cross-placement reflection and qualified developmental handoffs improve coherence without increasing anchoring or reputational bias.

The broader theoretical implication is that continuity should be assessed through the quality of connections among episodes. This moves evaluation away from counting weeks, rotations, or repeated observations and toward examining whether experiences remain interpretable to the learner, supervisors, and programme as development unfolds.

Conclusion

Learning across pharmacy placements remains longitudinal only when experiences retain developmental connection across changes in site, supervisor, professional expectation, and programme responsibility. Conflicting practice norms are not inherently harmful, and distributed supervision is not inherently discontinuous. Both can broaden professional judgement when differences are made interpretable and developmental information is carried forward without becoming a permanent label.

The Multilevel Continuity Model therefore locates continuity across four distinct but interacting levels: learner, placement, supervisor, and programme. Fragmentation becomes more likely when one level changes without adequate connection to the others; integration becomes more plausible when learners can

reinterpret prior experience, supervisors contextualize judgement, and programmes preserve responsibility for follow-through. The central implication is conditional but consequential: pharmacy placements do not become longitudinal because they occur in sequence. They become longitudinal when the educational system allows development to remain meaningfully connected across that sequence.

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