

# Promoting Internship Excellence: Key Strategies Employed by Pharmacy Schools for Successful Development

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**Abstract:** Various early pharmacy practice experiences, such as introductory, advanced, and postgraduate internship programs, are part of the journey of future pharmacists during their educational experience in pharmacy schools. Pharmacy schools have the potential to enhance the quality of their internship programs by establishing strategies to provide comprehensive instruction and practical experience for students. Hence, this commentary shade light on the critical tactics employed by pharmacy schools to guarantee the growth and success of pharmacy students during their different internship programs.

**Keywords:** pharmacy students, pharmacy schools, internship, pharmacy practice, residency, strategies

## Background

Pharmacy education is shifting towards competency-based training, emphasizing practical skills and professional competencies for contemporary pharmacy practice. Pharmacy internship programs (Table 1.) are central to this educational framework, providing experiential learning opportunities for students to apply classroom knowledge in real-world pharmacy settings.<sup>1,2</sup>

**Table 1** Common Types of Pharmacy Internship Programs

Internship Program	A Brief Overview
Introductory Pharmacy Practice Experience (IPPE)	These experiences are typically completed during the first three to four years of the pharmacy program. IPPEs provide early exposure to various pharmacy practice settings and usually last for a few weeks or months.
Advanced Pharmacy Practice Experience (APPE)	APPEs are typically completed during the final year of the pharmacy program, which can range from 3–12 months. Students rotate through different pharmacy practice settings and areas of specialization, gaining hands-on experience. The duration of each APPE rotation can range from 2–8 weeks.
Pharmacy Residency	Pharmacy residency programs, also known as Postgraduate Pharmacy Internship Programs, are widely embraced in countries such as the US, Canada, the UK, and New Zealand. Moreover, certain schools and healthcare centers in Saudi Arabia, Egypt, and Pakistan have received accreditation from the American Society of Health System Pharmacists (ASHP). These programs serve as postgraduate training initiatives that furnish participants with advanced clinical and specialized training. Depending on the program and area of focus, residency programs typically span one or two years, namely postgraduate year one (PGY1) or postgraduate year two (PGY2). Throughout the programs, residents collaborate closely with experienced preceptors and partake in a diverse range of clinical activities, enriching their skills and knowledge in their chosen specialty.

As pharmacy schools aim to prepare graduates for the dynamic challenges of modern healthcare, the focus on internship excellence has become increasingly paramount.<sup>2</sup> Understanding the approaches and best practices utilized by academic institutions is essential for advancing the quality and effectiveness of pharmacy internships.<sup>3</sup> Identifying successful development strategies can serve as a catalyst for advancing the profession and elevating the caliber of future pharmacy practitioners.

This commentary aims to explore the multifaceted landscape of internship excellence within pharmacy education, shedding light on diverse initiatives, pedagogical, and collaborative endeavors undertaken by pharmacy schools to optimize the intern experience. The investigation of these strategies intended to provide significant insights for educators, administrators, preceptors, and stakeholders in pharmacy education, driving internship programs forward and improving the preparation of future pharmacy professionals.

## Mapping the Curriculum

The first strategy pharmacy schools may use to construct successful internship programs is to set defined learning outcomes connected with the pharmacy curriculum goals. The concept of constructive alignment, a well-established principle in medical education, emphasizes the importance of aligning the learning outcomes with the learning activities and assessment methods utilized within the program.<sup>4</sup> In the context of pharmacy internship programs, constructive alignment ensures that the intended learning outcomes, the activities undertaken during the internship, and the methods used to assess student performance are interconnected and support each other, leading to a coherent and effective educational experience for the interns.<sup>5</sup> By embracing constructive alignment, pharmacy schools can optimize the design and implementation of internship programs, fostering a seamless integration of learning objectives, experiential activities, and assessment strategies.

These outcomes should encompass competencies such as medication management, patient communication, and ethical decision-making. A gap analysis should be conducted to ensure alignment between the curriculum and actual experiences.<sup>6</sup> A study conducted at Northeastern University in the US demonstrated the usefulness of this strategy in mapping leadership competencies for the PharmD program.<sup>6</sup> It identified gaps in coverage and depth of scope, inconsistencies in course objectives reflecting leadership topics and competencies. Additionally, it highlighted considerations for extracurricular leadership development.<sup>6</sup> In addition to identifying gaps in the curriculum, curricular mapping is valuable in pinpointing redundancies within the curriculum.<sup>7</sup> Highlighting areas of overlap or repetition, educators can streamline the curriculum to ensure each component serves a unique and essential purpose. This process not only enhances the efficiency of the curriculum but also ensures students exposed to a diverse range of learning experiences. Collaboration with preceptors is essential in this curriculum mapping process, as they provide valuable insights.<sup>8</sup> Pharmacy schools can also develop experiential learning activities tailored to address specific learning outcomes and competencies, such as setting up clinics where students can work with patients under the supervision of faculty or preceptors. This allows students to apply their knowledge and skills in medication management, patient counseling, and monitoring.<sup>9</sup> Furthermore, assessment methods, including self-assessments, reflective journal writing, essays,<sup>10</sup> and objective structured clinical examinations, should be established to measure students' progress. Regular evaluations of the internship curriculum are necessary to ensure its relevance and responsiveness to the evolving needs of the pharmacy profession.<sup>11,12</sup>

## Identify the Requirements and Expectations of the Pharmacy Profession

Pharmacy schools' second role or strategy in building an integrated internship program involves several crucial steps. First, stakeholder's assessment is essential for gathering input from various stakeholders, including practicing pharmacists, Alumni, industry professionals, and employers. Their insights into desired competencies for pharmacy graduates are invaluable in shaping the program. Collaboration with professional associations like the International Pharmaceutical Federation (FIP), the American Society of Health-System Pharmacists (ASHP), the American College of Clinical Pharmacy (ACCP), the American Association of Colleges of Pharmacy (AACP), the Canadian Council for Accreditation of Pharmacy (CCAP) and the Accreditation Council for Pharmacy Education (ACPE) is also vital. For instance, the US Accreditation Council for Pharmacy Education (ACPE) mandates a minimum of 300 hours for

Introductory Pharmacy Practice Experiences (IPPE) before students can progress to Advanced Pharmacy Practice Experiences (APPE), and 1440 hours of APPE are necessary to obtain a PharmD degree.<sup>13</sup> Hence, these associations provide valuable information on pharmacy developments, allowing pharmacy schools to incorporate relevant updates into their curriculum. Building strong partnerships with potential employers, such as community pharmacies, hospitals, pharmaceutical companies, and research institutions, is crucial. Pharmacy schools can tailor their programs by understanding their workforce needs and expectations. Gathering feedback from Alumni is another valuable source of insight into the skills and knowledge required in professional roles.

To ensure the program aligns with expectations, pharmacy schools should establish advisory boards comprising professionals from various sectors of the pharmacy profession. These boards provide guidance and input on curriculum development, and regular meetings with board members help schools stay informed about changing needs and trends in the profession.<sup>14</sup> Engaging in continuous professional development activities, such as attending conferences, workshops, and seminars, is vital for pharmacy schools.<sup>14</sup> This enables them to stay updated on the latest advancements, trends, and requirements in the pharmacy profession. Additionally, data analysis can help identify skills gaps and areas where curriculum enhancements may be necessary to meet industry needs.

## Determining the Appropriate Duration for the Internship

In the realm of internships, pharmacy schools play a vital role in defining their objectives and strategies to optimize the learning experience for students. Delineating the learning objectives is paramount, ensuring they align with the specific competencies that students should cultivate during their internships. By identifying these learning outcomes, pharmacy schools can accurately estimate the necessary time for students to achieve these objectives. Internship programs must allocate sufficient time for students to acquire and practice essential skills. Recognizing that more intricate tasks may require a longer duration,<sup>15</sup> schools must ensure that students have ample opportunities to learn and attain proficiency.<sup>8</sup>

Additionally, pharmacy schools must consider any regulatory requirements about the internship program duration. Regulatory bodies may stipulate a minimum number of hours or weeks students must complete to fulfill licensing or certification prerequisites. Complying with these regulations is essential for ensuring students remain eligible for licensure after graduation. To fulfill this requirement, pharmacy schools should review and adhere to the guidelines and recommendations provided by professional pharmacy organizations, accrediting bodies, and regulatory agencies.

## Defining the Requirements for Participating in the Internship

Another key strategy is that schools must establish comprehensive internship requirements to ensure students possess essential knowledge, skills, and qualifications for practical training. These include coursework prerequisites covering fundamental subjects like pharmaceutical sciences, pharmacology, and pharmacy practice, maintaining academic standards like a minimum GPA requirement, and obtaining certifications and licenses.<sup>16-19</sup> Examples include Basic Life Support (BLS) certificate or specific pharmacy technician licenses. The University of Georgia, College of Pharmacy has mandated an Introduction to Postgraduate Residency Training (IPRT) course as part of its experiential Doctor of Pharmacy (PharmD) curriculum. This course provides student pharmacists with curricular exposure to the career option of postgraduate residency training.<sup>20</sup> Pharmacy schools also emphasize immunization, health requirements, background checks, drug screenings, professional liability insurance, and adherence to specific regulatory requirements specific to their jurisdiction. These measures ensure the well-being of students and patients while ensuring compliance with relevant laws and regulations.

## Designing a Range of Structured Learning Activities Within the Internship

Pharmacy schools can design structured learning activities for their internship programs to ensure students understand pharmacy practice comprehensively. One key aspect is engaging students in direct patient care activities, including medication counseling, reconciliation, patient education, and monitoring. These activities foster the development of effective communication skills and enhance students' understanding of the pharmacist's role in patient care, such as Medication Therapy Management (MTM). MTM involves collaborating with patients to optimize medication regimens, identify and resolve medication-related issues, and improve patient outcomes.<sup>9</sup> By engaging in these activities, future

pharmacists will become patient-centered professionals.<sup>21</sup> Furthermore, traditional activities like medication dispensing activities offer hands-on experience in prescription processing, preparation, labeling, and proper storage and handling of medications.<sup>22</sup> Simulation-based education in pharmacy offers students a controlled environment to develop and apply clinical skills in real-world patient encounters.<sup>23</sup> This approach provides a safe environment for skill development, allowing students to make mistakes and receive constructive feedback. Simulation-based education also allows for the application of pharmaceutical knowledge into practical patient care scenarios, bridging the gap between theoretical learning and clinical practice. It also facilitates inter-professional collaboration and helps evaluate clinical competence. Simulation-based education prepares students for evolving practice settings, preparing them to excel in more clinical and patient-centered services.<sup>24</sup> Seybert et al, for example, described their experience with a simulation teaching paradigm. They introduced simulation instruction into pharmacy training programs in that model and discovered that high-fidelity simulation boosted evaluation and improvement of students' patient-centered care skills.<sup>25,26</sup> These experiences provide students with a solid foundation in fundamental pharmacy practices. To promote a culture of continuous improvement and patient safety awareness, pharmacy schools should involve students in quality improvement initiatives. Activities such as medication error reporting and safety audits allow students to actively contribute to enhancing patient safety and foster a mindset of continuous improvement.<sup>21</sup> Integrating clinical research projects during internships can also be beneficial. Involvement in research projects encourages students to develop critical thinking, data interpretation, and scientific writing skills.<sup>27</sup> This exposure to research enhances their ability to analyze and interpret scientific information, preparing them for evidence-based pharmacy practice.

Additionally, collaboration with interdisciplinary healthcare teams is essential. By working alongside healthcare professionals from various disciplines, students gain valuable experience in teamwork, communication, and contribution within a multidisciplinary setting.<sup>8,9,21</sup> This exposure facilitates collaborative patient care and prepares students to adapt to various practice environments. Lastly, experiential training in different practice settings broadens students' perspectives and exposes them to diverse patient populations. This exposure enables students to understand different healthcare settings' unique challenges and considerations, enhancing their adaptability and cultural competency.

## Developing a Rotation Schedule

Another strategy is establishing a well-designed rotation schedule that exposes students to diverse pharmacy practice settings. It includes carefully assessing the curriculum, forming relationships with multiple practice settings, and developing a rotation plan that permits students to spend a specified amount of time in every learning setting. In addition to the core rotations, offering elective rotations enables students to delve into specialized areas of pharmacy practice that align with their interests.<sup>28</sup> These opportunities allow students to explore and gain a deeper understanding of specific fields in pharmacy. Incorporating longitudinal rotations into the schedule has shown positive outcomes for pharmacy students.<sup>15</sup> Examples of longitudinal experiences include extended rotations in a primary care clinic or participation in a medication therapy management (MTM) service.<sup>15,29</sup> This allows students to develop strong rapport with patients, gain in-depth knowledge of chronic disease management, and provide comprehensive pharmaceutical care.<sup>21,29</sup>

Collaboration with preceptors is also pivotal in this process, as they provide valuable guidance and insights into the practice setting. Their expertise and mentorship contribute significantly to the student's learning experience and professional growth. An essential aspect of the rotation schedule is incorporating inter-professional education IPE. Pharmacy internship programs can apply IPE in various ways, including collaborative learning activities, simulation-based exercises, clinical rotations and shadowing, workshops and seminars, and team-based projects. This approach fosters a holistic understanding of patient care and promotes teamwork among healthcare professionals. Students develop essential skills in effective communication, cooperation, and patient-centered care by engaging in interdisciplinary collaboration during rotations.<sup>8,9,12,21,22</sup>

## Provide Guidelines to Preceptors

Irby D,<sup>30</sup> Described in detail the role modeling of clinical teachers: "They are faculty members who demonstrate clinical skills, articulate expert thought processes, and manifest positive professional characteristics". Pharmacy education is characterized by the fact that much of the educational process takes place in clinical practice, where clinical teachers play

pivotal roles.<sup>31</sup> The internships are influenced positively or negatively by the behavior of clinical teachers during daily practice.<sup>32,33</sup> Pharmacy schools can establish guidelines for preceptors during pharmacy students' internships. These guidelines should include clear learning outcomes, a comprehensive preceptor handbook, orientation and training, assessment methods, evaluation criteria, regular communication, continuous professional development, and feedback mechanisms.<sup>34</sup> These guidelines should align with the overall goals of the pharmacy program and include knowledge acquisition, skill development, professional behavior, and patient care competencies. An orientation session or training can help preceptors understand their roles and responsibilities in guiding and evaluating students through range of assessment methods, including direct observation, case presentations, written assignments, patient counseling evaluations, and self-assessment exercises, which can be used to evaluate students' performance.<sup>34</sup> Furthermore, Regular communication between preceptors and the pharmacy school is essential. Continuous professional development opportunities like workshops, seminars, or webinars can help refine guidelines and enhance the overall learning experience.<sup>34</sup>

## Creating a Comprehensive Assessment Framework

Pharmacy schools can establish a comprehensive assessment framework for evaluating student performance during internships. This involves several key steps. First, it requires defining competencies and developing rubrics for each competency. Second, it involves using multiple assessment methods and setting performance benchmarks. Third, it necessitates providing preceptor training specifically focused on these assessment methods. Fourth, it includes providing regular feedback and evaluating interpersonal skills. Fifth, it involves involving self-assessment and reflection, monitoring progress, and continuously improving the assessment framework.<sup>6,8,12,20-22,35-40</sup> Multiple assessment methods, such as direct observation, case presentations, written assignments, patient counseling evaluations, self-assessment exercises, and standardized assessments, can be used to evaluate student performance. The integration of Entrustable Professional Activities (EPAs) into pharmacy education represents a shift towards competency-based education and assessment, aiming to ensure that pharmacy graduates are prepared to meet the evolving demands of the profession.<sup>41,42</sup> EPAs include core practice activities, progressive entrustment, competency-based assessment, individualized learning plans, and experiential learning. These assessments focus on the application of knowledge, skills, and attitudes in authentic practice settings. EPAs are often integrated into experiential learning activities, allowing interns to engage in authentic practice experiences. While being assessed on their ability to perform specific professional activities under appropriate supervision.<sup>43</sup> This aligns with professional standards for pharmacy practice. Incorporating EPAs into the assessment methods for pharmacy internships, educators and preceptors can effectively evaluate interns' readiness for independent practice and provide targeted feedback to support their ongoing professional development.<sup>44</sup> Performance benchmarks serve as reference points for determining if students have met the required level of competency. Additionally, establishing student feedback mechanisms addresses concerns and generates ideas for program enhancement.<sup>35-40</sup>

## Continuously Review and Improve the Pharmacy Internship

Pharmacy schools employ various strategies that need continuous review and assessments using different methods such as conducting feedback surveys, organizing focus groups or interviews, conducting regular meetings with preceptors, students, and representatives, offering preceptor development programs, offering advisory committees, benchmarking activities, and continuous evaluations.<sup>6,8,12,20-22,35-40</sup> Collaboration with practicing pharmacists provides insights into the evolving needs of the profession. Hence, continuous improvement is essential to ensure the assessment process remains relevant and aligned with current pharmacy practice standards.

## Conclusions

This commentary suggests nine strategies for pharmacy schools to improve their internship programs. These include mapping the curriculum, conducting assessments, determining duration, defining participation requirements, designing structured learning activities, and developing rotation schedules. These strategies ensure students gain a comprehensive understanding of pharmacy practice, and exposure to diverse patient populations, and the profession. Furthermore, guidelines for preceptors, constructive feedback, and regular reviews can enhance the program's effectiveness. A culture of continuous improvement fosters acceptance of feedback and positive change. In addition, the implementation of these

strategies in pharmacy internship programs has the potential to serve as a valuable framework for future research in pharmacy education. By documenting the impact of these strategies on student learning outcomes, patient care, and overall program effectiveness, this commentary paves the way for continued advancement and enhancement of pharmacy education through evidence-based practices and research-driven improvements.

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