Exploring Curricular Integration in Pharmacy Schools

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Background

- The need for curriculum integration in pharmacy education is becoming more apparent as the field evolves and accreditation standards necessitate a curriculum structure where the didactic and experiential aspects of the curriculum are in close alignment.[1,2]
- Curriculum integration aims to provide students the opportunity to problem solve and address healthcare needs through innovation, critical thinking, and self-discovery which will position them to be practice-ready professionals and leaders.[3]
- Curriculum integration consists of horizontal and vertical branches, as well as varying pedagogies and strategies to create a framework for teaching and learning[1].
  - Horizontal integration is forming a link across basic science disciplines.
  - Vertical integration is taking information from the basic and social sciences and extending that through the clinical or more experiential aspects of the curriculum.

Objectives

To report the findings of an investigation of curriculum integration in US pharmacy schools. The aims of the study were to:
1. Identify the organizational thread used to integrate knowledge across the curriculums by determining if information is presented around a framework of disease states, drugs, case-based, etc.
2. Determine what pedagogies, including learning environment, format, and structure pharmacy schools are using to organize the delivery/implementation of learning experiences.
3. Determine how pharmacy schools are evaluating the success of the curriculum integration.
4. Determine the challenges that schools face in an integrated curriculum.

Methods

This novel, IRB approved, cross sectional study utilized a mixed methods approach consisting of 2 phases.

- Phase 1: An online self-administered Qualtrics survey. The online survey contained open-ended and close-ended questions that aligned with each aim. This poster reports the findings of the completed phase 1.
- Phase 2: Video interview. The video interview is a semi-structured interview. Responses to specific questions in Phase 1determined if a follow-up interview was warranted to gain a more detailed understanding of integration from each participant's context. This phase is ongoing.
- Our initial sample began with the top 60 pharmacy schools in the US according to the US News and World Report, with a goal sample population of 30 schools based on the following inclusion criteria:
  - Inclusion Criteria: These schools' websites, including documents such as syllabi or curriculum overview were searched for the terms "integrative, integration, or integrated." If the website described the curriculum as integrated in any sense, they were included in our sample population.
- Phase 1surveys were sent via a personalized email and a reminder email was sent at one week intervals for 2 weeks. Additionally, a telephone call and/or email was sent to non- responders to ensure that the email was sent to the correct person.

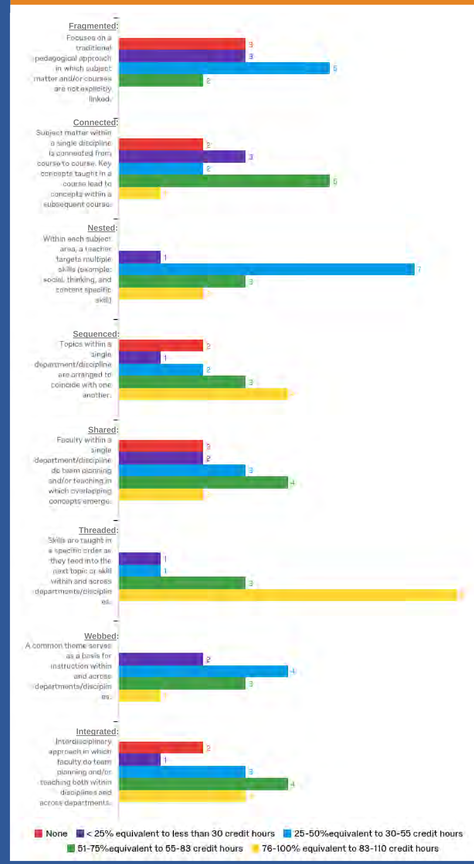
Pedagogies Utilized throughout Advancement in Pharmacy Curriculum

N= 14

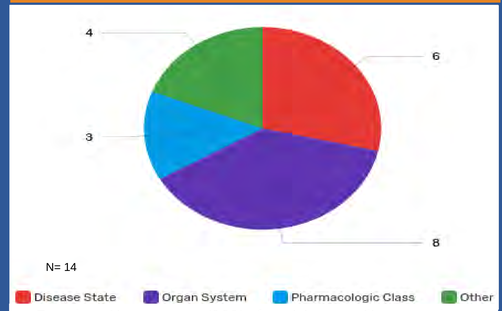
Pedagogies	P1 year (%)	P2 year (%)	P3 year (%)
Audience response system / Clickers	76.92	84.62	84.62
DIscussion-based learning	100	100	100
Interactive-spaced education	23.08	30.77	30.77
Web-based learning	38.46	53.85	38.46
Patient simulation	84.62	100	100
Process-oriented guided inquiry learning	38.46	30.77	38.46
Problem based learning, including case based learning	61.54	84.62	84.62
Team based learning	76.92	92.31	92.31
Traditional Laboratory experiences	76.92	61.54	46.15
Whole group lectures	84.62	84.62	84.62

: ¡ Indicates an increase in percentage from the previous year
: ¡ Indicates a decrease in percentage from the previous year

Percentage of Integration Models Based on Total Curriculum Hours

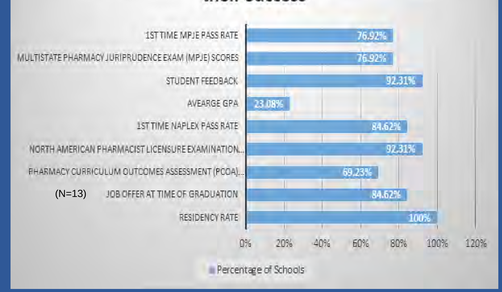


Organization of Didactic Instruction



- Based on 14 responses, 100% of participants utilize more than one instructor per course, whether it be additional primary instructor or guest lecturer.
- 86% of participants classified their didactic instruction as continuous integration of organizations throughout the three years of pharmacy school, meaning there is little to no change between P1, P2, and P3 years.
- Of the schools that did see a significant change in the organizational structure, that change occurred between P1and P2 year 50% of the time.
- The majority of responses selected organization by disease state as a form of didactic instruction used.

How USA Pharmacy Schools are Determining their Success



Curriculum Revision Challenges and Solutions

Most common challenges are workload (92.3%) and faculty apprehension (84.6%). Least common challenges reported are financial concerns, university approval, and donor/alumni approval.

When asked about how to address challenges, the most common themes were:
1) Engaging students, either through evaluations or meetings.
2) Regularly scheduled, mostly weekly, meetings between faculty and sometimes including students.

Other responses included:
1) Renovating VC technology and teaching space
2) Noting disparities in what patients need, what pharmacists can do to fill that need, and if a curriculum emphasis to prepare for that skill was feasible.

Overall, an emphasis on communication must be created to keep the conversation going and inform all stakeholders involved, including faculty, students, administration, alumni, and preceptors.

Results

After searching school's websites for selection criteria, 35 schools met the criteria and were sent the survey. Fifteen schools completed the survey.

Aim	Findings
1	The first aim served to identify the organizational thread used to integrate knowledge across the curriculums, 100% of participants utilized more than one instructor per course, whether it be additional primary instructor or guest lecturer. The majority of respondents indicated that their curriculum integration was organized by disease states.
2	The second aim sought to determine what pedagogies, including learning environment, format, and structure, pharmacy schools were using to organize the delivery/implementation of learning experiences. We found that 86% of participants classified their didactic instruction as a continuous integration throughout the three years of pharmacy school, meaning there is little to no change between P1, P2, and P3 years. Of the schools that did see a significant change in the organizational structure, that change occurred between P1 and P2 years 50% of the time.
3	The third aim sought to determine how pharmacy schools were evaluating the success of the curriculum integration. The most common method (N=100%) was residency match rates, NAPLEX scores and student feedback, followed by 1st time NAPLEX pass rate and job offer at the time of graduation. It is interesting to note that GPA was the least selected determinant (N=23.08%).
4	The fourth aim examined the challenges and ways to address these challenges. The most common challenges mentioned were workload and faculty apprehension. The most common way to address these challenges included keeping communication open and including students in the discussion.

Limitations

Limitations of the current study include:

1. Our study only included US News top 60 pharmacy schools in the US
   a. Our findings may not reflect and be generalizable to all pharmacy schools
2. Low response rate
   a. Less than 50% response rate to the initial survey

Conclusions

- The results from phase 1of this study suggest that most US pharmacy schools are using varying pedagogies and levels of integration with threaded being the most widely used and fragmented the least.
- Pharmacy schools across the country are using similar methods to determine their programs' success and many challenges to integration were identified.
- Pharmacy schools who are revising their curriculum to include more integration in order to meet accreditation standards should consider having open communication with all members involved in curricular revision, including students, in order to be successful.
- The next step in our research is to continue to collect data for interview portion (phase 2) of the project.

References

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3. Roth MT, Mumper RJ, Singleton SF, et al. A Renaissance in Pharmacy Education at the University of North Carolina at Chapel Hill. N C Med J. 2014;75(1):48-52.
4. Stewart, David W., Stacy D. Brown, Cheri W. Clavier, and Jarrett Wyatt. "Active-learning processes used in US pharmacy education." *American journal of pharmaceutical education* 75, no. 4 (2011): 68.