

UNIVERSITY of MARYLAND SCHOOL OF PHARMACY

A Flipped Education Model for MTM Core Elements in an IPPE.

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Background

The concept of a “**flipped classroom**” flips the traditional educational components of **introducing** content via in-class lectures and **reinforcing** it with homework. Since establishment of Medication Therapy Management (MTM) services by the Medicare Prescription Drug, Improvement, and Modernization Act in 2003, schools of pharmacy have worked to determine the most effective teaching strategies to train student pharmacists to deliver these services. The purpose of this project was to expand on the flipped classroom concept and apply it to the teaching of MTM core concepts in an introductory pharmacy practice experience (IPPE). We are calling this a “**Flipped Education Model**” (FEM).

Healthy Aging in a one-credit longitudinal IPPE during the second professional year. Students have two in-person orientation sessions at the beginning of each semester and are provided with online resources explaining the core concepts of MTM as well as basics of patient interaction, relationship building, and assessing Medicare Part D plans. Student pairs are then matched with an independently-living senior in the community. Over the course of 2 semesters, students complete each of the key components of MTM and submit assignments to faculty preceptors.

This experience provides students the opportunity to practice communicating verbal and written health information to patients, and applying previously-learned basic physical assessment skills as a part of their data collection. This structure reflects a FEM, given that students are responsible for self-directed learning for the basic concepts, and that faculty interaction time is spent on more complex application of MTM concepts to real-life patient cases.



Objective

The purpose of this report is to evaluate the impact of the FEM Healthy Aging course students’ perception of curricular emphasis on terminal performance outcomes (TPOs) related to MTM core elements in the PharmD curriculum.

Methods

A subset of questions was added to the annual University of Maryland School of Pharmacy student survey and administered to P1, P2 and P3 students in the spring of 2011. These questions asked students to indicate their perceived level of emphasis each of the school’s terminal performance outcomes (TPOs) as **Introduced**, **Reinforced**, or **Emphasized**, in order to analyze student perceptions of the breadth and depth of TPOs at each class year throughout the curriculum.

TPOs that relate to MTM are as follows:

1. **communicate with health care providers**
2. **communicate with patients and care givers**
3. **gather and use specific information (e.g. patient histories, medical records) to identify patient medication-related problems**
4. **develop a patient care plan to manage each medication-related problem**
5. **document pharmaceutical care activities**
6. **work with other stakeholders (e.g. patients and other health professionals) to engender a team approach to assure appropriate use of health care resources in providing patient care**
7. **practice pharmacy in interprofessional and collaborative practice**

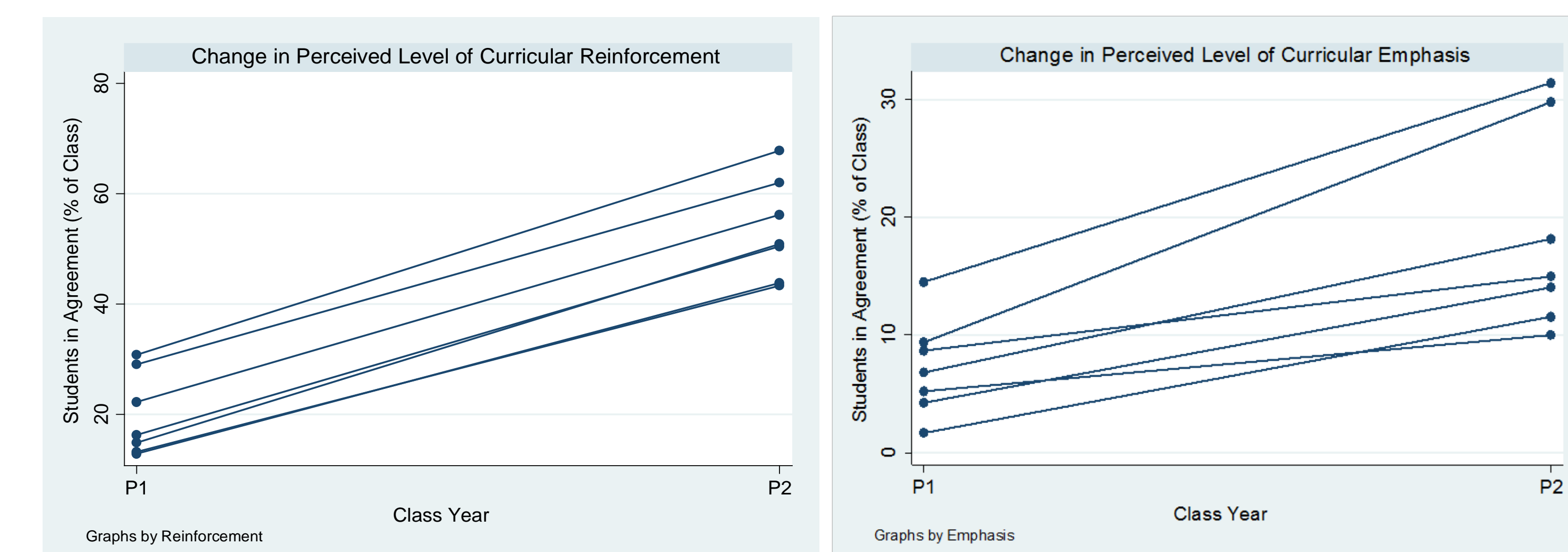
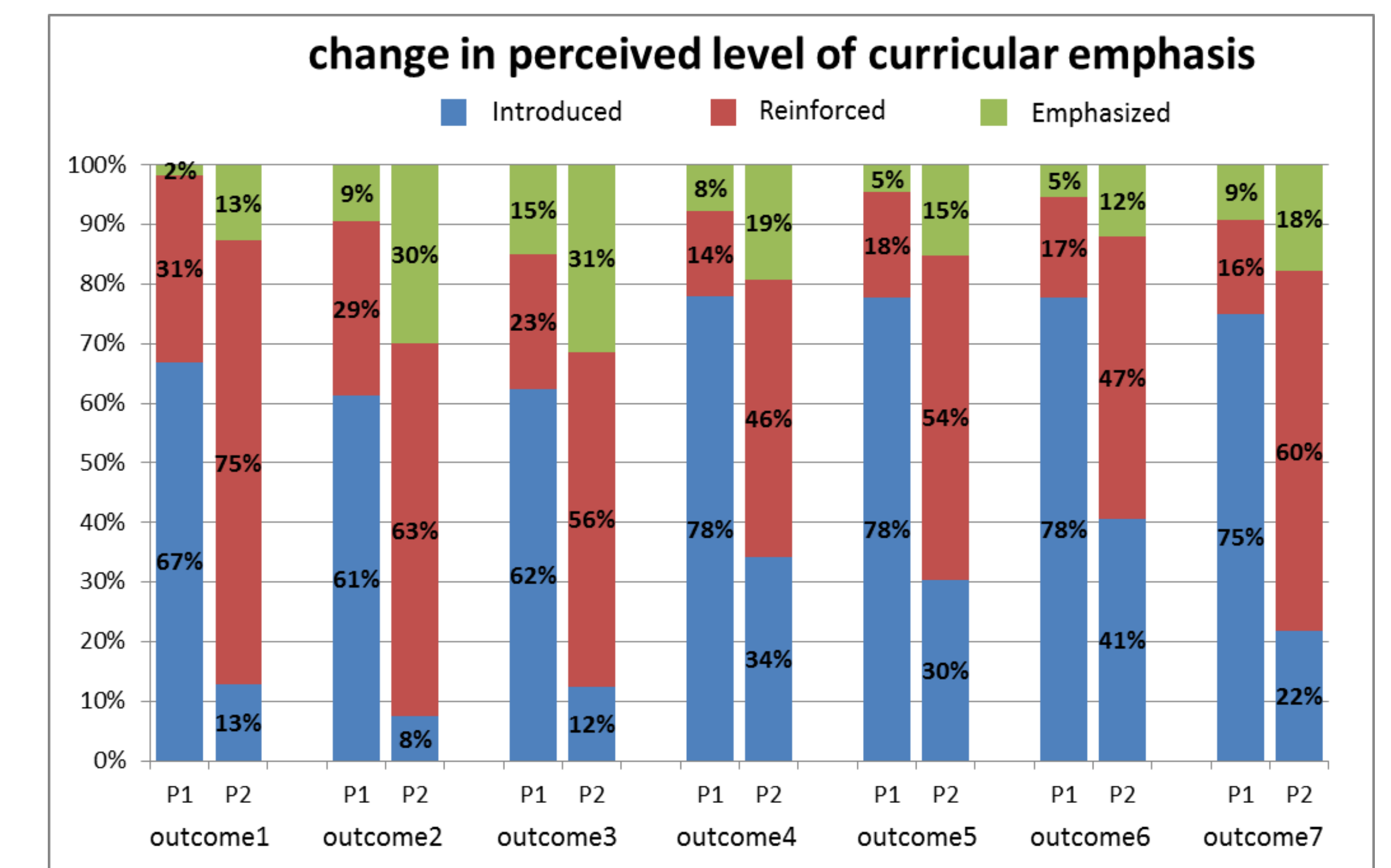
Comparison groups for this project were the respondents from P2 (n=138) who had been taught the five MTM core elements in Healthy Aging utilizing the FEM, and a control group of P1 students (n=137) who did not take the FEM class. Note that Healthy Aging is the only course that exposes students to concepts of MTM in the P1 and P2 curriculum. Data were analyzed for differences in perception between FEM-exposed and non-exposed students of the curriculum’s effectiveness at emphasizing MTM core element TPOs.

	P2 (% Agreement)	P1 (% Agreement)	Difference (%)	P-value†	99% CI
Outcome 1: Communicate with healthcare providers					
Emphasizes	11.57	1.7	9.86	0.0024	(1.75-17.96)
Reinforces	67.76	30.76	36.99	<0.0001	(21.48-52.50)
Outcome 2: Communicate with patients and care givers					
Emphasizes	29.75	9.4	20.35	0.0001	(7.58-33.11)
Reinforces	61.98	29.05	32.92	<0.0001	(17.23-48.61)
Outcome 3: Gather and use specific information to identify medication-related problems					
Emphasizes	31.4	14.52	16.87	0.002	(3.14-30.60)
Reinforces	56.19	22.22	33.97	<0.0001	(18.71-49.24)
Outcome 4: Develop a patient care plan to manage medication-related problems					
Emphasizes	18.18	6.83	11.34	0.0084	(4.95-22.19)
Reinforces	43.8	12.82	30.98	<0.0001	(16.89-45.06)
Outcome 5: Document pharmaceutical care activities					
Emphasizes	14.04	4.27	9.77	0.0092	(0.32-19.23)
Reinforces	50.41	16.23	34.17	<0.0001	(19.53-48.80)
Outcome 6: Work with other stakeholders to ensure appropriate healthcare resource utilization					
Emphasizes	10	5.26	4.73	0.1741	(-4.13-13.61)
Reinforces	43.33	13.15	30.17	<0.0001	(15.95-44.39)
Outcome 7: Practice pharmacy in an interprofessional and collaborative manner					
Emphasizes	15	8.69	6.3	0.1359	(-4.48-17.08)
Reinforces	50.83	14.78	36.05	<0.0001	(21.52-50.57)

CI=Confidence Interval; P1=First professional year pharmacy student; P2=Second professional year pharmacy student
†P-value produced using a two-sample student t-test of proportions

Results

Analysis of student perception indicates that the curriculum significantly **reinforces** all MTM outcomes between the P1 and P2 years. This can be attributable to the IPPE experience in Healthy Aging because there is no other MTM component in the P1 or P2 years.



Implications

The less significant increase in perceived **emphasis** may be due to the fact that the Healthy Aging course is only one credit among 35.5, spanning a rigorous and academically-intensive P2 year. Healthy Aging is also their first clinical experience in which students are practicing outcomes related to MTM.

Further analysis is needed to determine whether perceived emphasis increases as students progress through the curriculum.