

Finding Balance in Student Needs for Flexibility and Stability with Four Teaching Modalities

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Objectives

- Students may require more flexibility in their coursework for many reasons, including illnesses/disabilities, caregiving, athletics, jobs/internships, and religious/cultural needs
- Flexibility can include needs for time, space (in-person/online), methods, learning styles, content, organization, and assessments¹
- Although distance learning courses may offer personalized instruction that can be tailored by students to meet their needs², many find in-person instruction options more appealing³
- The goal of this work is to compare student success in a pre-pharmacy writing course offered using four different teaching modalities with different balances between flexibility and structure when taught by 1 instructor over a 5-year period: traditional in-person, distance learning (online), hybrid flex (hyflex), and modified in-person instruction

References

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Course Information

Course: Drug Use in American Culture, a pre-pharmacy writing course that is also offered to all OSU students as part of the general education curriculum (health & well-being theme)

Goals: Students develop skills in written communication and expression, critical analysis of sources, and oral and visual presentation

Evaluated Teaching Modalities

In-person (IP): All classes delivered using traditional in-person format; activities assigned in class on handouts and due at the end of the class period; writing assignments submitted through the learning management system (Carmen)

Distance learning (online, ON): Class material delivered in a 100% asynchronous online format; participation evaluated with discussion posts; weekly schedule used for assignment due dates; all assignments submitted through Carmen

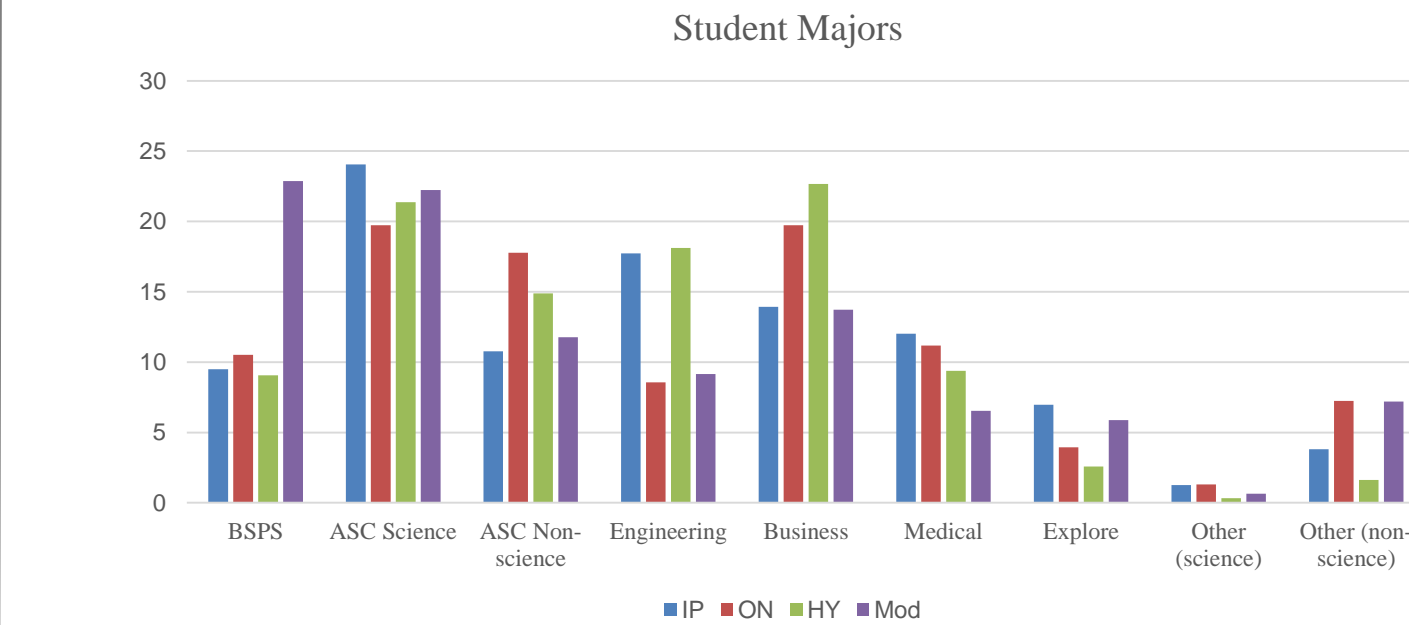
Hyflex (HY): Course delivered in person but recorded; class material can be completed in class or asynchronously with extended deadlines and submitted exclusively through Carmen; extensions freely given upon request; students can choose to attend class in person or asynchronously each day

Modified In-Person (Mod): Similar to Hyflex option except that assignments are due during class periods through Carmen and students must request lecture recording access; assignment extensions available upon request

Student Population Was Similar Among Sections

Table 1: Breakdown of the course offerings and student populations among the 4 teaching modalities

Type	Sections	Total # of Students	Senior	Junior	Sophomore	Freshman
IP	4	158	32.9%	38.6%	25.9%	1.9%
ON	5	152	21%	47.4%	30.9%	0.7%
HY	8	309	30.1%	41.7%	26.9%	1.3%
Mod	4	153	34.6%	42.5%	22.2%	0.6%



IP, in person; ON, online; HY, hyflex; Mod, modified in-person; BSPh, Bachelor of Science in pharmaceutical sciences; ASC, Arts and Sciences

Assessments: Academic Success

- Discussions: Measure of involvement and engagement with the course materials
- Quizzes: Assessment of understanding of the course content
- Short response writing assignments (SRWAs): Practice developing writing skills
- Paper: Measure of student success in achieving written communication skills
- Presentation: Measure of student success in achieving oral/visual communication skills
- Final Grade: Overall mastery of the course material

Modalities Had Small but Significant Effects on Academic Success

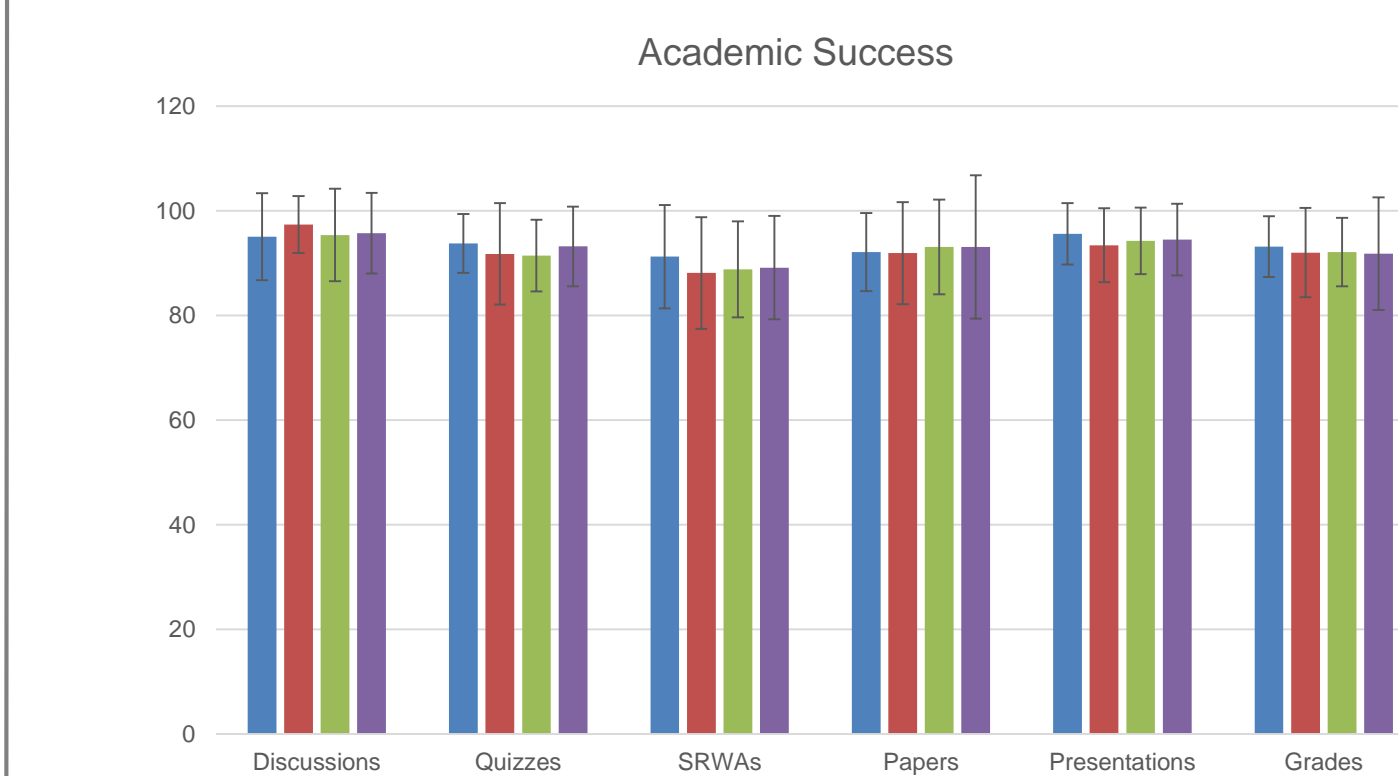


Figure 1: Comparisons of average assessment scores between course modalities. Averages and standard deviations were calculated for each course modality type and compared. Outliers due to students dropping or failing the course are removed (see Figure 3). Participation-weekly discussion posts and peer responses (online classes) and lecture-based assignments (other modalities). Quizzes- module quiz scores. Short response writing assignments (SRWAs)- focused short papers focused on specific writing skills. Paper- the final paper includes paper and checkpoint scores in a combined final grade. Presentation- in-person or webinar presentations. Final score- final course grade.

Table 2: Comparisons of assessment grades among course modalities

	F-Statistic	P-value
Discussion	0.12	0.95
Quizzes	4.18	0.006
SRWAs	2.99	0.03
Papers	0.69	0.56
Presentations	2.9	0.03
Grades	0.92	0.43

	IN vs ON	IN vs HY	IN vs MOD	ON vs HY	ON vs MOD	HY vs MOD
Quizzes	0.03	0.0002	0.46	0.73	0.16	0.02
SRWAs	0.009	0.01	0.07	0.5	0.41	0.75
Presentations	0.004	0.03	0.13	0.22	0.19	0.74

Table 2A: Comparison of grades among the four teaching modalities for each evaluated assignment type calculated using ANOVA. Significance set at p=0.05 (highlighted in blue).

Table 2B: Comparison of grades between teaching modalities for the three assessment types with significant differences by ANOVA; calculated in pairs using a t-test (2-tailed, unequal variance). Significance set at p=0.05 (highlighted in blue).

Student Satisfaction Was Highest in In-Person Class Modalities

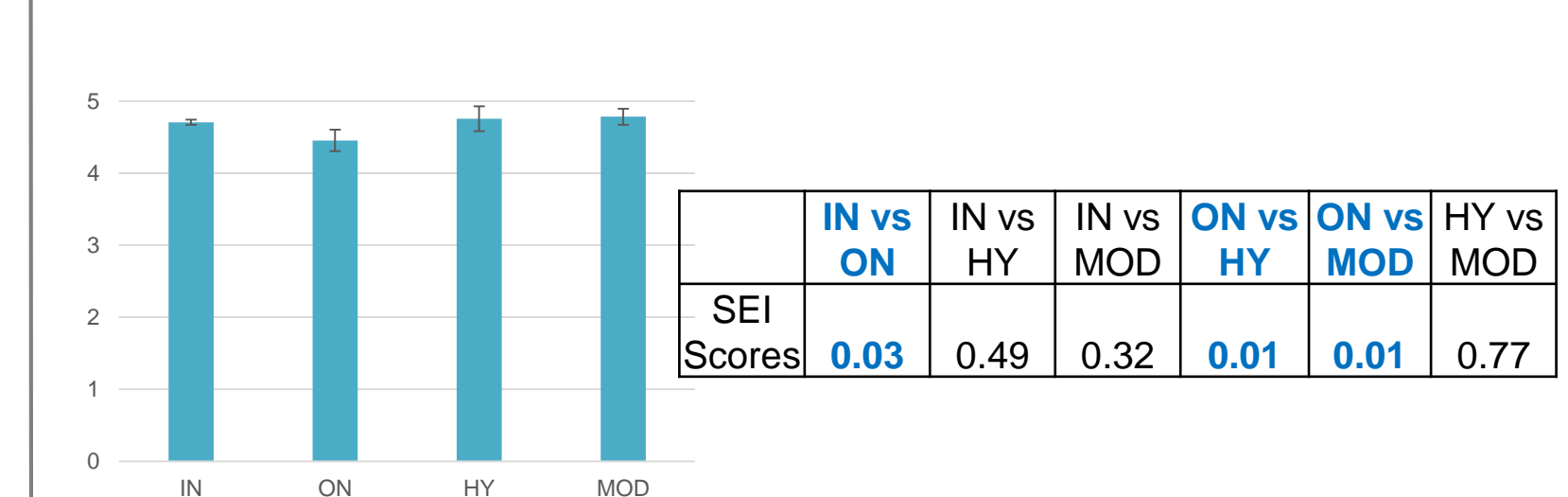


Figure 2: Comparison of averaged overall Student Evaluation of Instruction scores for each teaching modality. Student Evaluations of Instruction (SEI) scores are on a scale from 1-5. A score of 5 is a perfect score. Students rate their courses and instructors online asynchronously using the course delivery system (Carmen/Canvas). Differences were evaluated using a t-test (2-tailed, unequal variance). Student satisfaction was lowest for the online teaching modality (significance set at p<0.05 for all comparisons; highlighted in blue).

Student Responses

- Students reported appreciating the flexibility of attendance options for the hyflex sections
- Potential for extended deadlines due to health or technical issues was appreciated for the hyflex and modified sections

Willingness to Seek Help

- Students attending class in-person were more likely to ask questions about topic material presented in class
- Students in the in-person and hyflex sections were most likely to attend virtual or in-person office hours
- Students from all sections were likely to seek help with assignments over email
- There was a shift in the modified sections with students less likely to attend office hours

Effects of Teaching Modality on Failing Grades and Course Withdrawals

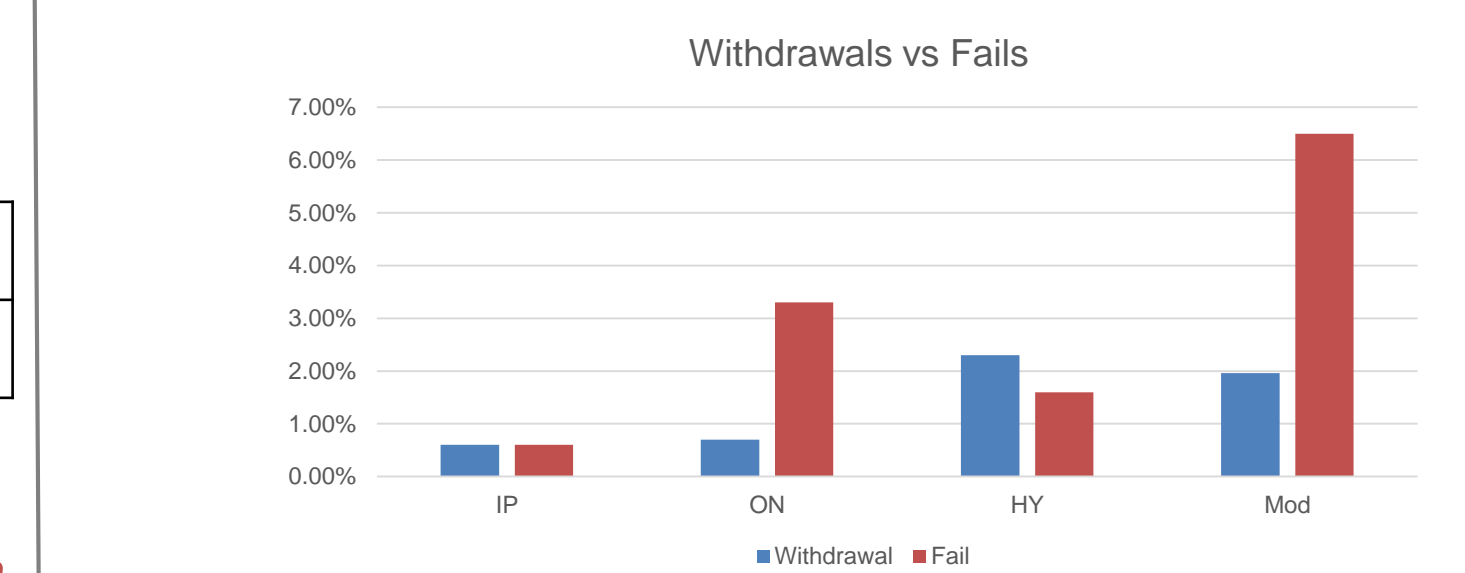


Figure 3: Comparison of percentages of students in each teaching modality who earned a failing grade (<60%) or withdrew from the course. The data are represented as percentages of total students in each course modality offering.

Conclusions

- Students performed well academically in all sections, with the lowest assignment scores generally noted in the online sections
- Students appreciated the flexibility offered by the hyflex and modified course formats and most students thrived in these environments
- However, some students require more accountability to drive academic success, especially in the post-pandemic era

Lessons Learned and Future Directions

- Regardless of modality, students prefer a structured course format with clear expectations
- Recording lectures and offering deadline extensions can reduce student stress, although clear rules and extended deadlines are essential
- Identifying student groups most likely to need additional support based on past experiences can help guide future course improvements