
Weekly Flow: an Effective Organizational Tool for Structuring Biology Courses and Supporting Student Learning

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INTRODUCTION

The organizational framework underlying our courses is not always apparent to our students. Establishing a clear “Weekly Flow” in college biology courses can support students who struggle with time management, making learning more accessible. I started using this technique in 2020 for my first online asynchronous course. The goal was to establish a clear structure through weekly checkpoints that would help students stay engaged in the new and potentially challenging format. I have continued to use Weekly Flow to make course organization explicit and predictable to students. I have used different versions of this technique in large introductory lecture courses and smaller upper-level elective courses, as well as in online, hybrid, and in-person courses. The clarity that this minor intervention provides is often mentioned by students in course evaluations as one of the main factors that aided their learning.

Instructor transparency and consistency with regard to course logistics and expectations can help students succeed as they navigate the transition to college and throughout their academic career. Time management and study skills are broad areas that undergraduate students struggle with worldwide as they transition to college, and these are skill sets where instructors can often do more to support student development (1). More experienced college students often still struggle with time management as they navigate different expectations from different instructors in different courses. In the wake of the global 2019 coronavirus disease (COVID-19) pandemic, many instructors have noticed an increase in student stress related to academics (2). By structuring, or

restructuring, a course around a predictable Weekly Flow, instructors can minimize some of the barriers that stand between our students and their learning.

PROCEDURE

The goal of an established Weekly Flow is to provide consistency and repetition on a weekly scale so that students know what to expect each week. This enables practice with time management skills. You can create a course’s Weekly Flow by first determining what the weekly deadlines will be and then committing to keeping those as consistent as possible each week. In my Tuesday/Thursday courses, for example, I generally have weekly deadlines of Tuesday, Thursday (before each class meeting), and Friday afternoon. This allows students to plan ahead even if they don’t yet know the precise assignment details.

Weekly Flow can be centered around different types of assessments due on different days each week (as mentioned above). For example, you may choose to have a take-home quiz due at the same time at the end of each week. You could also have it become available 2 days before then to provide students with flexibility along with structure. Another way to incorporate flexibility is to have assignment types vary week by week. Having an “application assignment” (or some similar category) can work within the helpful structure and predictability of Weekly Flow, while maintaining variety week by week. In one of my courses, the weekly application assignments completed over the semester were quite varied and included problem sets, reflecting on interview videos, nature walks, and working with online interactive resources. Weekly discussion posts or brief reflections might also be included in the Weekly Flow.

When I organize Weekly Flow around deadlines, I share with students on day 1 what a typical course week will be like. This includes an estimate of how much time they should plan to dedicate to the course outside of class meetings and provides some examples of how they might choose to structure that time. I emphatically encourage students to decide where and when they will do each type of work and schedule it ahead of time. Figures 1 and 2 provide an example of how this

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Weekly Deadlines

	Tuesday	Thursday	Friday
Assignment	OpenStax or other reading <i>(non-graded)</i>	Application Assignment <i>(due 9am)</i>	Quiz <i>(due 5pm)</i>

Ideally, you'll work on this course every day

Ideal Workflow	Weekend	Monday	Tuesday	Wed.	Thurs.	Fri.
Suggested Workflow	Review Read OpenStax chapter(s)	Review Read OpenStax chapter(s) <i>Attend TA session</i>	Attend Class <i>Attend Office Hrs</i> Review Begin Application Assignment <i>Attend TA session</i>	Review Complete Application Assignment <i>Attend TA session</i>	Attend Class Review	Review <i>Attend TA session</i> Weekly quiz
Hours Required	0-4	0-4	2-4	0-4	2-4	0.5 - 4

FIG 1. Tables presented to students to show weekly deadlines and ideal student workflow. Typical weekly deadlines in this example include Tuesday before class, Thursday before class, and Friday 5 p.m. This Weekly Flow is shared with a note that the schedule and deadlines on exam weeks will be different. Color coding and font differences are used to distinguish activity types. An estimated span of time required to complete all activities is also included.

information can be presented to students. This example is from a course that meets Tuesday and Thursday at 9 a.m. The information presented to students as the course's Weekly Flow includes weekly deadlines and an ideal workflow where students engage with material every day (Fig. 1). It also includes some alternative workflows students might be more likely to stick with (Fig. 2). If a student's planning doesn't work one week, they can revise plans and try again the following week. When students are struggling in a course, discussing how they're planning around the Weekly Flow can be a generative discussion starter.

Weekly Flow can also be structured around class activities. Rather than being focused on assignment deadlines, it can provide rhythm and variety to each week's class meetings. Table 1 contains an example of syllabus text describing the Weekly Flow in a "flipped" upper-level elective course that met Monday, Wednesday, and Friday. In addition to describing the type of work we will be doing, it provides information for students about how they are expected to prepare for each type of class meeting. This version of Weekly Flow provides the space to have less-predictable assignment deadlines (for example, in a course structured around longer-term projects) while maintaining structure and predictability.

Safety issues

There are no biological, chemical, or other safety concerns associated with this technique.

DISCUSSION

Most instructors already have some elements of Weekly Flow well established in their courses. However, the organization is not always explicit and is therefore often unclear to students. I have found that students greatly appreciate the reliability of a Weekly Flow, especially when there is enough variability to particular elements that it does not become repetitive to the point of being boring. In a recent end-of-semester course evaluation (for the course for which Weekly Flow is depicted in Fig. 1 and 2), 103 students responded to the question "What are the strengths of this course?" Of these responses, 32 (or 31%) explicitly mentioned the course organization as a strength. I take this as evidence that students both appreciated and were aided by the use of Weekly Flow. This is especially relevant in introductory courses, where a great deal of material is covered and deficiencies in study skills and time management can be major roadblocks to academic success. High levels of structure (including elements such as weekly practice and quizzes) in introductory biology courses have been shown to be especially effective in reducing "the achievement gap between students from disadvantaged versus nondisadvantaged educational backgrounds" (3). Therefore, implementing an explicit Weekly Flow in introductory biology courses may also be an effective component of broader work to make these courses more equitable and inclusive.

You'll need to work on this course AT LEAST 3 days each week consider...

TTF Workflow	Tuesday	Thursday	Friday
Suggested Workflow	Attend Class <i>Attend Office Hrs</i> Review Complete Application Assignment <i>Attend TA session</i>	Attend Class Review	Review <i>Attend TA session</i> Weekly quiz Read OpenStax chapter(s)
Hours Required	2-5	2-4	1-5

or

STF Workflow	Saturday	Tuesday	Thursday
Suggested Workflow	Review Read OpenStax chapter(s)	Attend Class <i>Attend Office Hrs</i> Review Complete Application Assignment <i>Attend TA session</i>	Attend Class Review Weekly quiz
Hours Required	1-5	2-5	2-4

FIG 2. Alternative workflows presented to students, showing ways to limit course work to either Tuesday/Thursday/Friday or Saturday/Tuesday/Thursday. Color coding and font differences are used to distinguish activity types. An estimated span of time required to complete all activities is also included.

TABLE I

Example syllabus text describing the in-class Weekly Flow for a course that meets on a Monday, Wednesday, Friday schedule

Class day	Description
Material Mondays	We will begin each week with a discussion of the text and new content for the week. There will be some short lectures, but the expectation is that you will come to class having spent time with the reading and ready to engage with the material.
Wrangling Wednesdays	Midweek, we engage in individual guided reflection and small group activities to deepen our understanding of the material, as well as process the emotions that come with these topics. There will typically be some kind of reflective journaling associated with Wednesday class meetings. This might occur during class but may also be due before or after the class meeting.
Fun Fridays	We will attempt to end the week on a lighter note with a series of inspiring case studies, videos, and other activities that I hope will be enjoyable. We may be able to take some nature walks together, and small group “book clubs” (more explanation to come) will occasionally meet on Fridays. You will typically have an assignment due before class on Fridays. These assignments could be paper drafts, journal entries following up on Wednesday’s meeting, or something different associated with that Friday’s activity.

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