

Using Mass Media Models for Virtual Teaching Modalities

Introduction

We advocate mining the sketch show format for structural insights in creating more effective online learning, particularly those media that involve their audience (either directly like "Ellen" or via fourth wall breaks like "The Muppet Show"). Having one mode of teaching causes students to saturate and tune out, yet having a class that is unpredictable leads to student confusion and thus also disengagement. The structure must be pre-announced and kept consistent across class sessions, while the actual content can be as similar or wildly different as the instruction requires. By maintaining the 'show' structure, students will always have a reference frame so they can focus on the material and not be trying to figure out the content delivery. Thus a predictable structure is required.

Commonly recognized classroom techniques include chunking of material into 5-7 bits, mixing teacher presentations with student-lead discussion, and varying between listening modes and hands-on activities. Instructors generally develop a personal set of modalities they provide for the class, and rotate among them. One professor may use lecture, discussion, and quiz as their primary tools; another open-ended inquiry, group problem solving, and student presentations. Early in the semester, these primary modes are introduced so students understand how they work; subsequent reuse of a known mode can then focus on the material rather than the 'how to'.

This is no different online; instructors gravitate to their preferred modes of instruction and engagement. In mass media methods, the equivalent would be segments. We assert the primary difference between on-ground and online is the duration of each mode/segment. The reduced immersion of the online experience makes it harder to sustain student engagement on a given mode compared to the time spent within a physical classroom, because online learning is both a reduced channel and more prone to distraction. The reduced channel aspect is due to students having less sensory engagement, being predominantly audio with a restricted 2D visual component. The higher risk of distraction is the outcome of each student being in their own local semi-isolated setting that lacks the 'boring' uniform distraction-free bubble that a classroom provides.

Therefore, a good online class has to manage the dual goals of keeping activities to a shorter time span to keep engagement, while minimizing confusion by avoiding too much non-instructional overhead when transitioning to new activities. Structuring each mode into a short segment of class-time is a constructive preparation enacted by the teacher before class. Switching between segments is a run-time activity during class time. Having multiple segments defined, which the students (after first exposure) recognize and understand, minimizes transition confusion while allowing for multiple transitions in a single class session to occur.

Put another way, a lot of online classes default to lectures that are structured like a movie: premise, derivation, application as a three-act structure. In an on-ground class, a lecture-mode professor generally relies on their personality and presence to keep the students involved, aided by the fact that classrooms are a closed reduced-distraction captive environment. However, online, a 90-minute lecture becomes the equivalent of delivering a 90-minute movie to the screen-only at-home participant. Most professors are not capable of delivering a 90 minute movie-level experience twice a week, given the nature of the material they must convey.

However, mass media models such as TV talk shows, game shows, and variety shows routinely deliver a 60-90 minute mix of engagement and information repeatedly each night. Their primary tool is the use of predefined segments such as 'the monologue', 'the interview', 'call up an audience member', 'game show segment', 'view from the street', 'comedy sketch', 'poll the audience'. And, of course, commercial breaks.

For online teaching, these can map to 'lecture', 'instructional video', 'question-and-answer', 'problem solving drill', 'ask students to share experiences', 'fun stories about the topic from the web', and 'poll the students'. This list is by no means exclusive nor required, but an example of sample modes a teacher might wish to use. Each teacher will have a set of modes they use repeatedly based on their material and how they run their class.

As a pre-emptive cautionary, we note teachers must avoid drifting too far into emphasizing entertainment over education. Pragmatics accept that a student is shaped by the mass media they consume, and that classes are in competition to this. It is important that teachers indicate to students that, while the class is a medium that students must attend and consume, it is also a process in which the students have a voice and can provide feedback and concerns in real time.

Background

Geri et al note that "in learning contexts, sometimes the message is complex, or cannot be transferred in a short format"[1], as well as the need for instructors to mix lectures with interactive content. With the understanding that a mix of content (rather than a straight class-long lecture) is necessary, creating a structure for presenting that mix becomes the next step. Bradbury adds "Multiple approaches can and should be used to help students not only to remember material but also to have a deep comprehension of physiological processes and mechanisms and be able to utilize such knowledge in various applications." [2]

Key to this discussion is we are not focusing on online techniques, but instead the structure needed to support techniques. There is active research on topics of what a student's attention span is (including Bradbury[2]) and the benefits of different methods in terms of interactivity

versus lecture (such as Geri et al[1]), but less focus on the framing structure of the online class session itself that enable professors to create engagement and 'audience' attention retention.

The use of mass media models for teaching is not unique to this author; back in 1983 Grasha and Levi noted the similarity of teaching and hosting a talk show in terms of "Teaching issues of importance to the program host, such as maintaining variety in the show's format, keeping topics and comments concrete and less abstract, maintaining enthusiasm and effective timing, confronting irrational beliefs, and dealing with role conflict"[3]

Structurally, modern media workers such as Lyons[4] recommend directly adapting traditional radio 'format clocks' for new media use such as with podcasting (Figure 1). Creating a visual template is one guide method for mapping segments, transitions, and breaks. For instructors who rely on slides, a set of pre-labeled slide templates is appropriate; likewise outlines or organizers are equally effective. But first, we need to first determine what our session structure will contain.

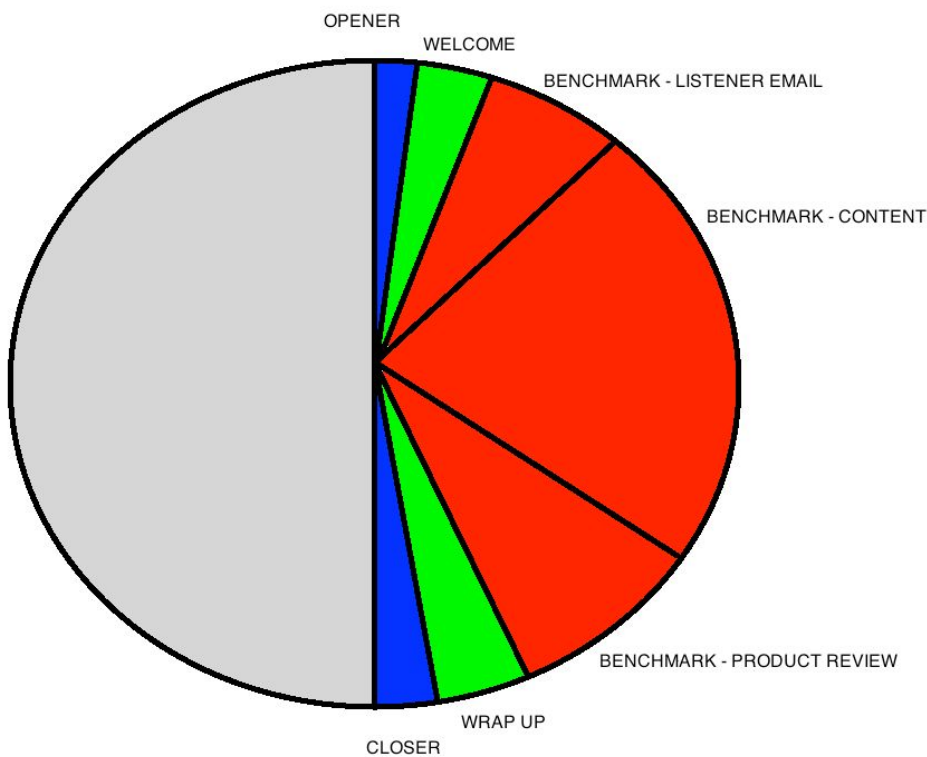


Figure 1: Podcast "format clock" indicating structure of each episode[4]

Given the large amount of research into children's education, we therefore start with a look at the structure of "Sesame Street" and its more random kin "The Muppet Show". "Sesame Street" by

design uses "individual curriculum-based segments which were interrupted by "inserts' [...] to use a mixture of styles and characters, and to vary the show's pace"[5]. The goal was to "capture, focus, and sustain [...] attention"[6], a goal shared explicitly by mass media (to retain viewers) and implicitly recognized in teaching (to maintain engagement).

"The Muppet Show" as an academic model is suitable because "in spite of its lack of educative intent [it] does offer an alternative to the teacher as the human conduit for the transmission of subject matter"[7]. We can further note the teacher-like condition that "Kermit the Frog, who, as the 'producer' and host, is the glue that patches together the bits and pieces" nevertheless "is never really in control of what goes on there, and we are constantly reminded of the autonomy of each of the characters"[7]. With effective online learning focusing less on long lectures and more on student-centric efforts, "The Muppet Show" joins our set of models for pulling together an effective online class. Let's therefore look at the specific frameworks used.

Note we are not talking about attention span, but engagement and chunking. Bradbury notes "student attention arises from differences between teachers and not from the teaching format itself. Certainly, even the most interesting material can be presented in a dull and dry fashion, and it is the job of the instructor to enhance their teaching skills to provide not only rich content but also a satisfying lecture experience for the students."[2] We would add the advice for instructors to teach a class they would want to take themselves.

Teachers must also be cognizant of the bandwidth and technology limitations some students face, both in terms of the digital divide and simple logistics. Not all students have high speed internet, and not all students have an isolated room when taking online classes. By having a regular structure, students with reduced internet access or in high distraction environments can anticipate the shift between passive 'listening' segments (where smartphone and headphones in the kitchen might suffice) and higher demand 'participatory' segments (requiring a quiet room and mike access), and adjust their environment accordingly. Their structure can emphasize both low-bandwidth core content delivery while allowing for parts of the class session to contain high-bandwidth items (many of which can also be provided offline for students to access later.)

As noted in the aptly titled "Principles of Effective Online Teaching", instructors need to "manipulate the environment as well as the outcomes."[8] Having a template makes it easier for teachers to create and deliver the course. Bayne's "Manifesto for Teaching Online" emphasizes that the interface is as important as the content, stating "the aesthetics of online course design are too readily neglected: courses that are fair of (inter)face are better places to teach and learn in."[9] Further, for teachers, their class situational awareness is less online than on-ground, yet they must maintain presence, as "an undefined teaching presence produced lackluster student engagement" and effective classes require "articulated and transparent design".[10]

Four-act structures

Top rated TV shows, talk shows, and genre media such as detective fiction and romance novels rely heavily on what TV Tropes calls "Strictly Formula" because "people who read/view them are freed up from discerning the structure and can concentrate on the language and the details. The writer has gotten the shape of the story out of the way of the content of the story." [11] The role of the teacher is equally crucial, much as Tennant notes that "The Host is Everything: The host maintains a high degree of control over their show, from subject matter to comedic tone. They are also the brand and must carry that burden." [12]

What we see from mass media examples (juvenile or adult) is the recurrent of a strict four-act structure with flexible and often rotating choice of elements within each act. In our juvenile examples, "Sesame Street" starts with a welcome and introduction to the main theme, rotates through stand-alone educational bits and social learning segments, then closes with a wrapup of the main theme. The Muppets (shown in Figure 2) use a TV-standard four act structure: an introduction to the guest star, alternation between sets of sketches that may or may not relate to the guest star and backstage 'bits' that set up the overall arc, a main guest number (usually musical), then a chaotic wrapup and closeout of the theme.



*Figure 2: "The Muppet Show" intro, looking like an online class in gallery mode
Image courtesy of disney.com*

The four-act structure returns with teen- and adult-aimed daily shows. Late night talk shows (including the classic "The Tonight Show" and the more modern "The Daily Show" and its "The Colbert Report" spinoff) use key pieces again broken into 4 acts with: opening segment monologue, recurrent segments or skits, interview with guest, closing segment. Similarly, radio shows and podcasts such as "The Prairie Home Companion" and its kin "Welcome to Night

Vale" mimic old-timey radio shows with 4 acts: an intro (both to the episode and to set the theme), recurrent sketches (only some of which connect to the main theme), a musical feature, and a closing monologue.

The use of a four-act structure including its mix of new and recurrent 'skits' or segments builds both a comfortable familiarity for the audience, plus an expectation of novelty. Put another way, they know good stuff is coming and how it is packaged, but not yet what it is. In an educational setting, we restate this by accepting that, while the content can be surprising, the structure of the class should not be.

The second walkway from mass media models is to shorten each online mode, relative to the time instruction would occupy in the classroom. Largely, this means moving away from long lecture segments (already a trend in teaching, with a shift towards inquiry-based and participatory work). Despite having shorter segments, we wish to minimize transition stress for the students by ensuring that they are not faced with new items being thrown at them, but rather are aware of what the expectations of the next segment will involve. Mass media transitions to a new segment by literal announcement, "Now the news" (or "Welcome our guest for tonight") combined by visual queues (such as the set design). They rely on novelty over predictability in that the set contents and (often) which segments play in a given night changes, while going for comfortable familiarity by pulling from a known subset of segments and keeping to a set order. The audience is primed for what structure to expect, so the content can then be more easily engaged.

A sample online class, drawing from this model, might start with a short warm-up exercise, then segue into the instructor's lecture, then a short video example, followed by small group problem solving, and closing with an open discussion on cases in the real world. Again, not very different from a well-run on-ground class, with the only difference between that the segments are both crafted to work with online expectations (lossy channel, more external distraction) and that the sequence is made consistent across classes (so students become trained in what to expect).

The third component to complete this framework is 'audience participation', aka 'student participation'. In an on-ground classroom, a professor can generally coerce questions from a large subset of their students via physical presence and the effective use of waiting; we are more open to long pauses in real-world situations. Online, pauses are 'dead air', and students are more anonymous at the other side of the screen than they would be if physically present. Mass media has a strong understanding that the audience should be participants as both individuals (polls, call-outs and questions) and as a group (applause, laughter). We are not suggesting professors should go for applause and laughter (though most online platforms do provide students with

buttons to register that), but rather to adopt media techniques for generating participatory engagement.

The mass media audience creates simultaneous noise, through applause, laughter, and-- most relevant for the classroom-- callouts and group call-and-answer by the host. What differentiates this from a lecture audience-- quiet, absorbing-- is that in a live classroom, most lectures tend to follow a question-answer interaction, wherein a student raises a hand to be called on, then is invited to speak, encouraging others to follow in turn.

Strong use of chat

A standard online technique for encouraging student participation is the use of checkpoints to periodically poll the students to type a response into chat, such as 'If you don't have any questions, please type "yes" into chat so we can proceed'. This serves the purpose of re-engaging the absent student, or at least getting them to remember they are in a class and attention is expected. And like applause, many students just follow whatever the first few chat-typers did.

A better model is to engage the student by asking for an assessment. A typical poll for assessment might be "For what was just presented, how ready do you feel to solve a problem with it, on a scale of 1-5". This is adequate but only weakly engaging. Most students, given a numerical question like this, will tend to put a middle answer (3) under the fear that '1' means they'll have to sit for a repeat of the lecture, but '5' means a pop quiz.

In a mass media model, the callouts should involve engagement and shout-out, which for an online class should involve a little entertainment and the ability for students to provide varied answers. With this approach, the question might be (drawing from a recent class), "I am about to present advanced material, that won't be on the test. To make sure you are aware, please type 'I will not panic' before I can show this material."

First, students have to type a sentence instead of just hitting a single button, so they are kinesthetically and (slightly) mentally more invested. Second, students who had become distracted or disengaged will be re-energized by reading their peers typing 'I will not panic', and potentially be more invested in the next segment. The key word of 'panic' itself is guiding the student to an anticipation of the next segment, adding a component of emotional investment. Finally, in practice, we discovered some students had fun playing with the format because it was words (and not just a number or button), with responses including 'I will panic', 'I might panic', and 'I will not panic?!?!?!'. All of which engage the students as a group with the channel (not content) more strongly and lead to a more successful transition to that next part of the class.

Again pulling from mass media models, where the structure is constant but the content changes, be sure to make call-outs and polls have variety. The 'not panic' line is a one-use thing; the next instructional transition call-out should be different, or the novelty engagement factor diminishes. Teachers can prepare a 'cheat sheet' of their own with possible call-outs, and just go down through the list as the semester progresses. Requiring students to type "I like danger", "Please don't stop", "Sure, why not", and similar perky yet neutral phrases adds enough variety to keep it fresh while maintaining the slight engagement uptick the transition is designed for. The teacher can view segments and transition elements as formulas (or shticks), and using repeated formulae with variations on their content is another lesson learned from mass media.

Assessment methods

Assessment of the effectiveness of adopting mass media models for online teaching in terms of whether students learn more is a difficult but not impossible task. The difficulty is because online teaching has many intertwined factors. We rarely can run two identical classes with different modes to compare student scores, as every class is different, with different students and a different embedded environment. In particular, while online classes two years ago were opt-in, currently due to Covid-19 many classes became online by mandate. Assessment data on method effectiveness is also often skewed because a good teacher ensures their class makes it despite impediments, and therefore end results show a similar grade curve shape even when methods shift.

We propose two short-term assessment measures, one aimed at the teacher and one at the students. For the teacher, we offer this structure so they can create a framework that reduces the amount of time they have to spend preparing material. By thinking in the mass media mindset, the teacher is removed from having to dynamically figure out how to vary their content delivery. Instead, they can pull from their menu of desired pre-sequenced segments, which provides them automatically with a way to chunk their material in an online-accessible way. By providing structure, the teacher can worry less about cleverness of form, and instead focus on populating each segment with effective content. Therefore this assessment is, after initially set up by the instructor, whether the use of mass media segmentation reduced or increased class preparation times.

We highly recommend the use of chat transcript log statistics to continually track engagement levels. In assessing student engagement, we adopt the metric of 'percentage chat'. Most online platforms (Zoom included) produce a chat transcription that is downloadable after the class. Running a numerical analysis on these chat transcripts is an effective source of data. The four

variables to look at are: percentage that chatted, amount of chat, frequency of chat, and percentage of meaningful chat.

For the first, 'percentage that chatted', take a raw tally of the percentage of students that participate in the chat at all. This is the online equivalent of taking attendance, in that it shows students were present without making a qualitative assessment of whether they were engaged.

The second item, amount of chat, is the line count of how big the chat transcript is. More lines of chat indicate more classroom participation (regardless of merit). This is a qualitative assessment, as the chat log will include polling chat, discussion chat, off-topic chat, and of course noise, not all of which is of equal value.

The third item is frequency of chat, measured by how many chat inputs each student made. This can be done formally (by tallying up the line count for each student and plotting as a histogram or calculating min/mean/max) or as an informal assessment by looking at roughly how many times most students posted to chat. Outliers-- those that didn't chat, and those that dominated chat-- are also worth studying.

The final item is assessing the percentage of meaningful chat. "Meaningful" is a qualitative assessment and will vary for each instructor. To pull a recent example, the discussion of warp drives in chat during a robotics class could be considered 'meaningful' (because the students are cognitively engaged with their classmates, even if it's off-topic) or 'noise' (because it wasn't about the lecture material), according to the instructor's chosen teaching priorities.

When in doubt in deciding 'meaningful', we recommend using this statistic as an engagement criteria and count any non-trivial chat line (no 'yes' or 'me too's) as 'meaningful' to use this percentage as an engagement statistic. Alternatively, the teacher is welcome to tally the 'meaningful' and 'noise' chats separately, and generate a signal-to-noise ratio for the chat discussion for use as an ongoing measure of whether the content is being focused on.

Conclusion

Having one mode of teaching causes students to saturate and tune out, yet having a class that is unpredictable leads to student confusion and thus also disengagement. Likewise, a good teacher accepts that not all students will not be equally engaged in all segments of their structure. However, using predictable yet varied modalities for each class will lead to students self-identifying with the portions of the class that are more effective for them. Thus a varied yet structured model can deliver virtual learning to students of different learning types and increase overall engagement. To create a structure for each class session that is consistent, repeatable,

and engaging, we recommend using evolved mass media models which have a history of engaging their audience for 90+ minutes on a nightly basis.

To reduce confusion, in both on-ground and online classes, students are transitioned into the activity. Before the students can do the activity, they must both understand what the activity is, and how they are to tackle it. For activities they have already participated in, this transition requires minimal instruction and generally goes smoothly, such as stating "time for a quiz, close your books and take out a pencil", or its online equivalent, "time for a quiz, please turn on your cameras and wait for the pop-up." For new or infrequent activities, a longer period of explanation and direction is needed. New activities also require more management to transition the students into the new place. This is more difficult with online instruction because online lacks physical queues and has reduced ability to do full-group interaction simultaneously alongside with individual hand-holding.

For effective engagement with different learners, more than one style should be used in any given class session, in a framework that students find accessible. Ultimately, in effective online student-centric learning, the role of 'lecture' is deprecated in favor of high engagement methods including multimedia use, student peer-to-peer interaction, and other virtual hands-on activities. The role of a teacher has therefore shifted from being a speaker to being more akin to a Host, a DJ at a dance club or an MC for a variety show-- we introduce and frame multiple content sources while constantly adjusting the tempo and pacing in order to keep the specific students attending (rather than some hypothetical audience) engaged. Given all the tools now available, it is vital to ensure the teacher has an underlying repeatable structure to guide each class session.

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