

Educational psychologists characterize them as motivational strategies. Classroom teachers just call them “hooks.” Either way, the concept expresses the importance of engaging students in their own learning. The practical challenge can be monumental. But all too frequently, teachers seem to construe *hooks* as ways to simply grab attention and elicit a response. This commonly accepted term (this month’s Sacred Bovine) is inappropriate for describing how teachers motivate true learning. The implicit metaphor of the hook fosters a view of students as gullible victims to be “caught and taught,” lured in and instructed, “hook, line, and sinker.” Here, I profile an alternative view that might promote more respectful and, ultimately, more meaningful learning experiences.

## ○ Hooks, or Openers

The purpose of hooks is plain enough. Students are often disaffected. They feel alienated by institutional demands, adults, the whole oppressive school system. They arrive in class on any given day still gabbing with peers, checking their phones and texting their romances, having negotiated crowded corridors and equally perilous social networks. Biology is typically not high on their agenda. Is it even on their radar? How does one meaningfully engage them? Not surprisingly, teachers often report motivating students as their number-one challenge.

Hooks, in the conventional way of speaking, are designed to direct student focus to the lesson at hand. But consider the connotations of the metaphor. Are teachers like anglers in a classroom, needing to “lure” students, “grab” their attention, “reel” them in, “capture” their interest, and “net” a lesson? Like the eponymous Captain Hook? Or hookworms? Talk of “hooks” does not create an image of a supportive and encouraging teacher. Let’s call them “openers” instead.

Motivation is surely essential to learning. Educational psychologists, buoyed by research from cognitive science, underscore the role of learners themselves in promoting their own learning. Ideally, effective learning is student-centered and active, in sharp contrast to most school culture. True learning is about what the learner learns, not what the teacher teaches. So the conventional conception of hooks, as teacher-centered, is ill framed. Teachers need to tap into their students’ own self-motivational structures. They need catalysts, invitations, and encouragement. Visions, seeds, and sparks. Inspiration – not coercive “hooks.”

Many teachers, it seems to me, view hooks merely as ways to get students’ attention. But ideally, openers have a much broader and deeper role. Here, I identify five distinct dimensions of engaging students. First, one wants to simply reorient the focus of attention – from

the hectic world outside the classroom to an occasion dedicated for learning. Thus, in entering a theater, audience members typically pass through a narrow, low-ceilinged tunnel. Through a clever architectural device, the outside world is symbolically and emotionally left behind. Similarly, an opening to class is, in part, an occasion to establish class time as a learning space. For some teachers, it is a routine ritual. Clapping hands and saying hello. Or answering a warm-up review question. On other occasions, it might be the opposite: something deliberately unexpected. A break from the ordinary rhythms. A dramatic anecdote, an odd artifact, a spectacular image or lab demonstration. The key element is to transform attention and, with it, intent. Some teachers, having garnered attention, feel that the motivational work is done. But the larger challenge has only begun.

A second role for openers is simply (re)establishing a social relationship. The basis for communication. An occasion for sharing. Teachers often regard their relationships with students as among the most meaningful aspects of what they do. Yet educators rarely discuss how this relationship is established. Or reestablished every day. Introductory jokes, for example, are less about gathering attention than about social ties. Teacher and student enjoy the amusing moment *together*. Similarly, personal anecdotes are less about the content of the story than the interpersonal act of sharing. In this way, one establishes a mutual presence and opens dialogue. By extending respect, rather than expecting or demanding it, a teacher earns respect. The social connection promotes working together.

Third, openers ideally orient students to the day’s topic. They contextualize and give personal meaning to the lesson. The concept may not be clear yet, but the reason for learning about it should be. And the reason should matter to students, not just to the textbook authors or test-writers. Context, for the purposes of learning, is necessarily defined by the student’s perspective. Exhortations of “relevance” from some external authority are hit-or-miss, at best. There is no substitute for knowing one’s students’ perceptions and values. Making it real. Using concrete examples. Being local and contemporary. Finding images that fit in the students’ horizon. Many prescribed lessons may seem remote from student experience. But a healthy investment of creative imagination pays off. If we don’t contextualize the outlook from the learner’s point of view, students will lack orientation to the learning ahead.

But even this is not enough. An effective opener does more than just elicit fleeting “interest.” A visible response does not always indicate *engagement*. A fourth and more demanding dimension of hooks is *motivation*. Framing a lesson does not necessarily evoke a

personal commitment. Effective learning involves affect as well. Ironically perhaps, emotions matter in the science classroom. A striking opening, however entertaining, may not carry any deeper import for learning. An opening distraction may be just that: a distraction. Focus may soon drift away. Engagement means a student has adopted a posture of active learning. Effective motivation requires careful crafting. Not by a hook, but by inspiration.

External motivators – grades and institutional penalties – have some effect. But one can see how they rely on leverage. Internal motivation, by contrast, fosters true, long-lasting, and meaningful learning. It is the cognitive counterpart of hunger, thirst, and sex drive. Authentic motivation comes in several varieties. For example, relevance matters, but only when it also generates an impetus to know. Biology in the news: Ebola, local environmental concerns, health issues. The context must evoke students' desire to be informed. The deficit must be motivational. Other effective catalysts evoke mystery, with an air of suspense. Or uncertainty, or debates yet to be resolved. Or unfinished story scenes, with corresponding anticipation of what happens next. Or wonder, with curiosity whetted. Idle curiosity is, well, just that: idle. The “wow” of spectacle needs to be echoed by a “How?” or a “Why?” An effective motivator is essentially unfinished. It projects a promise of an emotionally satisfying completion. For example, one focuses on questions, not answers. (Not yet.) The experience is deliberately incomplete. The ideal motivator launches students on a trajectory. A compelling one. Effective teaching requires a bit of emotional engineering. The common metaphor of the hook can easily lead one astray.

Fifth, a good opener might help tap into and expose preconceptions. It brings student background (both sound and unsound) to the fore. On what foundation can lessons be built? What ideas can be more fully informed? The tradition of using discrepant events is designed to couple this exposure or awareness with a motivation to address the problem of inadequate knowledge.

Engaging students fully, then, involves at least these five forms of preparation simultaneously: redirecting student attention to learning, a renewed social relationship, orientation to the topic, emotional investment in learning, and awareness of preconceptions. Unlike hooks as traditionally conceived, complete motivation is multidimensional.

One reason for articulating these many roles is to underscore that a strategy effective for one function does not necessarily fulfill the others. How often do teachers get students' attention but hold it only for a brief moment? This fails to motivate true learning. There can be misplaced confidence that students are committed and ready to listen. Attention is not engagement. “Hooks” are not always fully effective motivators.

As teachers, we should be wary of gimmicks. Psychologically they may be weak motivators, or perhaps pseudo-motivators. Cartoons may be good for a laugh, but not always for a lesson. Guessing games may evoke a sense of play, but not meaningful engagement. Discrepant events may be so obscure that they do not truly inspire curiosity or prompt a productive kind of cognitive instability. Magic tricks, however fun, may easily be dismissed as tricks. Openers should have some depth, or staying power.

Worse, some hooks exhibit a bait-and-switch strategy. That is, an exciting opening may not truly be relatable to the ensuing lesson. Perhaps the vivid news context falls by the wayside as the class transitions into a conventional lecture, as remote as the decontextualized textbook. Or a fascinating story of scientific discovery, holding the

prospect of revealing the human dimension in science, is replaced with impersonal discussion of experiments and evidence. In such cases, the opener is not aligned with the ultimate lesson. The initial motivation soon dissolves. More importantly, perhaps, the implicit promise of the trajectory seems compromised. Respect for the teacher, part of a long-term teacher–student relationship, erodes further. Again, this is where the metaphor of hooks can mislead teachers.

Ironically, perhaps, one good source of openers is history. Why did anyone care about this knowledge *in the past*? How was the research motivated? Typically, such episodes exhibit both cultural context and personal motivation. At the very least, the human dimension is vivid and can usually form the basis of an engaging story. The story and the lesson are intertwined.

## ○ Lines

Some teachers seem to believe that once students are hooked, they will remain engaged. Yet sustaining a learning experience involves motivation as well. Although the power of hooks is often misconceived, one might revisit the phrase “hook, line, and sinker” to further highlight the roles of “lines” and “sinker.” That is, ideally a lesson plan will exhibit a story line, arc, or trajectory and, at the end, a formal closing. The initial opener threads through the entire learning episode. Ideally, the introductory theme pervades subsequent activities. For example, cases in the news are common openers. But are they an introductory aside or an integral seed? Does the contemporary case become a vehicle for expressing and articulating the very lesson itself? An “application” will not merely be an informative illustration. Rather, it will be the fabric of the fuller lesson. Context and target concepts are woven together. If one has introduced a seed question or problem, the lesson can easily be the gradual development of an answer or solution. Motivationally, one does not inspire the students, then abandon the inspirational context. Rather, one evokes curiosity and transforms the initial example or idea into the thematic line and emotional thread of the lesson.

Alas, motivational lines are also susceptible to unfruitful gimmicks. For example, students often respond favorably to lessons designed in game format. Yet the involvement in competition can easily outstrip the ultimate educational objective. One can mistake lively activity and short-term interest for meaningful, long-term learning.

## ○ Sinkers

In addition to openers (hooks) and lines, an effective learning experience also has closure. The lesson has a “moral.” Emotionally, the motivational deficit is fulfilled. Aesthetically, there is resolution. Pedagogically, the learning objective is finalized. Teachers can deliberately craft this effect. We can call these teaching moments “sinker,” as in sinking a putt in golf. Or sinking a foundation deep to ensure the long-term stability of a building. The metaphor of a foundation is apt for education.

Learning theory based on cognitive science highlights the importance of consolidation, where the lesson is summarized and reinforced in long-term memory. The sinker happens when the incompleteness of the original problem is finally and fully – and

formally – completed. It is also an occasion to pause briefly and appreciate the value of the learning experience. The original motivation finds its ultimate reward. The student can appreciate the whole lesson, hook, line, and sinker. Prospectively, every class might express the value of education.

## ○ Engaging Students

Engaging students “hook, line, and sinker” could be, in some contexts, unwarranted educational con-artistry. But not if one gives appropriate meaning to those terms. First, hooks – or openers – should truly engage. Mustering attention is not enough. Provoking an active response alone is not sufficient. One is aiming to motivate learning, both emotionally and intellectually. Second, lines, based on a sustained theme, help thread the motivation throughout the entire lesson. Finally, sinkers help bring closure and resolution to those lessons. Developing effective openers, lines, and sinkers invites careful advance thinking and imagination. At the same time, they can utterly transform the teaching experience. They bring students’ motivation, energy, and spirit into the class environment. Emotional engagement matters to teachers, too. And when the

students share in the excitement, teaching becomes virtually effortless and, at the same time, more deeply fulfilling.

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