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Deciphering Learning Behavior Patterns

Make sense of metrics to make more confident decisions

Karen Hebert-Maccaro

Understanding your learners is vital to designing and delivering learning to meet today's individual and organizational needs. But how do you gain strategic and actionable insight into your learners' behaviors?

To truly understand your learners' behavior—and what it means for your organization and your learning programs—you'll probably need to change the metrics being monitored and measured in your learning ecosystem.

One of the most important things learning leaders can do is understand the content consumption patterns and engagement of their learners. While there are undoubtedly many interesting learner behaviors to explore, this report defines and discusses four of the most important types of behavior to understand :

- Linear learning behavior
- Nonlinear (or performance-adjacent) learning behavior
- Deepening behavior
- Broadening behavior

Learner behavior patterns are an underexplored component of professional learning and development efforts today. Perhaps this is, in part, because of a faulty but long-standing reliance on learning style as an indicator of preferred approach to receiving information. Recent cognitive science research has indicated that learning styles, such as visual, auditory,[1] kinesthetic, concrete, and abstract, are unreliable at best and that prior research on the topic largely failed to properly test the influence of learning style in an experimentally rigorous manner.

Another possible reason the learning and development profession has all but ignored the pursuit of learning behavior patterns is because of an overreliance on one particular behavior: completion. While the inclination to gravitate toward something concrete and answerable with a binary yes-or-no response is understandable, the result is an overly simplistic and not particularly useful conception of learner behavior.

Completion is about compliance; learning is about impact

The allure of a simple completion metric may be strong, but in many cases the value it provides simply isn't. Required learning may be the one exception to the rule. In the case of a requirement, completion has an inherent value. If you want to (or have to) require training—for orientation, new manager development, or compliance with laws and regulating bodies, to give just a few examples—then tracking and reporting completion data enables enforcement and demonstration of compliance with the requirement. However, outside of this instance, completion is not a particularly useful behavior metric. Simply put, completion measures compliance, but learning is all about impact. Completion alone does not provide insight into impact or any other useful element of learning design and delivery.

Another reason completion isn't useful outside of compliance situations is because today's learners don't consume content and learning experiences in one way.

Linear and nonlinear (or performance-adjacent) learning behavior

It's clear people learn in distinct ways—even if learning styles are unreliable estimates of their differences. At O'Reilly, we explored learning behavior on our online learning platform during Q3 of 2017. By examining approximately 195,000 unique learning sessions by learners across a range of industries, we found that fully 42% were non-linear. *(See Figure 1, below)*

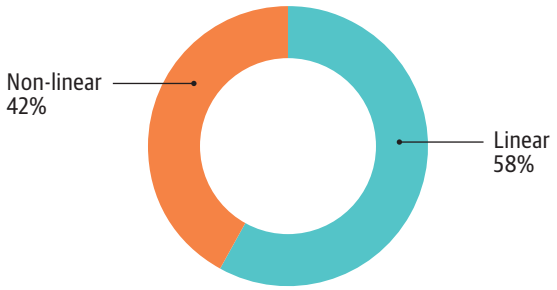

Figure 1. O'Reilly linear vs. non-linear learning behavior

[1] Examples:
frontiersin.org/articles/10.3389/feduc.2018.00105/full
blogs.edweek.org/edweek/inside-school-research/2009/12/report_debunks_learning-style.html

What is nonlinear learning? It's learning that happens adjacent to the workflow, which is why we call it performance-adjacent learning. Performance-adjacent learning tools allow an employee to jump into a learning experience (for example, the specific chapter of a book or part of a video course) that will provide a needed definition, answer, or tool and then quickly return to their work and apply it. It might appear in reports as short bursts of learner engagement that are very likely out of order. In these instances, the value is derived not from completing a single unit of learning (e.g., a full book, video, or course) but rather in having frictionless access to learn while you work.

To further explore this behavior, in Q3 2018, we surveyed 6,852 of our learners and found that 44.2% self-report that they use the O'Reilly learning platform in a performance-adjacent manner, confirming our nonlinear finding from 2017. And the estimated time saved from this type of behavior equalled one week per year, per learner.

With additional research, we found that learners who are more advanced in their level of proficiency in a particular topic are more likely to behave in a nonlinear manner. Once learners pass what we call the point of structural literacy (in other words, they have built some proficiency with a topic), they are more comfortable with jumping around quickly in wider bodies of content to find learning that is most context specific and relevant. They no longer want or need to be as structured in their consumption, and they want to direct their own learning toward their own unique set of application-oriented needs. *Figure 2, Professional Skills Development Framework*, depicts this behavior.

Learners new to a topic, however, were more likely to prefer a linear learning engagement. Linear behavior is structured and learners are likely to follow the predesigned sequence. For example, a learner may start at chapter one or the introduction video of a course and take the sequence as presented. This sequenced consumption of learning experiences is helpful for those less proficient with a topic, because good learning design for beginner learners presents limited content in an easy-to-understand manner.

It is important to note that even in linear behavior, the completion metric may not apply. A learner could progress sequentially from chapter one to chapter five of a 20-chapter book and feel as though they accomplished what was needed. A typical report may show that as ¼ complete, but the learner achieved her goal, did so in a linear or structured way, and got the value she sought.

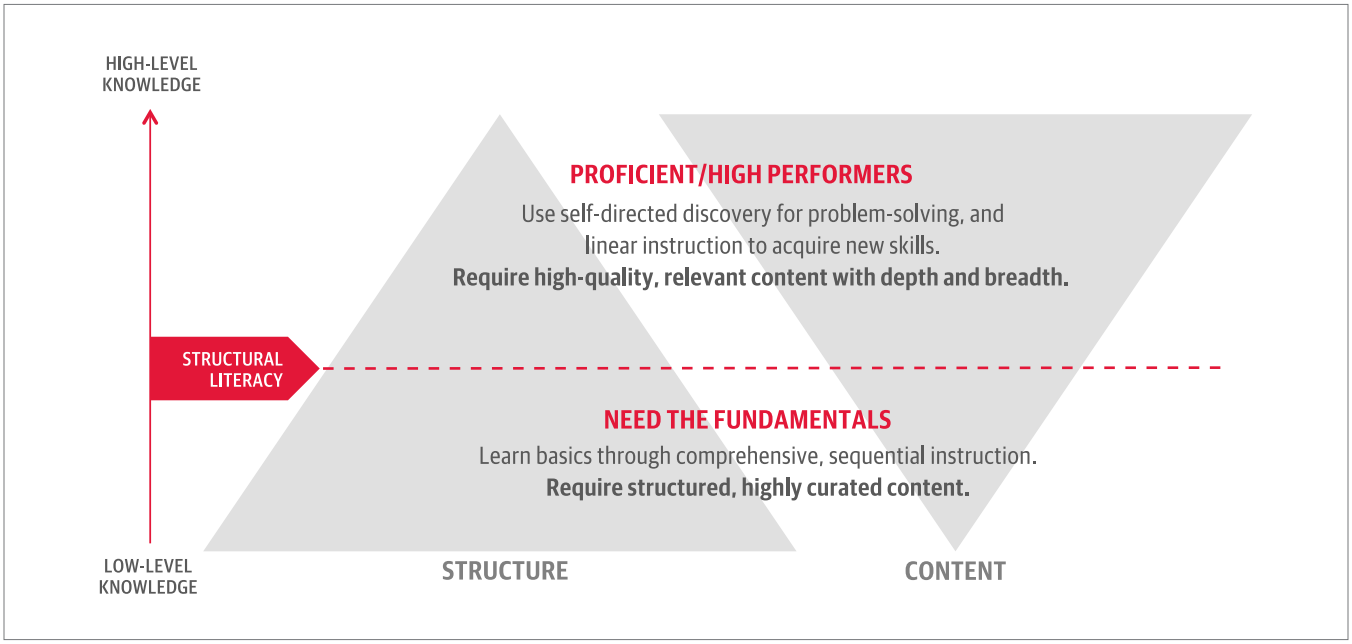

Figure 2. Professional Skills Development Framework

Deepening and broadening learning behavior

Deepening learning behavior occurs when learners are focused intently on developing a skill and building proficiency in a very specific topic area. At first glance, deepening behavior seems very similar to linear learning, since as with linear learning behavior, you'll likely see deepening behavior when learners have a new skill, concept, or technology they're looking to master. However, unlike those practicing linear learning, learners who are deepening are not necessarily consuming content in a structured and sequential order.

Deepening behavior is categorized by the learner's focused and continuing engagement with content or experiences on the same topic. As such, an expert steeped in his field may exhibit deepening behavior very focused on a single topic even if the learning is nonlinear or performance adjacent. Deepening behavior suggests, though doesn't prove, proficiency building.

By examining approximately 289,000 users on the O'Reilly learning platform in November of 2018, we found that 47.1% of all users were engaging in deepening behavior.

Broadening behavior is observed when a learner is beginning to show a sustained interest in a new topic area within the learning tools or resources provided. You may find that learners are branching out to topics related to their core focus areas or jumping from one distinct topic to another without any obvious connection. This behavior could suggest a number of things about your learners. Broadening behavior may be indicative of a learner who is being asked or is self-driven to learn about new areas for professional or personal reasons. It may mean that the learner is drawing connections from different topics that aren't obvious to others. Over time, broadening trends may suggest what's coming next and what is on the mind of the most progressive of your learners. With additional exploration, this may be a way to stay ahead of the learning needs of your workforce and be ready when the need becomes mainstream.

Using the same parameters (approximately 289,000 users in November 2018), we found that 52.9% of all users were engaging in broadening behavior.

While this is a snapshot of the learning behavior at one point in time on one platform, the distribution suggests that a significant portion of any population may be engaged in one or the other (or both) at any one point in time—requiring differing strategies to most effectively meet their needs.

Learning behavior is transient

A really important thing to note is that learning behaviors can and will change based on:

- The topic
- The learner's level of proficiency
- The broader context (the priorities in the learner's life and work)
- The immediate context (what is needed or possible in the moment)

Any one learner could be exhibiting any one (or more) of the four behaviors for a given topic and another of the four for a different topic at the same time. For example, a new learner in the Agile methodology may be engaging in linear learning while also exhibiting nonlinear and deepening behaviors when learning about Python (a common computer programming language), a subject they are well versed in.

Understanding learner behavior is the first step in implementing a more useful set of learning metrics.

How to use learning behavior metrics

The implications for learning and development professionals are many. Understanding learner behavior patterns can help learning leaders:

- Decide what learning experiences to buy or build, paying specific attention to those that support nonlinear and deepening behavior (two areas not always well supported with traditional learning tools and resources)
- Identify and design learning experiences for different proficiency levels
- Understand how learners are progressing through content and learning experiences and identify areas of stagnation or lack of focus
- Move beyond traditional and often inadequate metrics (including completion) toward metrics that provide real actionable insights

Understanding learner behavior is the first step in implementing a more useful set of learning metrics. The ability to derive insights about proficiency and engagement patterns could help learning and development be more effective overall, by meeting the learner where they are and with what they most need. It can drive greater precision in the development and/or purchasing of learning tools and resources. Learner behavior patterns are an important part of the story of learning efficacy. Now is the time to embrace and explore them for the benefit of your learners and your organizations.

Karen Hebert-Maccaro is presently Chief Learning Experience Officer of O'Reilly Media responsible for leading and managing the organization's learning strategy. In this capacity she oversees the management and development of learning initiatives and programs for O'Reilly Online Learning, the company's learning and training platform and manages both creation and curation of content to innovate new learning experience products both on and off the platform. Prior to joining O'Reilly she was in various talent management roles including Vice President of People Development and Chief Learning Officer for companies in both biotechnology and healthcare technology. Karen holds a PhD from Boston College, an EdM from Boston University, and a BA from the University of Massachusetts.