The Stories Your Data (can) Tell

A Comprehensive Analysis of the Participation Phases of Learning and What They Teach Us

In the field of Continuing Medical Education (CME), understanding the nuances of learner participation is crucial for analyzing both the effectiveness of the educational experience and for the improvement of future programs.

This white paper examines the various phases of learner participation, emphasizing the importance of pinpointing where and how learners engage with the material. Each phase, from starting an educational session to the post-activity follow-up, offers unique insights into learner interactions, comprehension, retention, and application. By analyzing these stages educators, program designers, and supporters can gain valuable perspectives on the impact of designed educational experiences. This understanding is instrumental in tailoring future CME programs to meet the evolving needs of medical professionals, ensuring that the education provided is both relevant and impactful.

The current approach to participation analysis in online CME programs often yields rudimentary data, primarily focusing on the number of users who initiate a session compared to those who complete the course and claim a certificate. In this context, these individuals are frequently referred to as "learners," a term inappropriately used even for those who merely begin by clicking on a session's overview page. Such a simplistic analysis raises several pertinent questions about user engagement and course efficacy. Key among these include identifying the stages at which users disengage and what specific factors contribute to their dropping out. Is the dropout rate linked to the relevance and appropriateness of the educational content? Is it a consequence of the content being unengaging or poorly presented?

> There are stories in your data if you know where to look…

Understanding the nuances of how and where users participate in the program is crucial. It serves as a foundational step towards a more comprehensive understanding of user engagement and the overall effectiveness of online CME.
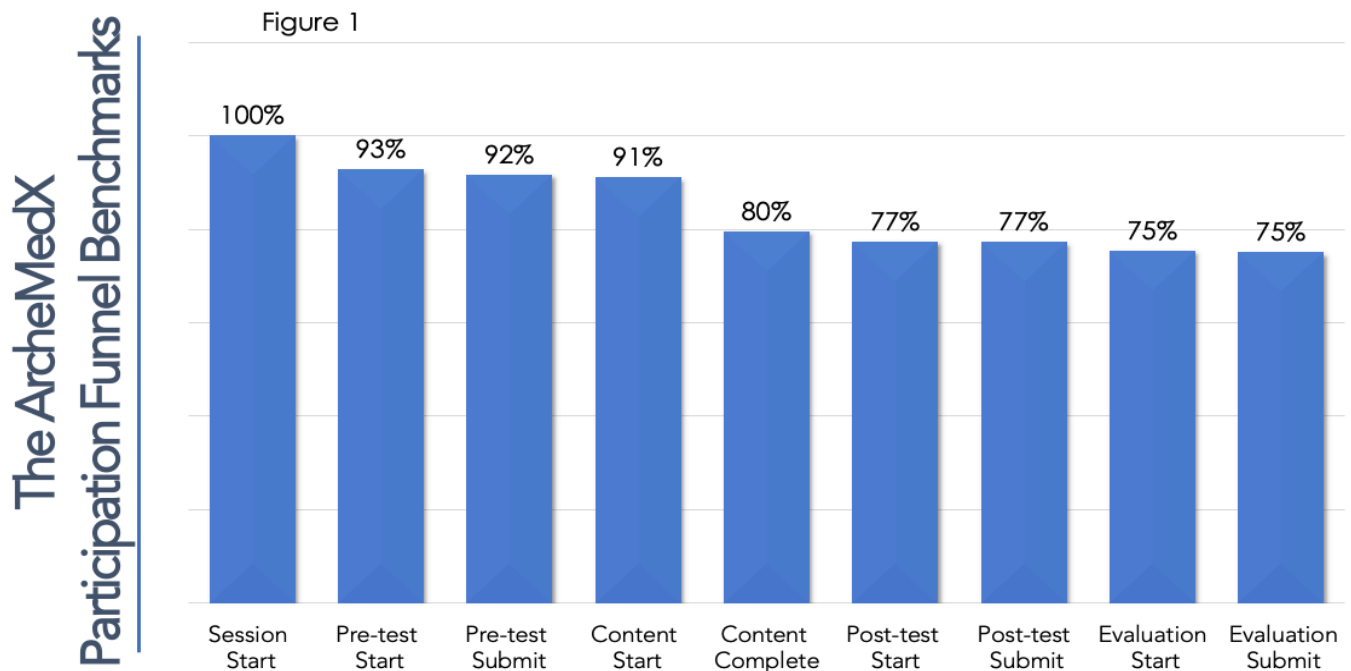
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Each Phase Tells a Story

To gain comprehensive insights into user participation and attrition in online CME activities, it is essential to segment participation into distinct phases. This detailed analysis facilitates a deeper understanding of each phase's impact on the overall learning experience.

At ArcheMedX, we have powered asynchronous, online CME for more than 10 years. These learning experiences have generated millions of participation events allowing for the modeling and benchmarking of CME participation across more than half a million activity sessions.

ArcheMedX CME Benchmark Data
531,921 activity session starts by 200,789 unique learners, including Physicians, NPs, and PAs from primary care and a variety of specialties.

Our analysis begins with segmenting participation into 9 phases (Figure 1).

Figure 1

The ArcheMedX Participation Funnel Benchmarks

- Session Start: 100%
- Pre-test Start: 93%
- Pre-test Submit: 92%
- Content Start: 91%
- Content Complete: 80%
- Post-test Start: 77%
- Post-test Submit: 77%
- Evaluation Start: 75%
- Evaluation Submit: 75%

Starting an Educational Session
The most basic count evaluating user interest, this phase is measured by how many users clicked "start" on the activity overview page and began a session on the ArcheMedX platform.

Starting a Pre-test
Analyzing user engagement at the pre-test initiation phase provides insights on the appropriateness of the education to the user. Often an activity title can drive inappropriate users away from the education (i.e. wrong specialty, wrong profession). Measuring the attrition at this phase can identify key elements of the effectiveness of the recruiting program targeting the applicable clinician for the education.

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Submitting a Pre-test

Tracking the submission of the pre-test is crucial for evaluating the users' initial understanding and setting a baseline for measuring educational impact. It can also identify problems with the pre-test if a significant number of users drop out prior to submitting their answers, including tests with questions that are poorly constructed, tests that that may be seen as too hard or too easy, or tests that may contain too many questions and are perceived as creating a barrier for the learner.

Starting the Content

Analyzing the number of users that begin the core content of the CME activity offers valuable data on their engagement patterns and commitment to learning. This is the first step to identifying actual learners, as defined by the Outcomes Standardization Project (OSP).

Completing the Content

Measuring completion rates of the content is a critical indicator of the program's effectiveness and the learners' perseverance in the learning process. There is also nuance within the completion data when analyzing the number of learners who completed the content in less time than the length of the video, skipping over large sections. These learners, identified as certificate seekers, are only participating to secure a certificate.

Starting a Post-test

While the majority of learners who complete the content start the post-test, evaluating a fall-off in post-test starts can identify learners who were there to simply answer a clinical question and were not participating for CME credit.

Submitting a Post-test

Tracking the submission of the post-test is vital for assessing knowledge acquisition and understanding the effectiveness of the CME content, with comparison to baseline crucial. Identifying which learners completed both pre- and post-tests allows for pairing of data and separate, more rigorous outcomes analysis. Noting the level of attrition at this stage may also identify problems with the alignment between the content presented and the post-test questions. If the learner is confronted with questions that were not discussed in the content, they may get frustrated and drop out of the activity.

Starting an Evaluation

Monitoring the commencement of an evaluation process helps gauge the learners' willingness to provide feedback, reflecting on their overall experience.

Submitting an Evaluation

Analyzing the submitted evaluations gives direct insight into user satisfaction and potential areas for improvement in the CME program as well as learners who are focused on earning CME credit for their participation in the activity.

Through these phases, a nuanced picture of user participation in CME activities can be constructed, enabling educators and program designers that use the ArcheMedX platform to refine and enhance the effectiveness of their educational offerings.

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Participation Phase Change – Lessons from the Fall-Off

When analyzing participation, start with the most common question: where did users/learners fall-off? Each phase of participation can tell a part of the story and help the educational provider improve the overall engagement by the participant/learner. To illustrate these points, below are real world examples and insights from past CME Activities powered by the ArcheMedX Platform.

Pre-test Fall-off

Activities that have significant learner attrition in the initial phases of the education can identify multiple factors that might need to be addressed. Utilizing a benchmark will help identify those activities that are not performing as expected.

Figure 2: Fall-off in Pre-test Start and Submit
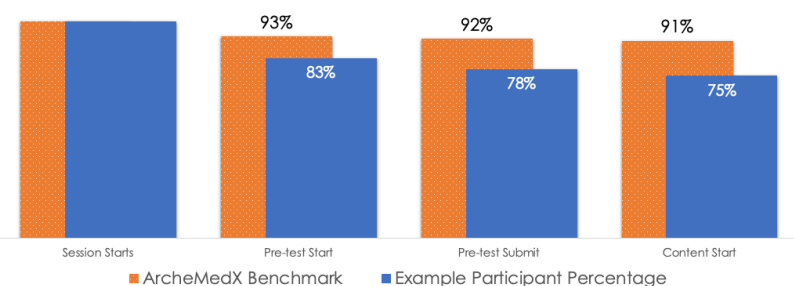
A review of Figure 2 shows that the activity had a pre-test start percentage ten points lower than the benchmark, indicating significant drop-off by the participants. A deeper analysis of the course identified issues with the title slide matching the description on the overview page, creating confusion with the clinician participants. In addition, the course was primary care focused but the logo of the accredited provider was from an OB-GYN association. The disconnect between what users expected and what they saw when confronted with the "start pre-test" page and the pre-test questions, resulted in increased attrition at the early phases of participation. Clear identification of the appropriateness of the education for the clinician learner is key to drive participation and engagement in the early phases and throughout the entire educational experience.

Fall-off in Content Complete

Identifying significant drops in learners while they were engaging with the content can provide significant insight as to the quality of the materials, effectiveness of the faculty, and the overall validity of the content for the recruited learners. The activity noted in Figure 3 shows a content start 6 points below and content complete 19 points below benchmark.

Calculating completion rates from these data (as defined by the OSP) can also be used to identify activities that fall below benchmarks.

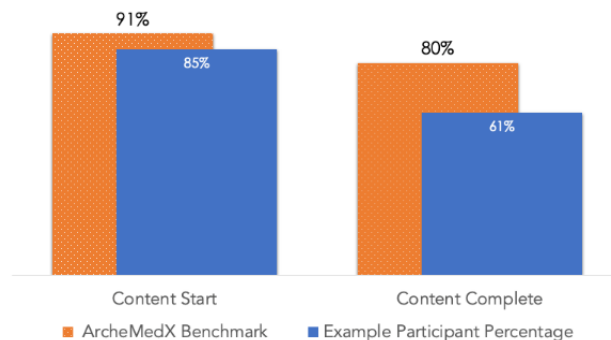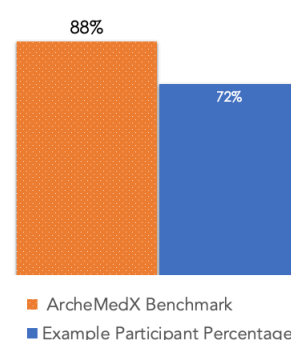Figure 3: Fall-off in Content Complete


Figure 4: Completion Rate

Analysis of the benchmark completion rate for the ArcheMedX platform, shown in Figure 4, is also significantly higher than the noted activity (88% vs. 72%Further analysis of the activity is warranted to identify where learners dropped within the content (i.e. what was being discussed, what faculty were presenting).

Using a minute-by-minute review, Figure 5 shows that learners dropped significantly at minute 14, with 19% of learners not progressing past this point in the video. A review of content presented indicated that faculty shifted the discussion from treatment and patient management to emerging therapies. This shift in the discussion resulted in a spike in attrition. In addition to the drop in learners completing the content, an analysis of the post-test data showed that learners also lacked retention of the topic discussion of emerging therapies, as indicated by a lack of

Figure 5: Minute-by-Minute Video Viewing

correct responses on applicable post-test questions and a high average number of attempts to pass the post-test. In short, the participation analysis highlighted a material issue with the educational content for the given audience.
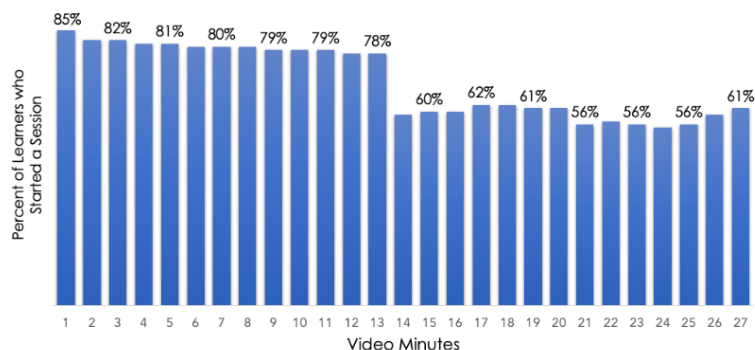
Post-test Fall-off
Phases of participation should also include a review of how the learners engage after they have consumed the content. Learners who completed the content and moved on to the post-test, but dropped without completing the test, may have experienced a disconnect in the content presented and the questions asked in the assessment.

Figure 6: Fall-off in Post-test Submit
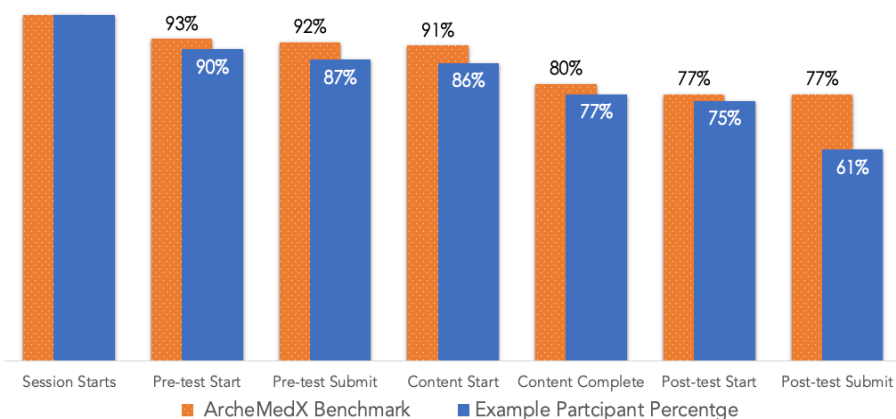
The activity participation data shown in Figure 6 demonstrates a 16-point decrease in the post-test submission rate vs the ArcheMedX benchmark. Further review of additional post-test data, including average correctness scores, confidence-based assessment, and post-test attempts, also fell below the ArcheMedX benchmarks. Upon a detailed review of post-test questions and their alignment to the content of the activity, it was determined that the post-test assessment questions were not adequately covered in the content of the activity. This resulted in frustration for the learners and an increase in those that simply dropped participation instead of submitting a completed post-test.

The Story of Certificate Seekers
Within every continuing medical education activity there are a group of learners that are simply looking to secure a CME certificate, satisfying the requirement for state licensure or another regulatory body. In a recent ArcheMedX poll conducted prior to clinicians starting a variety of activities, 1 in 5 respondents indicated they were participating for the CME credits. The ArcheMedX benchmark for certificate seekers, measured across more than 420,000 activity starts with evaluations, is 21%, mirroring the learners' responses.

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ArcheMedX has developed a variety of metrics to identify potential certificate-oriented learners. One indicator is time spent within the video content; those who complete an activity but do so in less than one-third of the expected duration are deemed to be certificate seeking. Additional analysis might indicate a lack of engagement with various elements of the education, including polling questions and accessing resources. These data help identify learners that move quickly through the content to quickly complete the post-test and evaluations steps on their way to securing their certificate. The analysis in Figure 7 for the example activity identifies a certificate seeker rate 13 pts higher than the benchmark.

Figure 7: Certificate Seekers

ArcheMedX Benchmark	Example Activity
21%	34%
79%	66%

■ Time Spent > 1/3   ■ Time Spent < 1/3
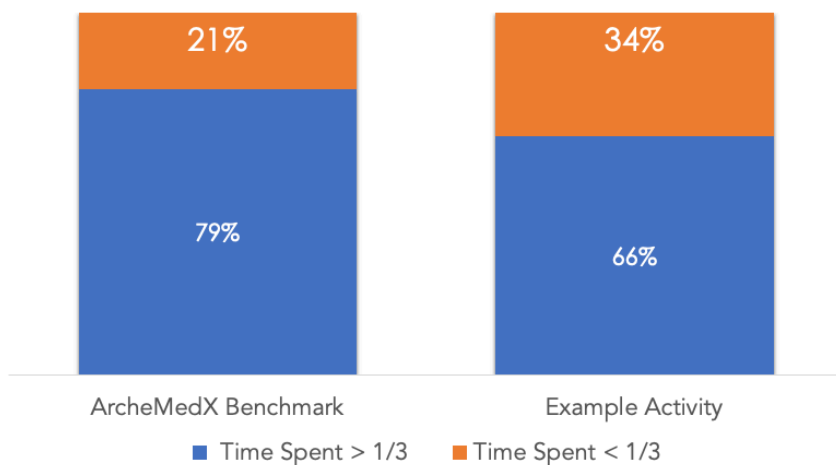
Understanding who these learners are is vital for an accurate assessment of clinician engagement in CME activities and their impact. While the rush to obtain a certificate might be one reason for minimal engagement with the education, it's also possible that the content's quality—or lack thereof—could be prompting learners to bypass substantial portions to reach the conclusion swiftly.

Providers of this activity should undertake analysis of which sections learners were bypassing and if, for example, learner comments in the evaluation for the activity identified a problem with the faculty in those sections. In addition, a review of learner profiles would be in order to confirm the recruitment efforts had resulted in the right learner profession and specialty participating in the activity. Finally, being able to segment learners when analyzing aggregate assessment data provides an enhanced picture of the impact of the education on knowledge, competence, and learner confidence.

Discovering Your Stories

A detailed analysis of clinician participation in individual CME activities is a critical step in enhancing the quality and effectiveness of the education. A comprehensive approach, expanding quantitative and qualitative analysis and transcending the existing measures of starts and completes, is imperative to unravel the complex layers of learner engagement and interaction. By diving deeper into these insights, education providers can identify the stories that help refine delivery, enhance learner participation and engagement, and improve the overall effectiveness of CME.

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