

Developing Web Analytics to Evaluate Online Educational Resources

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Abstract

Web analytics tools such as Google Analytics^[1], Crazy Egg^[2], and Fire Stats^[3] are increasingly popular mechanisms for examining overall website usage. This should come as little surprise since these tools enable site administrators to easily access analytics data such as total website traffic, average bounce rate, traffic source, average time on site, and visitor demographics. However, these tools are limited in their capacity to provide an in-depth picture of individual user's behavior in online environments.

Traditionally, web analytics has been utilized in the business sector to assess the impact or effectiveness of a business decision^[4]. For example, corporations are able to use web analytics to evaluate the return on investment for a particular business strategy such as the implementation of new website features or the placement of online advertisements. The rationale is that through consistent monitoring of web metrics and enhancement of web analytics systems, businesses will be better able to develop plans that maximize profit.

While there is a growing literature base around the use of web metrics and analytics in the business world, little research has been conducted to examine the application of these tools in the education sector. There need to be metrics by which educational sites like Teaching the Levees^[5] and virtual learning management systems like Blackboard^[6] can be deemed as effective in

fulfilling their pedagogical goals. One pedagogical domain that requires measurement centers on active and passive learning. For this, we need to identify how a site can be instrumented and also decide on metrics that can be used to gauge whether users engagement in active or passive learning.

An instructor reading out to students is an example of passive learning in classroom scenario. However applying this context in online learning is hard. Considering the online context, in this study we assume reading and browsing on the site to be a Passive Learning .

Active Learning in a classroom scenario is where a student actively engages in classroom discussions, asks questions or supports/refutes an argument. For this study, if a student actively engages in online discussions such as replying to comments, emails or forward articles it is considered as Active Learning. Research has shown Active Learning is better than Passive Learning^{[9][10]}.

At EdLab^[7] we are developing new web analytics to gauge the active and passive learning patterns by tracking the user sessions and recording their clickstream data on Teachers College Record website^[8]. This data captures the number of times the article is emailed, forwarded, discussed or replied. These measures indicate a different level of engagement. Another indicator of active

engagement that we are experimenting with is repeated views of an article by the same user, suggesting deeper and prolonged engagement with the content. We are also administering surveys with an incentive to gauge the learning of the user. All of these techniques are based on our understanding

of cognitive and pedagogical research. Nevertheless, we are also extending this knowledge base by determining how closely these metrics actually measure active learning by surveying and monitoring participants.

References:

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