

Measuring the Performance of an Online Journal: Preliminary Findings

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Abstract – The *Engineering Design Graphics Journal* recently adopted Google Analytics in order to begin developing visitor profiles and behavior patterns with the ultimate goal of using the statistics to identify improvement opportunities. During the first 1.5 months of use, the study period, the *Journal* was visited 1,999 times of which 90% (N=1,791) were from absolute unique visitors. The visits originated from 87 countries/territories. The average Pageviews was 2.38 and the average time on site was a minute, thirty-four seconds. *Journal* pages were viewed a total of 4,753 times during this period of which about 71% (N=3,365) were unique views. The proportion of single-page visits or visits in which the visitor left the *Journal* site from the entrance page (bounce rate) was about 66%. The proportion of new visits during this period was about 89%. Google Analytics and the hundreds of reports and sub-reports it produces that profiles site visitors and their behavior has the potential for assisting an online journal identify improvement opportunities.

Keywords: Engineering Design Graphics Journal, Google Analytics.

INTRODUCTION

Significant investments are made by all who are associated with the publication of a journal—readers/researchers, authors, and the journal staff, which includes the technical staff, reviewers, and editors. Readers/researchers, as an example, rely on the quality of a journal and its articles to advance their research, and need to be assured the articles are of high quality. Authors, many who are academicians, need to know if their work is having an impact, as an example. Journal staffs, and in particular volunteer journal staffs, need to know if their efforts are appreciated. The purpose of this study was to begin developing visitor profiles and behavior patterns. The ultimate goal was to begin identify performance improvement opportunities for online journals.

METHOD

Subject

The subject of this study was the *Engineering Design Graphic Journal (EDGJ)*. First published in December 1936 as the *Journal of Engineering Drawing* [1], the *EDGJ* is the official publication of the Engineering Design Graphics Division. The Division received formation approval from the Society for the Promotion of Engineering Education, forerunner of the American Society for Engineering Education, in 1930.

Up to the publication of volume 73, issues of the *EDGJ* were printed and physically mailed to those entitled to receive issues. As well, the review of manuscripts has gone from paper copies being delivered by conventional postal delivery services between involved parties, to one in which manuscripts were attached to email messages and sent between the involved parties, to one being managed by the Open Journal Systems (OJS), an integrated open source journal management and publishing system. On Aug 24, 2009, following an eighteen month self-study, the OJS-aided online-only *EDGJ* was launched (B. Yang, personal communication, August 24, 2009).

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Instrument

Google Analytics (GA), a Google product, is a tool that generates detailed statistics on how users find a web site, how they explored it, and aided by the statistics, can be used to enhance user experience [2] [3]. While the intent of GA is to assist an endeavor in improving their website return on investment, GA can help a journal improve its performance.

GA, however, is not without its limitations. GA relies on what is known as a “page tag”, or what GA refers to as GA Tracking Code (GATC). Ad filtering programs can block GATCs thus distorting the statistics. For sites that receive a high volume of traffic, GA limits its analysis to a sample of visits. The greatest impact on GA performance, however, is the blocking or elimination of cookies. While some of the limitations can be mitigated or taken into consideration to an extent, they cannot be overcome completely.

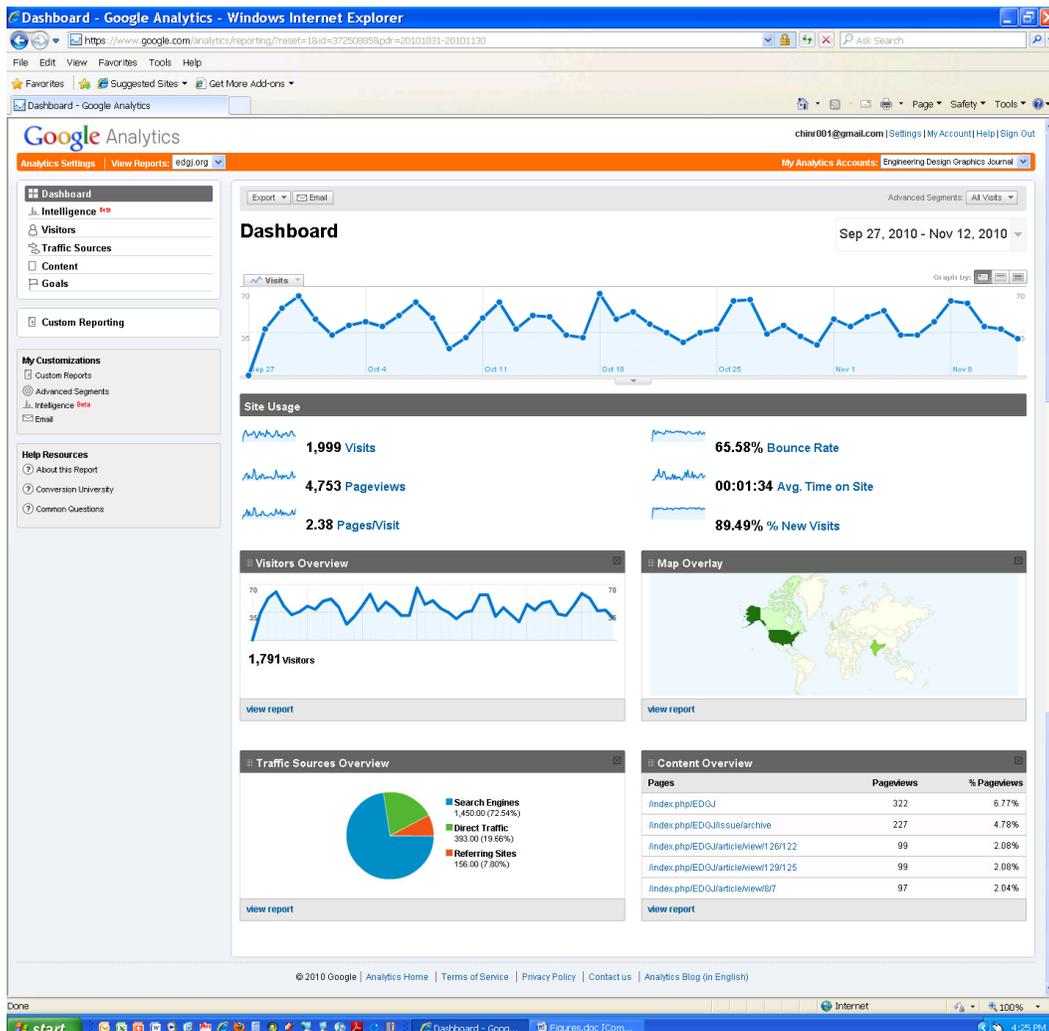


Figure 1. Google Analytics Report Interface

GA produces hundreds of reports and sub-reports that characterize a site’s performance. The Report Navigation panel, which appears in the upper left of the Report Interface, can be used to access these reports (see Figure 1). This study was limited to an examination of three categories of reports: Visitors, Traffic Sources, and Content. Intelligence reports were not examined because this category of reports was still in Beta, even though some, like

Notenboom [4], have suggested that, in the Google world, Beta applications may actually be in their final release. Goals reports were not examined either, because no goals statistics had been calculated.

Visitors reports and sub-reports (see the first two columns, Figure 2) provide statistics on visitor interaction with the site, the type of visitors, and statistics about how they are viewing the site. Traffic Sources reports and sub-reports (see the third column, Figure 2) describes how different offline or online sources send traffic to the site. Sources that are driving the most traffic to the site and the ability to spot trends can be gleaned from the graphs and charts that are provided. Content reports and sub-reports (see the fourth column, Figure 2) provide statistics on the pages in the site and how visitors interacted with each one. Some of the statistics provided include time on page, landing and exit page information, and a navigation summary. The purpose of Dashboard (see Figure 1) is to present high level statistics to the casual user and access to more in-depth report sets [5].

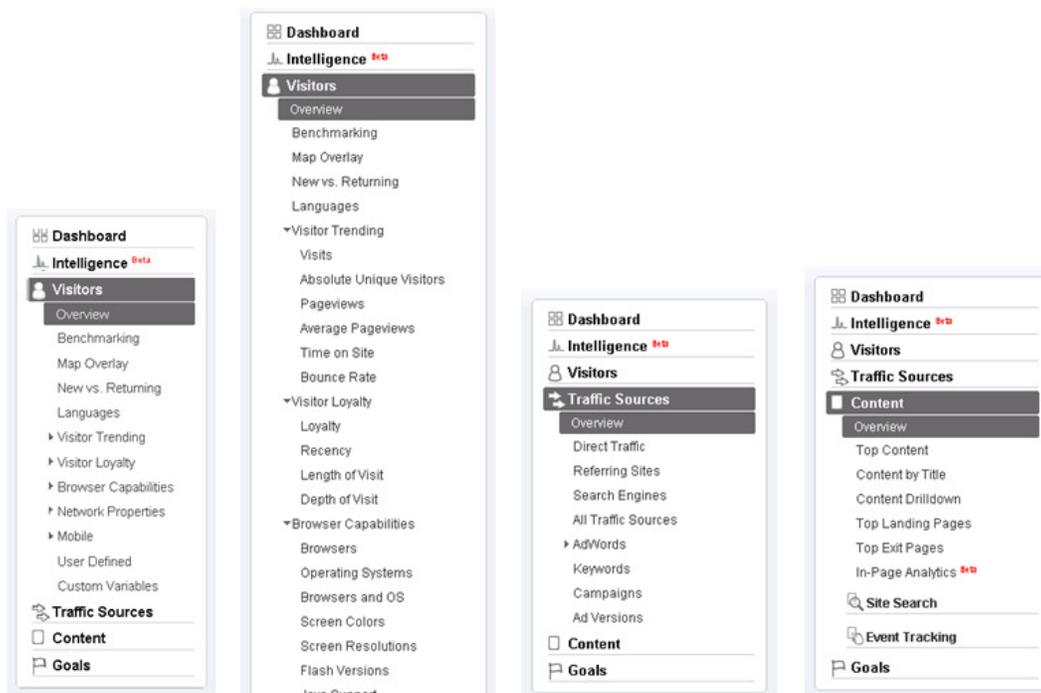


Figure 2. Accessing Reports.

Procedure

On Sep 28, 2010, an *Engineering Design Graphics Journal* Google Analytics account was created and began collecting data (C. Skidmore, personal communication, September 28, 2010). In order to prepare this report, a decision was made to produce a snapshot of the statistics for the 1.5 month period from Sep 27, 2010 to Nov 12, 2010.

RESULTS

In an examination of the *EDGJ* Dashboard (see Figure 1), which was set for the study's date range, the number of visits is graphed for the period selected. Below the graph is the at-a-glance view of the *EDGJ*'s key metrics. During the study period, the *Journal* was visited 1,999 times. *Journal* pages were viewed (Pageviews) a total of 4,753 times. The average pageview was 2.38 times and the average time on site was a minute, thirty-four seconds. The proportion of single-page visits or visits in which the visitor left the *Journal* site from the entrance page (bounce rate) was about 66%. And the proportion of new visits during this period was about 89%.

Beneath the at-a glance view of the *EDGJ*'s key metrics are report snapshot modules—Visitors, Traffic Sources, Content, and a Map Overlay, which is a Visitors report (see Figure 3). Modules can be added or deleted from this area to suit user needs.

Visitors

In the Visitors Overview (see Figure 1), it was noted that during the study period—Sep 27-Nov 12, approximately 90% (N=1,791) of the views were a result of unduplicated or counted-only-once visitors, or what GA refers to as absolute unique visitors.

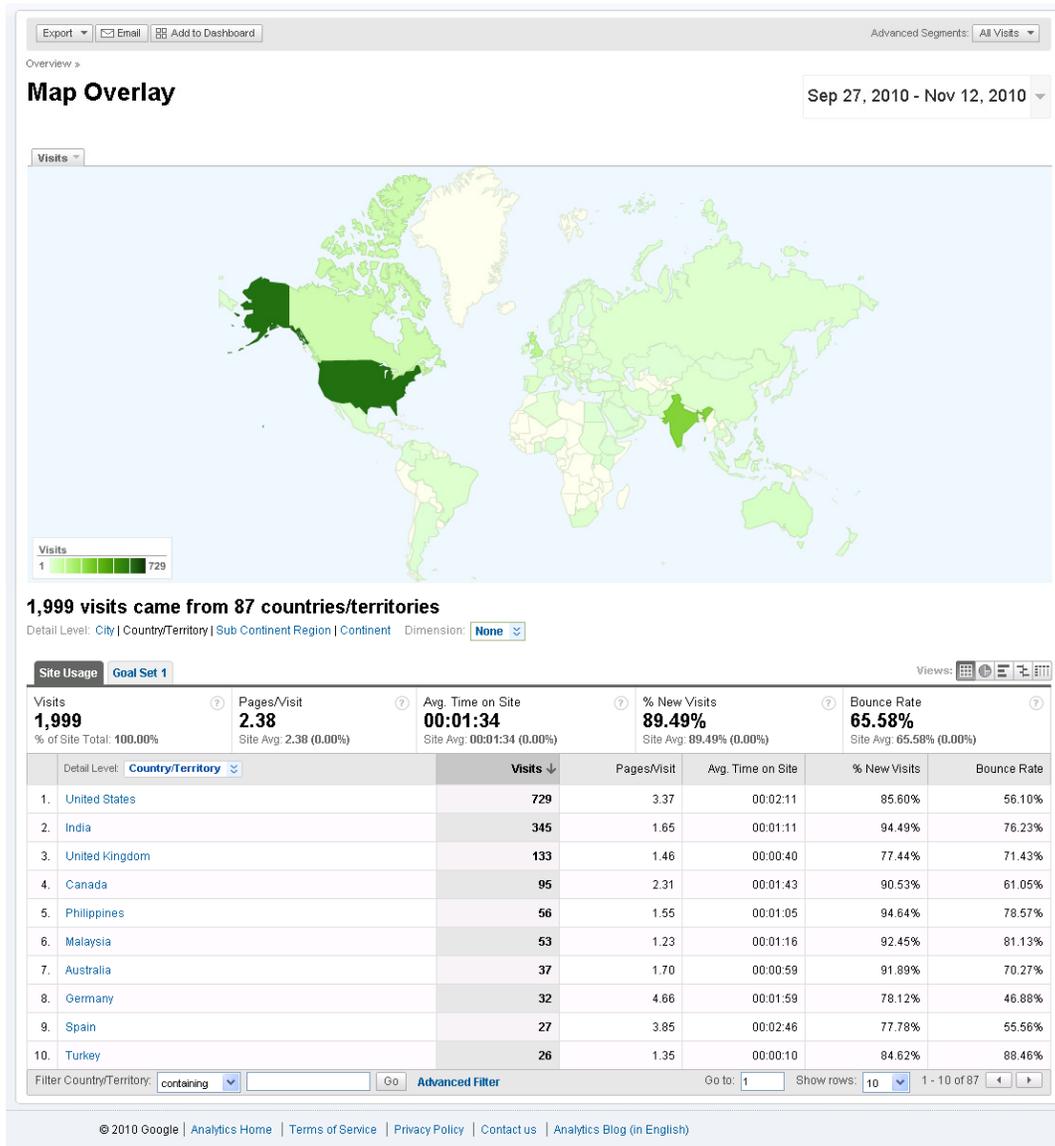


Figure 3. Map Overlay.

As one of the Visitors reports, the Map Overlay report (see Figure 3) can be used to visualize volume (visits, Pageviews) and quality (Pageviews per visit, conversion rates, per visit value, and the like) metrics by geographic region. According to the summary statistics, the *EDGJ* was visited most frequently by visitors from the United States. This was followed by India, the United Kingdom, Canada, and so forth. In its present configuration, statistics

on the average pages viewed per visit, average time on the various sites, proportion of new visits, and bounce rate per country are provided. Moreover, there are 7.7 more ten-row displays containing like statistics for other countries. And like many of the GA reports, each of the column headings can be used to order the data, which automatically reorders the data in the other columns at the same time.

Traffic Sources

In the Traffic Sources Overview (see Figure 1), it was noted that the greatest volume of traffic or visits to *EDGJ* site were a result of Search Engines (72.54%), or from visitors who clicked on the *EDGJ* site from a search engine result page. This was followed by Direct Traffic (19.66%), or visits from those who clicked a bookmark to come to the *EDGJ* site or who typed the *EDGJ* site URL directly into their browser. The least amount of traffic was a result of Referring Sites (7.80%), or from visitors who clicked on the *EDGJ* site from another site. The Traffic Sources Overview report itself (see Figure 4) provides additional details and access to additional reports on the sources of traffic and how traffic from keywords searches compares to traffic as a whole on the site. To access the full report, the user would click on the “view full report” link.

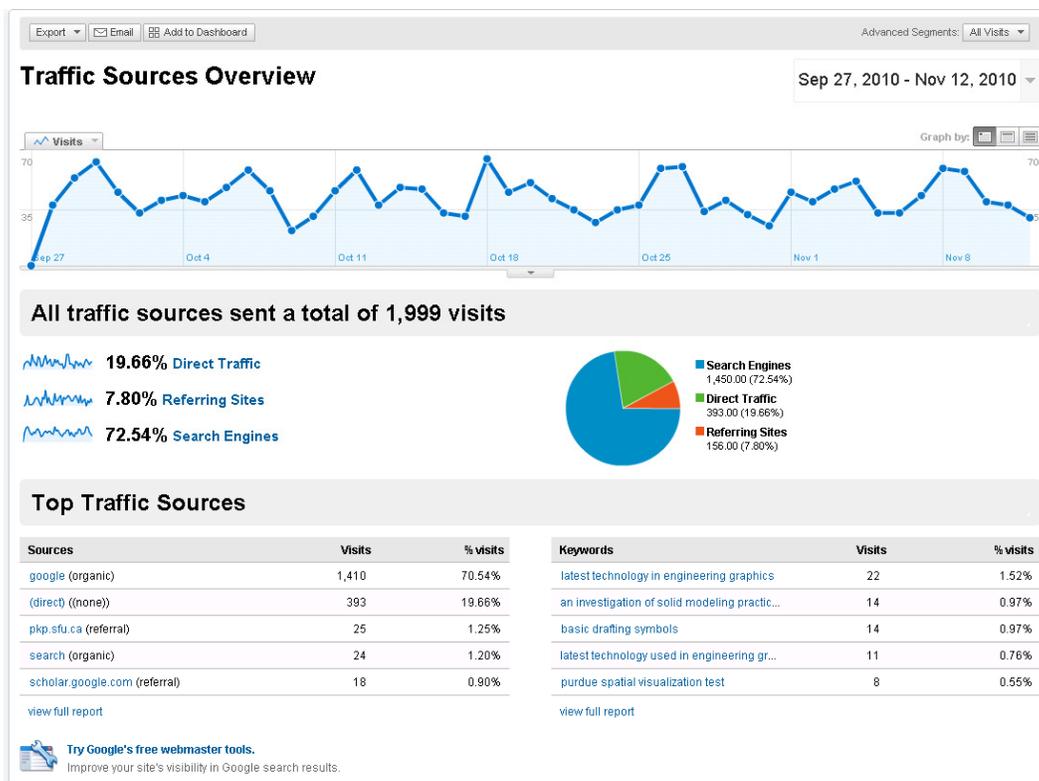


Figure 4. Traffic Sources Overview.

Content

The Overview report for Content (see Figure 5) provides an overview of Pageviews volume and lists the pages that were most responsible for driving Pageviews (Top Content) ranked from highest to lowest. The user can also access reports that reveal how users interact with the site and statistics related to how they found the site—Navigation Analysis and Landing Page Optimization.

The Top Content table is an abstract of all of the pages which were viewed on the site. To access the full report, the user would click on the “view full report” link. In the report (see Figure 6), 100% of the statistics are displayed for

Pageviews and Unique Pageviews so comparisons among the individual pages can be made. As well, site averages for the average time on a page, Bounce Rate, and proportion (%) exiting are provided so comparisons can be made.



Figure 5. Content Overview.

Another way of examining statistics that appear in the Top Content, Full Report table (see Figure 6) is to click on the page in question. Clicking the row three page (/index.php/EDGJ/article/view/126/122), as an example, yields a graph for that page (see Figure 7) and the same summary statistics that appear in the Top Content, Full Report table. During the study period, this page, which is an article site, was tied with another article site for the most frequent Pageviews. But it was ranked first among article sites for Unique Pageviews. A screen capture of the article's first page appears in Figure 8.

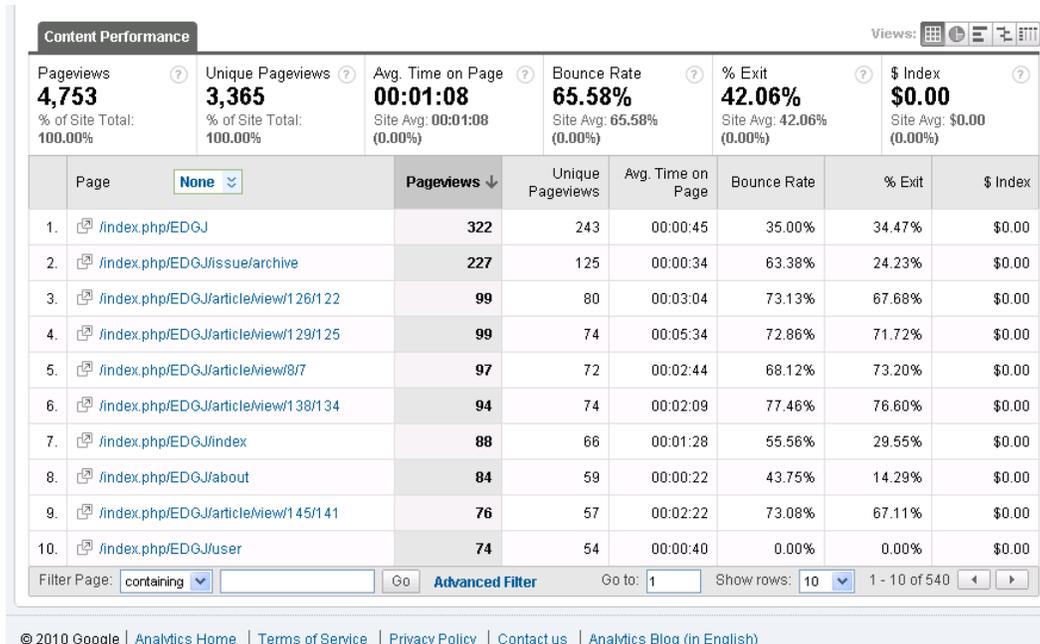


Figure 6. Top Content, Full Report.

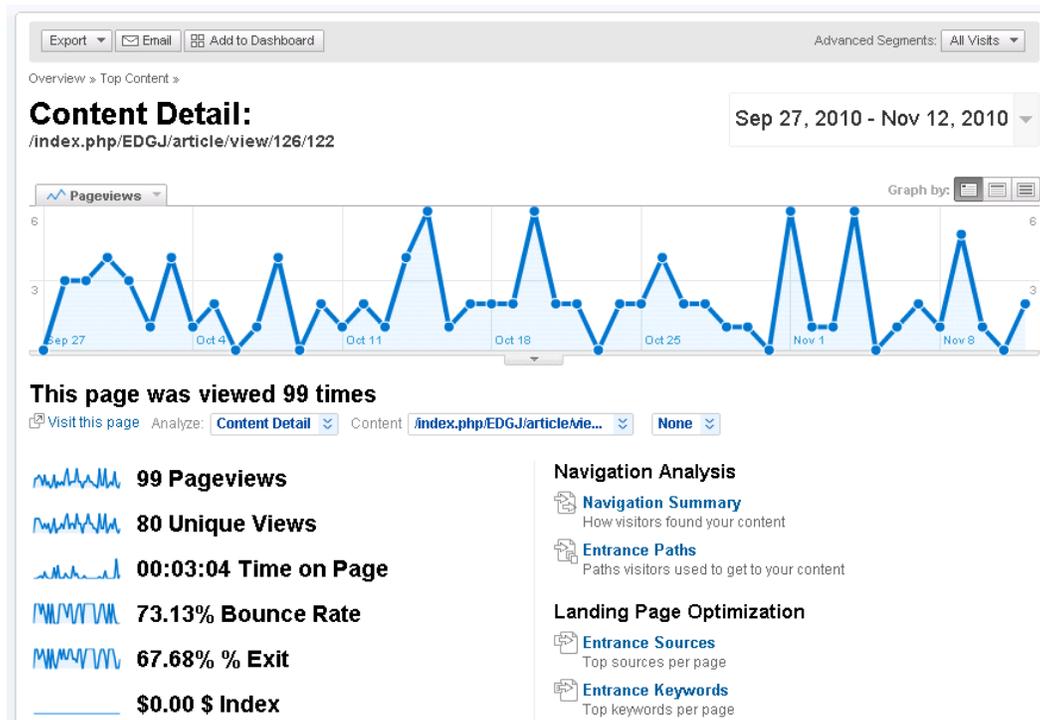


Figure 7. Content Detail for /index.php/EDGJ/article/view/126/122

Developing 3-D Spatial Visualization Skills

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ABSTRACT

The development or improvement of 3-D spatial visualization skills is often cited as one of the major goals of engineering design graphics education. Historically, improvements in spatial skills were achieved as a by-product of a graphics education that often included several semesters of instruction in manual drafting technique. As the engineering curriculum evolved through time, traditional graphics instruction was "squeezed" from two directions simultaneously. First and foremost, engineering programs were required to reduce the total number of credits to graduation, often resulting in fewer credits available for graphics instruction. Second, pressure was exerted on graphics educators to include additional topics such as CAD, design, and creativity in their introductory courses. Instruction in manual drafting technique was greatly reduced or eliminated altogether in favor of sketching and/or computer applications. Throughout this evolutionary process, the objectives of graphics education have changed accordingly. Increased emphasis has been placed on the development of 3-D spatial skills in these courses, however, many graphics educators, who themselves

Figure 8. Top Ranked *EDGJ* Article [6].

DISCUSSION

The purpose of this study was to begin developing visitor profiles and behavior patterns in anticipation the *EDGJ*, as well as other online journals, could begin identifying improvement opportunities. In this examination, selected summary statistics produced by Google Analytics associated with the following were examined:

1. The number of new and returning visitors to the *EDGJ* site and to what extent they interacted with the *EDGJ* content (Visitors).
2. The different kinds of sources that send traffic to the *EDGJ* site (Traffic Sources).
3. The impact of pages, or pageview volume, and the pages, or Top Content, most responsible for driving pageviews (Content).

The *EDGJ* now knows which are the most commonly viewed pages and which are the least and how they are used. Pages characterized with a high bounce rate could suggest the pages should be redesigned. A high 'Time on Page' could suggest content that is particularly interesting to visitors. Questions should be answered as to why some are high visitors exit pages. There may be a good answer for the higher rate, such as the fact the visitor finished conducting their business. In contrast, a high number of exits might suggest the page is confusing. Also, do the landing pages entice visitors to continue examining and exploring the *EDGJ* site, and why do they depart the site from selected pages? The statistics may suggest that pages, in particular, administrative pages in contrast to journal article pages, may have to be redesigned if the bounce rate is particularly high.

According to the GA statistics, the majority of the *EDGJ* site visitors, over 72%, clicked to the site from a search engine result page. More specifically, the majority of those who click to the *EDGJ* site from a search engine result page, over 97%, used Google. Visitors who clicked a bookmark or who typed the *EDGJ* site URL directly into their browser to get to the *EDGJ* site was a distant second to the use of Google with over 16%. One explanation for this disparity and seemingly lack of familiarity with the *EDGJ* site can be attributed to its newness. The *EDGJ* can probably anticipate that, without intervention, the proportion of Direct Traffic visits will increase as those with an interest learn of the site. Moreover, if an intervention plan is implemented, the *EDGJ* can probably anticipate that the proportion of Direct Traffic visits will increase more rapidly over time.

With respect to the *Journal's* visitor profile, the statistics suggest that the vast majority of visitors to the *EDGJ* site were a result of new visits. About 11% of the visits were a result of returns to the site. This too may be a result of the site's newness. It is anticipated that this 1 to 9 ratio of return visits verses new visits will moderate over time. And while it was outside the original intent of this study, some of the *EDGJ's* overview statistics were compared to the available overview statistics for the *Journal of Curriculum and Instruction (JoCI)* [7]. Of particular note was the difference between visits originating from other countries/territories for the two journals. Slightly over a quarter of the visits for *JoCI* originated from other countries/territories. In contrast, almost two thirds of the visits to the *EDGJ* originated from other countries/territories. While the confounding variables have not been examined, this warrants further study.

This study can be characterized as just scratching the surface. Further examination and ongoing study is in order. The Journal needs to begin setting goals and using the goals statistics. In addition to establishing internal benchmarks, other more mature, like online journals need to be sought out against which to benchmark.

Google Analytics generates a plethora of descriptive statistics an endeavor can use make improvements to their site: improvements that can lead to return visits and new visits. It appears, through this limited study, Google Analytics has the potential to characterize the performance of online journals and to identify improvement opportunities.

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