

AC 2009-1511: ASSESSMENT OF THE AMOUNT OF TIME STUDENTS STUDY

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ASSESSMENT OF THE AMOUNT OF TIME STUDENTS SPEND STUDYING

Abstract

To meet the objectives of accreditation students must learn the material. Each professor teaches a lesson and then assigns homework. When students do their homework there usually is no quantitative way of measuring the amount of time spent on their assignment. Recently, we have used a quantitative method to assess the amount of time a student studies material assigned on the web as homework. The technology now enables us to measure the time spent on studying and to correlate that to the acquisition of the material.

Introduction

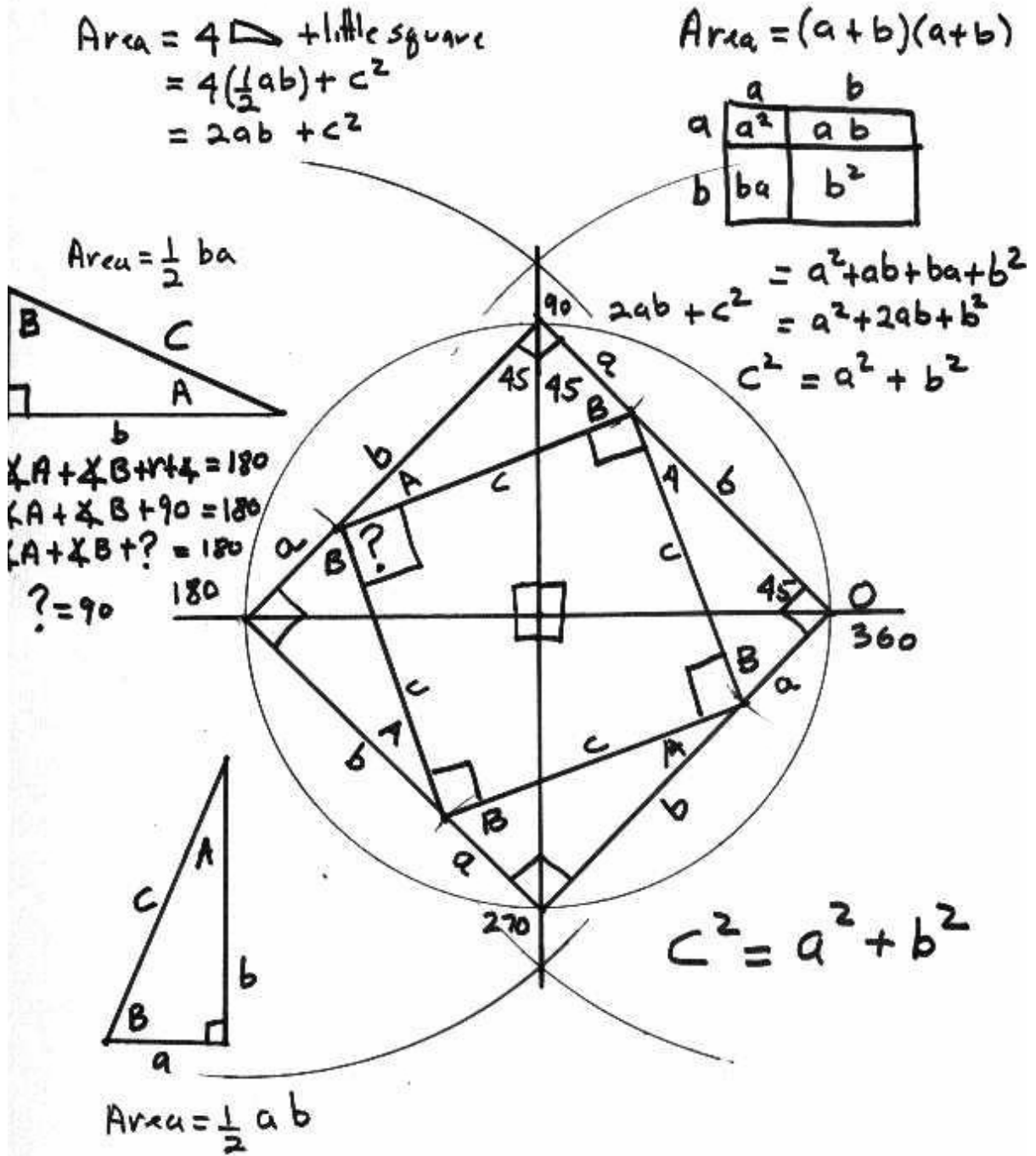
I teach physics and mathematics at TCI, The College of Technology. The college has 4000 students and is located in NYC. Accreditation assessment challenges every faculty member. We are continually looking at the outcomes and questioning what steps should be taken to improve the outcomes. Because accreditation is vital to the success of a program poor performance is a hot topic in department meetings. Some standard approaches are; increase homework, hold review session, have peer to peer tutoring. Since we keep rubrics from term to term on each course we can assess the applied corrections by the improvement in outcomes.

At first we made a major video on major topics like the Pythagorean Theory¹. This took a considerable amount of work on planning and filming. The outcomes improved from 40% to 55 % we were encouraged. We started to make shorter videos on topics (Find the Inverse of a Matrix, and Plot a Function) We monitor the use of the video on the website by using Google Analytics to measure the number of times students access a video. This provides a quantitative measure of students who are accessing the website.. We could never measure students studying before. Since the technology is now available we have started to make shorter video to illustrate major topics and improve the outcomes of our students in meeting stated objectives

The syllabus of a mathematic course MAT135 College Algebra and Trigonometry lists the chapter topics and the basic equation of Pythagoras $a^2 + b^2 = c^2$ is the foundation of the course. In 1999 at the ASEE I presented "A Geometrical Proof of Pythagoras Theory"³ the students are required to derive the proof (shown below in Figure 3) on the first few exams in the course.

Figure 3

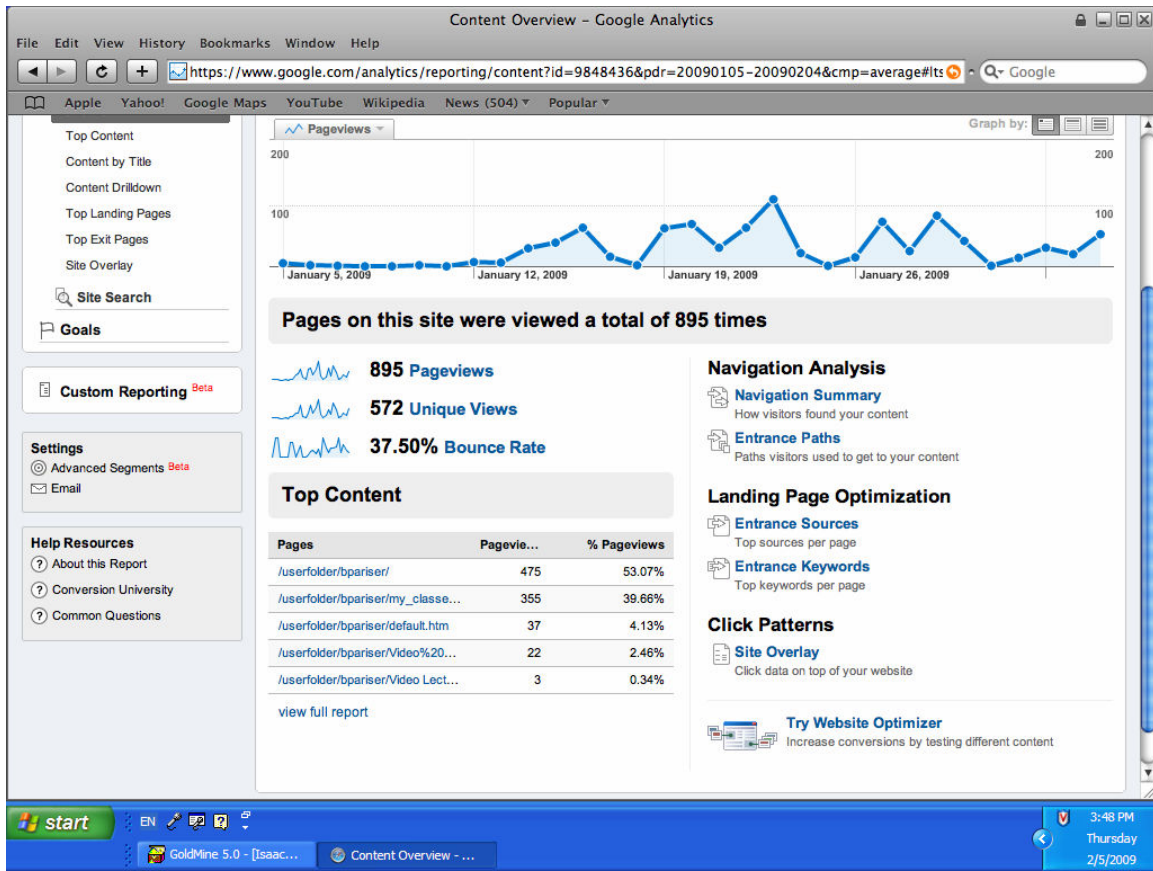
“A GEOMETRICAL PROOF OF PYTHAGORAS’ THEOREM”



Before this paper “A Geometrical Proof of the Pythagoras Theory” was presented the assessment of the objective of deriving the proof of the Pythagoras was met by 25 % of the students. After the paper was published and placed on the TCI Intranet the objective was increased and the approximately 40 % of the students could complete the proof. In our EET faculty meeting we discussed that the students were still not meeting the objective and the question was, are they studying?

The academic challenge was to see if students were devoting the effort to study, and to see if the results of their studying could be quantified. Google provided a means of quantifying the time students access a site by using Google Analytics. I placed a marker on the webpage which records each visit. The time of the visit, the number of visitors, and the duration of each visit is recorded. The data includes the geographical location of each visitor. From our paper “Data Acquisition for Outcomes and Assessment”⁴ Google Analytics tracks the number of visits to the webpage, the number of visits to my classes, the number of visits to the video lectures. The challenge now is to deploy Google Analytics in all of the pages of the website and record the progress of our students using a new studying technique of video lectures.

The data that Google Analytics records can be seen in Figure 5



Number of Visits at each site January 2009–02–05

Figure 6 shows a graph of the traffic to the intranet as a function of time.

Month	Visits
Sept	157
Oct	149
Nov	163
Dec	115
Jan-09	301

Since TCI is on a tri semester September 2008 was the start of the Fall Term. 157 students accessed the website. When the new semester started in January 2009 the number of students that accessed the web rose to 301. So you can see that intranet is getting more popular with our students and we have a quantities method of assessing the time students spend studying.

References

- 1 "Video Lecture on the Pythagorean Theory" ASEE 2008, by B Pariser, C Meherji
- 2 MAT135 Syllabus, TCI September 2008
- 3 "A Geometrical Proof of Pythagoras Theory" ASEE 1999 by B Pariser
- 4 "Data Acquisition for Outcomes and Assessments" ASEE 2008, by B Pariser, C Meherji

Author

Bert Pariser is a faculty member in the Electronic Engineering Technology and the Computer Software Technology Departments at Technical Career Institutes. His primary responsibility is developing curriculum and teaching methodology for Physics, Thermodynamics, Electromagnetic Field Theory, Computers and Databases. Bert prepared grant proposals to the National Science Foundation, which produced the funding for a Fiber Optics Laboratory. He served as faculty advisor to the IEEE and faculty advisor to Tau Alpha Pi National Honor Society. Bert was instrumental in merging Tau Alpha Pi National Honor Society into the ASEE. In addition Dr. Pariser, Co-Founded 5 venture companies, and as a management consultant successfully catalyzed over \$100 million of new shareholder value in client businesses. Bert led cross-functional client teams in projects to find and capture value-creating profit and growth opportunities. Bert received a PhD, MS from Columbia University and a BS from MIT in Electrical Engineering. bert.pariser@tcicollege.edu