Preserving Academic Integrity:
Rio Salado’s Peer-to-Peer Plagiarism Detection System
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Process Context

Preventing plagiarism and preserving academic integrity are critical for maintaining high-quality student instruction, but quantifying the plagiarism rate within higher education and obtaining benchmarking data for the plagiarism detection process are difficult since most published studies on plagiarism involve self-reported academic dishonesty. The percentage of students who self-report at least one incident of cheating ranges from 91.7% in a 1997 study by Roberts, Anderson, and Yanish, to 80% of students from Turnitin.com, a provider of plagiarism checking software, to 36% in a study conducted by the Psychological Record. From these statistics and a few isolated instances in which Rio Salado faculty caught plagiarizing students by chance, Rio administration and faculty knew that Rio students were almost certainly cheating from each other. However, the college had no mechanism in place to identify this type of academic dishonesty. To combat this problem, Rio faculty determined that a process for detecting peer-to-peer plagiarism was necessary.

Rio Salado’s vision, “We astonish our customers,” corresponds with the Rio Salado College mission to transform the student learning experience through Choice, Access, and Flexibility; Customized, High-Quality Learning Design; and Personalized Service and Organizational Responsiveness. Throughout the organization as a whole, Rio Salado employees demonstrate the organizational values of Customer Focus, Relentless Improvement, Inclusiveness, Professionalism, Teamwork, and Sustainability. Within the context of these six values, Rio focuses on the core organizational practices of Learning, Innovating, and Partnering to provide access to high-quality instruction for diverse student populations. Rio Salado’s Peer-To-Peer Plagiarism Detection System aligns with the college mission and values.

Rio Salado College was founded in 1978 as one of seven “colleges without walls” in the nation, and innovation has been a key practice at Rio Salado from the beginning. In 1996, Rio Salado became one of the first colleges in the United States to go totally online, offering Internet courses and full online support with features like online registration and academic counseling. The college has continued to develop and implement a variety of innovative learning delivery options like Rio’s Dual Enrollment program, which allows high school students to receive both college and high school credit for completing Rio Salado courses while still in high school. In addition, Rio has cultivated partnerships with community leaders, such as a relationship with the Arizona Dental Association and Delta Dental, which gave rise to the Rio Salado School of Dental Hygiene in 1998. Rio Salado has also established numerous satellite campuses throughout the greater Phoenix area to live up to its motto as “the college within everyone’s reach.” Currently, Rio’s innovative programs and services reach more than 64,000 credit and non-credit students each year through flexible courses that start each Monday.

Rio Salado’s main products and services provide educational opportunities for numerous populations who find pursuing higher education through traditional means a particular challenge, such as working adults and incarcerated students re-entering society. Rio also partners with various corporate, government, and industry leaders to provide training and occupational programs and customized degree completion options. Rio Salado is the largest of the 10 colleges in the Maricopa Community College system in terms of student head count and accounts for more than 22% of the total students in the system.

The primary customers for Rio’s Peer-to-Peer Plagiarism Detection System, which is housed in Rio’s Teaching and Learning Department, are Rio’s Faculty Chairs, their Instructional Coordinators, and 1,300 adjunct faculty members. (See attached Organizational Chart.) As Rio instructors, these faculty members utilize the Peer-to-Peer Plagiarism Detection System to locate students who copy another student’s assignment and submit the work as their own. The copied work could be from a student in a current section of the same course with a different instructor, from a student in the exact same section, or from a student in a previous section of the course. Another customer population serviced by the plagiarism detection system is any student taking a class at Rio Salado College. The Peer-to-Peer Plagiarism Detection system is one tool that ensures the academic integrity of the institution. Academic
integrity means that a student graduating from Rio Salado College has the qualifications obtained from completing a certain program. Therefore, all students at Rio become customers of the plagiarism detector.

Accurately identifying a benchmark for the process is difficult for several reasons. Within the higher education industry, colleges and universities don’t readily release information regarding their plagiarism rates. No school wants to admit that their students are cheating. Additionally, due to Rio Salado’s unique educational structure, which includes 48 course start dates per year and a large, diverse student population, few organizations with a comparable structure exist. Rio Salado’s Peer-to-Peer Plagiarism Detection system was created completely in-house and customized to fit Rio’s needs. Finally, it is nearly impossible to benchmark other industries outside of higher education because the plagiarism detection process is unique to the higher education industry.

The Rio Salado Peer-to-Peer Plagiarism Detection process aligns with three core values of the AQA Excellence Program: Managing for Innovation, Management by Fact, and Agility.

Managing for Innovation

The Peer-to-Peer Plagiarism Detection System was an innovation implemented in response to a need identified by faculty and administrators to detect plagiarism occurring from student to student in multiple sections of identical online courses. Rio’s unique student population, which is spread throughout Arizona and across the United States, coupled with the sheer number of adjunct faculty made detecting those students who had copied assignments from each other nearly impossible. The Peer-to-Peer Plagiarism Detection System has been recognized within the higher education industry with two awards for its innovative design. Rio Salado received the “Innovation of the Year” award in 2010 from the Maricopa Community College District for an innovation contributing to student excellence in education. Also in 2010, Rio was awarded the 2010 WCET Outstanding Work (WOW) Award for the plagiarism detection system. The WOW Award recognizes organizations using cutting-edge educational technology tools and practices.

Management by Fact

Management by fact is another value demonstrated by the Rio Salado Peer-to-Peer Plagiarism Detection System. Data created by the system is continually collected and analyzed to monitor the number of suspected plagiarism cases and drive process improvements. For example, the system generates a detailed outline and determines a factual percentage of similarities between the work of two students. When plagiarism is detected, the information is conveyed to Faculty Chairs for follow up, which allows instructors to easily manage student scores and decreases the time necessary for adjunct faculty members to research any suspected plagiarism submissions. Tracking the number of plagiarism cases caught with this tool allows the college to make informed decisions about the level of resources necessary to combat this problem and where to focus plagiarism prevention efforts. Finally, knowing the number of plagiarism incidents allows Faculty Chairs to revise their course content to prevent plagiarism from occurring in the future, as they can focus on improving assignments in those subject areas with higher levels of plagiarized content.

Agility

The core value of agility is also exemplified by Rio’s plagiarism detection system. Historically, as course delivery methods and technologies have advanced, Rio Salado has responded by quickly adapting its instructional tools to meet the needs of both the student and faculty customer populations involved in the online learning process. In fact, the planning, development, testing, and implementation of the Peer-to-Peer Plagiarism Detection System was accomplished in a short five months using only existing internal staff, which clearly demonstrates the institution’s ability to see a need and work quickly to meet that need. Furthermore, Rio Salado’s organizational climate, which embraces innovation and relentless improvement, allows the organization to respond quickly to changing customer needs.
1.0 The Process

1.1a Process Identification

Preserving the academic integrity of Rio Salado’s programs is a high priority. Online students at Rio Salado College submit most of their assessments electronically through RioLearn, the college’s proprietary learning management system via Perception, the college’s assessment management tool. When turning in an assessment, students must certify that the submitted work is their own. Instructors are encouraged to use online document scanning systems, such as Turnitin, which can detect if a student copied information from an online source. However, these systems cannot identify peer-to-peer plagiarism, in which a student copies an assignment from another student and submits it as his or her own, original work.

Figure 1: Peer-to-Peer Plagiarism Detection System: Operational Process Flow Chart

Rio Salado’s plagiarism detection system utilizes a mathematical model to calculate the similarity between submitted essays. The process works as follows:

1. A student submits a written essay assignment by pasting the answers into a textbox in Rio’s Perception assessment software. At this point, certain assignments are filtered out (such as those assessments worth 10 points or less and essays containing fewer than 75 words) and not run through the system.

2. The essay undergoes a cleaning process to remove nonessential words and to convert words to their base form. For example, the word grading would be changed to grade, which helps to detect those students who attempt to reorder phrasing or reword another student’s answer.

3. The essay is compared against a set of essays submitted for the same assignment within the past 180 days. The system tallies the percentage of similar words in both assignments. If the new response is mathematically similar to another essay, then it is flagged as a case of potential plagiarism. Mathematically similar is defined as both student responses having at least 50% of the same words in common.

4. For each flagged essay with a percentage of 50% or higher similarity, a color-coded report highlighting the identical words in the
submit is generated. Potential cases of cheating are typically detected within 12 hours of initial submission. (See Figure 2.)

Figure 2: Sample of Peer-to-Peer Plagiarism Report

<table>
<thead>
<tr>
<th>Plagiarism Alert!</th>
</tr>
</thead>
<tbody>
<tr>
<td>A possible case of peer-to-peer essay plagiarism has been detected in one of your courses. The two submissions shown below are 76% similar. Please take some time to review these submissions and determine if this is an instance of plagiarism or simply a coincidence. Exact matches have been highlighted.</td>
</tr>
</tbody>
</table>

| Student: Typla Giarizedelse Email: Typla@riosalado.edu |
| Phone: 602/555-5555 |
| Address: 227 W Sesame St, Mesa, AZ 55555 |
| Class: BPC888 #8888 Summer I 2010 |
| Instructor: John Smith |
| Assessment: Lesson 2 Short Answer, #1 |
| Submission Date/Time: Jan 1 2011 3:23:02:000PM |
| IP Address: 255.255.255.254 |

| Student: Timal Lowscheat Email: Timal@riosalado.edu |
| Phone: 200/555-5555 |
| Address: 111 Some Dr, NY, NY 11111 |
| Class: BPC888 #99999 Spring 2011 |
| Instructor: Amy Jones |
| Assessment: Lesson 2 Short Answer, #1 |
| Submission Date/Time: Apr 1 2011 6:14:36:000PM |
| IP Address: 255.255.255.0 |

According to Andrews, Jean (2010). CompTIA A+ Guide to Managing and Maintaining Your PC (pp. 44). Boston, MA Course Technology. The four main functions of an operating system are 1. Provide a user interface that allows a user to perform housekeeping procedures that often concerning secondary storage devices, such as reorganizing a hard drive, deleting files, copying files, and changing the system date. 2. It manages files on hard drives, DVD drives, CD drives, floppy drives, and other drives. Then creating, storing, retrieving, deleting, and moving files. 3. An operating system also manages hardware, as it managing the BIOS (programs permanently stored on hardware devices) and memory, which is a temporary place to store data and instructions as they are being processed. It can diagnose problems with software and hardware and interfacing between hardware and software (that is, interpreting application software needs to the hardware and interpreting hardware needs to application software). 4. An operating system can manage applications such as installing and uninstalling applications and running applications and managing the interface to the hardware on behalf of an application.

The four main functions of an operating system is "Provide a user interface, Manage files, Manage hardware, and Manage applications." The first function "Provide a user interface", performing housekeeping procedures requested by the user, often concerning secondary storage devices, such as reorganizing a hard drive, deleting files, copying files, and changing the system date. Providing a way for the user to manage the desktop, hardware, application, and data. Function two, which is to "Manage files". Managing files on hard drives, DVD drives, CD drives, floppy drives, and other drives. Function three which is to "Manage hardware" managing the BIOS (programs permanently stored on hardware devices), managing memory, which is a temporary place to store data and instructions as they are being processed. Diagnosing problems with software. Interfacing between hardware and software (that is, interpreting application software needs to the hardware and interpreting hardware needs to application software). Function four which is to "Manage application". Installing and uninstalling applications, running applications and managing the interface to the hardware on behalf of an application.


5. The Faculty Chair over the discipline receives a copy of the plagiarism report via email. Plagiarism detection notifications are automatically sent by the system at 7 a.m., noon, and 4 p.m. each day. These alert emails contain:
   a. The essay containing potentially plagiarized material
   b. The essay containing the potential source material

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c. Student, course, and instructor information for both students involved

d. A “percentage similar” measurement that indicates the degree of similarity between the two essays

6. Upon receiving an email alert, Faculty Chairs follow through with department-specific protocols. Each discipline has a structured, customized process in place to efficiently and effectively handle each plagiarism alert according to thresholds established by that particular discipline.

As noted in the process flow chart on page 1, inputs to the plagiarism detection system are the student essay assignments submitted to the plagiarism checker. The outputs to the process are the system report and notification email, which illustrate the percentage of similar words in an assignment and alert the Faculty Chair to potential plagiarism. Feedback occurs in the process when the assignment is flagged and information sent to the Faculty Chair for review and also when a student who has plagiarized work is contacted by the instructor.

Substantial testing was carried out on all aspects of the system, including similarity thresholds, to ensure that as many possible cases of plagiarism are caught while minimizing the number of false-positive reports generated. A collaborative partnership between the Institutional Research Department and Information Services ensures the validity and integrity of the process.

As mentioned above in Section 1.1a and the Process Context, detecting peer-to-peer plagiarism among Rio students before the system was in place was problematic due to the sheer number of sections offered for certain courses. (See Figure 3.)

In 2011, Rio offered 264 sections of English 101 and 215 sections of English 102 using the same curriculum. These courses were taught by 77 and 71 different faculty members, respectively. The high number of unique sections of the same course means only a slim chance of catching a student cheating from another student exists if the two students are enrolled in different sections of the course with two different instructors, or if the copied work was submitted in a previous semester. Also, many of Rio’s 1,300 adjunct faculty members work off-site. This means faculty teaching the same courses rarely have an opportunity to interact with one another and compare notes regarding assignments.

The key requirement for the Peer-to-Peer Plagiarism Detection System is to find those students who have copied and submitted another student’s work as their own and report those students to the appropriate Faculty Chair for follow up discipline according to established practices. Catching dishonest students promotes academic integrity and preserves the value of Rio’s courses and educational system as a whole.

The design process for the Peer-to-Peer Plagiarism Detection System involved a multidisciplinary team with representatives from Rio Salado’s Institutional Research and Information Services Departments,
Course Support, and Administration, along with Rio Salado Faculty representatives, a main customer group for the product. Throughout the process, collaboration occurred between these key groups to ensure the needs of various constituencies were met. Stakeholders discussed which assignments should be scanned by the system, what information should be included in the plagiarism report, and the date span for comparison. Faculty requirements were also taken into consideration. Faculty needed a copy of the student-to-student plagiarism submissions, the percentage of similarity between the assignments, and student contact information, and these were all incorporated into the report. This information allows faculty members to quickly determine if a student committed plagiarism. Involving key system users in the design process from the beginning ensured the system met the needs of those customers, while the use of a multidisciplinary team from various departments within the organization ensured process requirements were technically possible and operationally sound.

The plagiarism detection process aligns with Rio Salado’s overall strategic plan and the specific goal of student success within that plan which states, “We review, measure, and improve processes, practices, and services to increase student success.” Student achievement cannot be accurately measured if students submit work that is not their own. The facts obtained from the plagiarism detection process are also utilized to improve student performance and by extension, student knowledge.

Rio Salado places a high value on academic integrity and student learning. Holding students accountable for creating their own work and detecting cheating through the peer-to-peer plagiarism detection process have allowed the college to uphold strict academic standards. This greater accountability, which encourages students to complete their own work instead of copying from one another, then leads to increased student success and learning.

Additionally, the peer-to-peer-plagiarism detection system provides faculty with an effective and efficient tool to catch those students who are not completing their own work. Before the implementation of the system, such cases were not tracked, and identifying trends was impossible. Now, multiple faculty members teaching the same course have the ability to discover those students who copied answers from other students, preserving academic integrity.

1.1b Process Design or Improvement

As mentioned in Section 1.1a, a cross-functional team was established to implement the project. Rio Salado utilizes the Plan-Do-Check-Act Cycle (PDCA) for quality assurance and relentless improvement. During the design and testing phases, the system was closely monitored and the data were analyzed to determine if the system was functioning as intended. Over time, various modifications were made to improve the system’s efficiency and effectiveness based on the operating data obtained. These improvements include:

1. Adjusting the date range: As stated on page 1, the system compares submitted essays with a pool of assignments turned in by other students.
students in the same course within a specific date range. When the system launched on August 7, 2009, the date range for comparison initially was a 14-day history of submitted assignments. On August 20, 2009, the date range for comparison was changed to 90 days to account for Rio’s flexible start dates. (See Figure 4.) After testing and monitoring system performance, the date range for comparison was changed on July 1, 2010 to 365 days because the 90-day span was found to be insufficient for catching those students who plagiarized information from work submitted in a previous semester. (See Figure 5.) When the date span was 90 days, the system was able to process all essays on the same day that they were submitted, and the processing time was 0 days behind.

After increasing the comparison date span to 365 days, system data showed that processing time was increasing. In fact, by August 23, the plagiarism detection system had slowed to 19 days behind in processing submitted assignments. A decision was then made, based on the data, to decrease the history comparison span to 180 days in an effort to speed up processing. This adjustment reduced the processing delay and preserved the benefit of comparing assignments with submissions spanning more than one semester to catch a larger number of plagiarizing students. (See Figure 6.)
Again, the data were monitored for numerous weeks after the change. The results, as noted in Figure 7, showed that the processing delay had been eliminated. Monitoring output data allowed the technical team to adjust the comparison span for maximum efficiency.

2. Eliminating false positives: The initial data showed that too many false positives were being flagged, meaning that the system reported an assignment as plagiarized when it really wasn’t. This issue accounts for the large number of assignments flagged at the end of 2009: 606 in September 2009 and 668 in November 2009. In January 2010, a feature was added to give Faculty Chairs the ability to exclude an assignment from the plagiarism checking process. Short-answer assignments, assignments worth less than 10 points, and other essays that had a high probability of containing similar words began to be excluded from the scanning process, which decreased the number of false positives.

3. Filtering: Filtering was also used to reduce the scanning time. A filter was added in which the top five most frequent key words are gathered before doing a complete scan. If four of the five keywords match in both essays, then further processing takes place to determine if plagiarism occurred. Otherwise, the scan is complete.

4. Color coding: Based on faculty feedback, color coding of words and phrases that appeared in identical order was added to the plagiarism report. Faculty members can now tell at a glance if the assignments are identical.

5. System Efficiencies: As noted in Section 1, many improvements were made after evaluating system data. The database code was revised to reduce the number of steps necessary to compare essays. The code was also split among servers to allow parallel scans to run at the same time. Optimal scheduling was also researched to minimize the processing load on the servers.

As mentioned in the process context, the system was developed, programmed, tested, and implemented completely in-house. This development method allowed for careful control of costs and meeting key milestones, which indicates the agility of Rio Salado’s organization. The system also created long-term savings by avoiding the licensing and support fees which would have been required by an outside vendor. Because the development was completed in-house, any required changes are made effectively and efficiently without having to contact the software company for a fix, and in-house maintenance allows for the collection of useful data to improve the process. Faculty Chairs across Rio’s various departments have the flexibility to use the plagiarism reports to meet the individual needs of their discipline, which demonstrates the agility of the system. Finally, the in-house construction provides a direct feedback outlet for customers (Faculty Chairs) to help with process improvement. A customer survey was conducted in Spring 2011 to evaluate faculty satisfaction with the system, which will be discussed in the results section.

Rio Salado’s Peer-to-Peer Plagiarism Detection System is one facet of Rio’s overall academic integrity plan. The college established an Academic Integrity Team, which is housed in the organization’s Testing Department, to monitor the plagiarism detection email reports and offer additional support and research regarding any potential academic misconduct. The Peer-to-Peer Plagiarism report is automatically
generated and then emailed from a secure email account. The members of the Academic Integrity Team monitor this email account for any irregularities, such as undelivered email and communications from faculty. The Team then responds to any requests for further information by the Faculty regarding the Peer-to-Peer process; information requests range from detailed IP address reports to previous records of academic misconduct. Monitoring the email account is a daily process in order to maintain the timeliness of the system.

Since reports of potential plagiarism are sent directly to the Faculty Chairs, information sharing and collaboration were limited initially. To overcome the drawback of scattered and seemingly unrelated data failing to connect and identify larger issues, the Academic Integrity Team collects and records all Peer-to-Peer information in a centralized database to which all Faculty Chairs have access. Making pertinent information from the reports available allows for planning and decision-making based on fact. The team can run reports to identify areas that may need changes or improvements within course content to make it more difficult for students to plagiarize.

In addition, Rio Salado established an ad-hoc Academic Integrity Council, which meets as needed to address specific academic integrity issues found through the data collected by the Academic Integrity Team related to egregious issues for one or more students within multiple disciplines. This Council is comprised of appropriate Faculty Chairs, Associate Dean of Student Enrollment, appropriate Dean or Associate Dean for discipline area, and the Academic VP, if necessary. The issues discussed by this council likely lead to disciplinary action by the college.

As has been demonstrated, sharing of data compiled by the Academic Integrity Team allows for process improvements and deterring academic dishonesty. The data collected provides information to drive innovation in instruction throughout the college.

1.1c Performance Measures or Indicators

Key performance indicators for the Peer-to-Peer Plagiarism Detection System include:

1. number of assignments submitted through the plagiarism detection system
2. number of potential plagiarism cases detected
3. run time for the system
4. faculty (customer) satisfaction with the system

Data from the four key process indicators are collected as needed and analyzed to manage and continually improve the system over time. Because the system was built and is run entirely in-house, adjustments can be made quickly and easily. Input from faculty members, the key customers for the system, is continually sought and incorporated into the system. Due to Rio’s culture of agility, changes can be made quickly in response to faculty needs. Also, utilizing this data enables adjustments to be performed to ensure maximum effectiveness and efficiency.

2.0 Process Results

2.1a Process Results

The overall result of the Rio Salado Peer-to-Peer Plagiarism Detection System has been the creation of a systematic, measurable process to flag potentially plagiarized assignments and to catch those students who copy work from each other. This, in turn, preserves the academic integrity of the institution. The key process indicators discussed above indicate that the innovative system is working as designed.

Number of Assignments Scanned: Prior to the launch of the peer-to-peer system, Rio Salado lacked a formal process to detect this type of plagiarism, which means that no statistics are available prior to the process implementation. The peer-to-peer plagiarism detection rate is assumed to be 0 documented cases. From the period of August 2009 through May 2011, 5,263,404 total assessments were taken at
Rio Salado College. During that same time period, the number of assessments scanned through the detection system ranged from a low of 35,790 in December 2009 to a high of 50,817 in October 2010. As mentioned in Section 1.1b, not every assignment is scanned by the system for a number of reasons. Figure 8 shows the number of assignments scanned per month from August 2009 to May 2011. More than 900,000 assignments have been checked for peer-to-peer plagiarism since the system was launched.

Figure 8: Number of Assignments Scanned - August 2009 to May 2011

<table>
<thead>
<tr>
<th>Date</th>
<th>Number Scanned</th>
<th>Date</th>
<th>Number Scanned</th>
<th>Date</th>
<th>Number Scanned</th>
<th>Date</th>
<th>Number Scanned</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sep-09</td>
<td>43,117</td>
<td>Mar-10</td>
<td>45,840</td>
<td>Sep-10</td>
<td>45,919</td>
<td>Mar-11</td>
<td>49,321</td>
</tr>
<tr>
<td>Oct-09</td>
<td>45,742</td>
<td>Apr-10</td>
<td>46,870</td>
<td>Oct-10</td>
<td>50,817</td>
<td>Apr-11</td>
<td>50,221</td>
</tr>
<tr>
<td>Nov-09</td>
<td>46,432</td>
<td>May-10</td>
<td>42,077</td>
<td>Nov-10</td>
<td>48,858</td>
<td>May-11</td>
<td>41,462</td>
</tr>
<tr>
<td>Dec-09</td>
<td>35,790</td>
<td>Jun-10</td>
<td>42,158</td>
<td>Dec-10</td>
<td>36,738</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jan-10</td>
<td>38,469</td>
<td>Jul-10</td>
<td>38,941</td>
<td>Jan-11</td>
<td>39,878</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Feb-10</td>
<td>41,495</td>
<td>Aug-10</td>
<td>35,463</td>
<td>Feb-11</td>
<td>41,698</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Total</td>
<td>907,306</td>
</tr>
</tbody>
</table>

Number of Potentially Plagiarized Assignments: The second key indicator indicates a fairly constant trend in the number of assignments flagged after adjustments were made to filter out false positive data, as described in the Process Implementation section. Current data on the percentage of assignments flagged for potential plagiarism from January 2011 through May 2011 are included in Figure 9 below. Overall, the graph shows a relatively constant percentage of plagiarism cases detected (with the exception of April). An analysis of the data shows no obvious reason for the decrease in number of cases detected in April. It is possible that the college doesn’t have enough longitudinal data to provide a definitive answer. Another plausible explanation is that changes in the term block affected the number of assignments flagged. System developers continue to monitor the data to determine if this was just a one-time occurrence or if there is evidence of a larger issue.

Figure 9: Percentage of Flagged Assignments

System Run Time: As discussed in Section 1.1a, the system run time is monitored continually. The data obtained is used to make efficiency improvements.
Faculty Satisfaction: Faculty satisfaction is measured by surveying faculty customers both formally, through a survey, and informally, through interaction with the Academic Integrity Team, to collect their feedback on the system. Rio Salado conducted a five-question survey during spring 2011 to gain feedback from the faculty customers on the plagiarism detector. The survey elicited a total of 29 responses. Overall, participants gave high marks to the Peer-to-Peer Plagiarism Detection System. All five statements regarding the Plagiarism Detector received at least 96% agreement from respondents.

The statement, “The Peer-to-Peer Plagiarism Detector helps to ensure the academic integrity of courses at Rio Salado,” received the highest percentage of Strongly Agree responses (86.21%, N = 25). The statements “The Peer-to-Peer Plagiarism Detector aligns with our Core Practices” and “The Peer-to-Peer Plagiarism Detector aids in the pursuit of our Core Values” each received the same percentage of Strongly Agree responses (82.76%, N = 24). The statement “The Peer-to-Peer Plagiarism Detector adds value to my courses/department” received 22 Strongly Agree responses (81.48%). The statement “The Peer-to-Peer Plagiarism Detector helps Rio to better serve its customers” received the lowest percentage of Strongly Agree responses (78.57%, N = 22).

Most of the respondents would recommend the use of the Plagiarism Detector to a friend or colleague. Twenty three respondents said that they were Extremely Likely to do so (93.31%). One respondent remarked, “The peer-to-peer plagiarism detector is truly innovative and invaluable in helping to ensure academic integrity of coursework among our students.”

As reported in the Process Context, the Peer-to-Peer Plagiarism Detection system has earned two awards for its innovative design: “Innovation of the Year” from the Maricopa Community College District in 2010 and the 2010 WCET Outstanding Work (WOW) Award, which recognizes those organizations using cutting-edge educational technology tools and practices.

Additionally, faculty members have responded positively to the new system. Faculty member John Jensen praised the system: “The peer-to-peer plagiarism detection system is a key element in fortifying Rio Salado’s commitment to academic integrity. What is more, it reinforces in students the formation of ethical behavior and self-reliance as critical values in their character development and their learning as a personal responsibility. In the end, we feel that this system supports authentication in the online learning environment that meets or exceeds the capabilities of the physical classroom.”

The results obtained by the plagiarism detection system support the data included in the Process Context that show students do engage in plagiarism. Unfortunately, benchmark data from other colleges or the higher education industry as a whole are not available for the peer-to-peer plagiarism detection process. However, as demonstrated in the application, before the Rio system was implemented, very few peer-to-peer plagiarism cases were detected, and no formal process existed for handling such cases. With the establishment of the Peer-to-Peer Plagiarism Detection System, Rio Salado has increased the number of peer-to-peer plagiarism cases caught and has established a formal process for responding to suspect instances of plagiarism, thus preserving and maintaining the academic integrity of the institution and the value of a Rio education for all enrolled students at the college.
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1. Creates database of reported plagiarism incidents and compiles data regarding plagiarism trends.
2. Develops and updates the system; monitors run time and system performance.
3. Carries out appropriate discipline for students who have plagiarized per department policy.
4. Assists with data validation, trending, and monitoring system performance.