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# Plagiarism Checker as Best Free Online Plagiarism Detection Software

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### ABSTRACT

The advancement of online information system allows every internet user to have ample amount of data that they can gather without acknowledging the authors. Thus, the awareness of anti-plagiarism tools whether it is free-online services or commercial software can help both students and faculty to properly acknowledge and identify the source of the data. This study intended to compare and contrast the efficiency and other cited criteria for the available free-online plagiarism detection system. The seven free-of-cost online services on plagiarism detection software that were identified during the time of testing were Plagiarism

Checker, Plagiarism Detection, Check for Plagiarism, PlagTracker, PlagScan, DupliChecker and PaperRater. The seven tools had been tested with the textual data that had been derived from numerous websites which includes educational institutions and open access journals. The strong and weak points of each tool were validated by allowing the respondents to use each tool and rate it according to the cited criteria. Among the tools tested, the Plagiarism Checker turned out to be easiest tool to use with the highest rate of learnability due to simplicity of its user interface. The ability of its online services to cross-check other internet sites regardless of the file format where the tested textual data that had been copied gives a more reliable output than the others.

*Keywords* - Educational technology, plagiarism detection, efficiency and effectiveness, online plagiarism, descriptive research, Sorsogon City, Philippines

### INTRODUCTION

The advancement of technology in the 21<sup>st</sup> century enables the academe to be exposed in large quantity of data that can be used in teaching. The students are open to global sharing of data where retrieval becomes much faster and publicly available anytime. Their common way of data mining is the proliferation of search engines in the web, which have hundreds of billions of data index that can be found on the internet. This higher rate of availability of data leads to the non-originality of students' output. At the same time, students were exposed to the uncritical and unacknowledged use of other's work (Badge, 2010).

As observed, most of the students prefer to make their outputs easier. Park (2003) concluded in his study that plagiarism among student were common and manifested in their paper works. They are tempted to copy and paste the textual data from the internet or any web source. This situation creates widespread plagiarism in all grade levels and even extends to the graduate studies. However, the existence of cross-checking software for textual data through various websites will discourage students and researchers to commit plagiarism in their work. Japos (2012) emphasized that failure of the researchers to document properly the sources always led them to plagiarism. Citing literatures from wikis, web links, news, social networking produced grey literature and non-authoritative source of ideas. Other plagiarism algorithms are included in some virtual learning environments that allow the mentors to check their student's output immediately. This software is not purposively intended to offend students but to improve their

ability to write and be critical in acknowledging and doing citation techniques.

The extensive availability of anti-plagiarism software on the internet, whether free or proprietary will enable the students to access them to initiate a self-check mechanism for their technical works. However, for economy and fast results they use the free online services for this type of software. The tools used in this study are commonly patched text from different websites such as wikis, www.eric. ed.gov, ww2.rch.org.au, www.ihmctan.edu, wiley.com and the likes that include subscribed or commercial databases, open access journals and publications.

### **FRAMEWORK**

Plagiarism for the purpose of this study means "the action or practice of taking someone else's work, idea, etc., and passing it off as one's own" (OED Online, 2009). The wide range of available data in the current technologies such as internet has disclosed information that is valuable and reliable for students' work which results to unacknowledgement of other's work. This becomes a primary concern in the Higher Education section which led to an increase in the prevalence of plagiarism (Duggan, 2006).

This study focuses only on the current available free software and services for plagiarism detection purposes. Other researchers investigated the efficacy of Google (www.google.com) search engine against EduTie and EVE2 (Purdy, 2005). Purdy reasoned out that the inclusion of Google search engine in the plagiarism detection becomes more effective than those commercial systems as they are directly being used to query the text parameters. This was proven when he constructed several specific tests for duplicate text detection on the internet. The results showed that the Google search engine is more accurate than the two commercial systems that were sold to the public. The other two commercial systems produced inconsistencies with their results. The findings of Purdy's study were also confirmed by other investigators (Royce, 2003).

The automated results generated by *Turnitin* commonly calculated the percentage of copied text. This online plagiarism detection service cannot automatically distinguish between plagiarized texts and properly cited direct quotations (Jocoy, 2006). This study is supported by Frazer (2004) which emphasizes that the detection software produces originality of the reports by comparing the submitted written materials to the existing texts in their internal database, online text and journals and information from the internet which are open accessed. Japos (2012) also conclude that technology-based quality

assurance of researches improves readability and originality since it reduces plagiarized textual data. As he added, technology-based assurance led the research outputs to be readable by the other researchers, since foreign researchers had difficulty in understanding due to some complexities in their ideas.

Further, Braumoeller and Gaines (2001) utilized the EVE detection software to test the accuracy based on their patch text as the test material. Their results showed that there are greater variations of results after several trials that have been made on the same test material. Nevertheless, there are some texts in the test material that were known to be plagiarized but have not been detected.

Chaudhuri's (2008) study disclosed that SafeAssignment has least effective capability in detecting plagiarism when the textual data has been derived from commercial or subscribed databases especially those library resources that are being hosted by universities and colleges. However, some patch texts that were used during the test produced inconsistent results on the scores of plagiarism detections. Hence, he recommends that this software should be verified and be tested by a set of evaluators to attain perfection of its result. In addition, Japos (2012) stressed that some textual data cannot be cross-checked with the other sources especially if it comes from any secured databases of subscribed journals. He further disclosed that this may prevent publishers to verify if the submitted article does not violate any research ethics.

# **OBJECTIVES OF THE STUDY**

This study primary aims to determine the efficacy or the efficiency and effectiveness of the free anti-plagiarism detection tools that is available on the internet for public use. It specifically aims to: a) identify and compare by listing the weak and strong points of the available online free plagiarism detection tools that is available on the internet as top hits of the known common search engines such as Google and Yahoo; b) Test the effectiveness and efficiency of the the listed plagiarism detection tools based on the following criteria such as usefulness, ease of use, efficiency, and learnability; and c) recommend a plagiarism detection tool that can be used based on the criteria that had been presented.

### **METHODOLOGY**

This study is a descriptive survey utilizing documentary analysis of the free plagiarism detection software. Survey questionnaires were given to students of

SSC Graduate School enrolled in summer 2014. Data gathering was done from April to May 2014 to 25 respondents who were enrolled in Computer Education subject. These questionnaires drew the insights or needed information from the respondents on how these detection tools work using the criteria that were set. To comply with research ethics protocol, the researchers obtained informed consent from everyone who was interviewed on given questions to answer.

There were seven chosen free plagiarism detection software that are actively being utilized based on the Google search engine hits. These are:

- 1) The Plagiarism Checker (http://www.dustball.com/);
- 2) Plagiarism Detection on the Internet (http://www.plagiarismchecker.com/);
- 3) Check for Plagiarism (http://smallseotools.com/);
- 4) PlagTracker (https://www.plagtracker.com/);
- 5) PlagScan (http://www.plagscan.com);
- 6) DupliChecker (http://duplichecker.com/); and,
- 7) PaperChecker (www.paperchecker.com)

Most of the detection tools are online services using the web interface which requires internet connection for processing textual data to detect plagiarized information from known sources on the internet. These seven tools had been selected to be used in this study since it had been stipulated in their terms of usage agreement to be publicly accessed. Moreover, they disclaim that the results will be used for personal use of the end clients and they are not responsible for what could be the possible purpose of the clients or users especially if it will results to erroneous data. Moreover, they are always open for corrections of their processes or feedback based on critiques by the public if the results were made on comparisons in other plagiarism detection tools.

These tools can detect plagiarized text using an automatic detection based on textual data input. Furthermore, the search engine tools such as Google, Bing, Yahoo and others were not included in these tools since they were considered as manual detection tools and have a limited number of characters per query for matching processes.

To test the efficacy of the detection software, the following criteria as cited by Atkinson & Yeoh (2008) were used. Perceived usefulness refers to degree at which a person consider the system or application would contribute for the improvement of his or her job performance while perceived ease of use refers to the extent at which learning of new application software in detecting plagiarized

text will utilize minimal amount of user's effort.

Results correctness refers to the expected results of the detection software based on the supplied sample files that contains copied text from various websites in different formats; efficiency is the turnaround time to complete the detection process based on the textual data provided; and learnability refers to the ease of learning by the end-user in using the detection tool(s).

The test files that were provided contain textual data coming from known sources, and most of them were actually plagiarized. These files contain the copied texts from various website sources and file formats that are available on the internet during this test. The text in each file had been fed one at a time to the listed online detection tools and is rated according to the criteria using the rubrics shown below:

Criteria	Points	Description/Conditions			
	3	very useful			
Usefulness	2	partially useful			
	1	not useful at all			
	3	very easy to use			
Ease of Use	2	easy to use			
	1	difficult to use			
	3	user can use it on unlimited number of queries			
Efficiency	2	there is a limit for every query			
	1	user has to wait for the results until it completes the detection			
Learnability	3	user can easily perform a plagiarism detection due to fewer procedures to follow			
	2	user needs more time to be familiar with the user interface before using the software			
	1	user needs much time to read the software manual before learning how to use the service or software			

These criteria on rating the software were discussed to the respondents before allowing them to test these tools. The site links/software for plagiarism detection tools were given to the respondents for them to test the criteria provided. Collected data were tallied and treated with statistical tools such as frequency distribution and weighted means. These weighted mean values determined the suitability of the detection tool based on criteria provided during testing. Plagiarism detection tools were ranked in descending order based on their garnered weighted means.

### RESULTS AND DISCUSSION

### 1. Identification and comparison of Free Plagiarism Detection tools

There are seven identified free plagiarism detection tools covered in this study. In the process of describing these tools, their strong and weak points were discussed. The strong points of each detection tools include the capability of the software, where, the weak points refer to the limitations of it in detecting the plagiarized software.

### The Plagiarism Checker (http://www/dustball.com/)

This detection tool is built on top of web interface which has less number of controls on its user interface to provide a direct use of the tool in detecting plagiarized textual data.

### **Strong Points**

There is unlimited number of words that can be copied or pasted to its text box for plagiarism detection; and the interface is easy to use.

#### Weak Points

Plagiarized detection on file uploads is reserved only for paid subscribers; reports generated cannot be downloaded since it is embedded on its page during detection but it can be printed along with the page for possible copy of the results; and, it does not have a side-by-side comparison of the sample textual data from the collected data coming from the website that were suspected for plagiarism.

# Plagiarism Detection on the Internet (http://www.plagiarismchecker.com)

This detection tool works by dissecting the pasted textual data into 32 words as it is the limit of the search engine(s). The user controls in their web interface is the same www.dustball.com which provides a straight forward utilization. It is advantageous since it is a copy-paste procedure for textual input; and, it has easy-to-use web user interface.

On the other hand, its limitations include the following: a) each line of pasted textual data must contain 32 words only or it will be shortened as it is the limit for Google search engine; b) the results are mainly based on the search engine hits; and, c) there is no file upload for automatic detection of the contents.

### Check for Plagiarism (http://smallseotools.com)

This tool is built on top of a web service that allows the end-user to copy and paste the textual data for automatic detection. The web service derives up to nine words from the data in a random location of the textual data inputs and feed it into the Google search engine.

This tool is efficient and effective on detecting plagiarized text on the following points:

- a) Unlimited number of textual data that can be pasted to their input text box
- b) It counts the number of unique phrases that have been derived from textual data input against its total generated phrases.
- c) There is an automatic detection of existing keyword on the internet.

However, its efficacy can be lessened due to the following constraints:

- a) The tool randomly selects phrases from the input data consisting of nine words per phrase not the whole sentence;
- b) It uses a search engine to generate its reports on plagiarism detection;
- c) There is no side-by-side comparison for the detected plagiarized text from the internet.

# PlagTracker (https://www.plagtracker.com/)

This tool is also a web service for detecting textual plagiarism which allows the end-user to copy-paste the data into the input text box for its purpose. It also allows user to register so they could use any extended usage or further reporting as soon as the checking of the text or uploaded data has been completed.

This tool is effective and efficient on this purpose according to its featured capability such as; a) free for user sign-up; b) easy to use; c) unlimited number of document that can be check; d) Copy-paste of textual data or file upload is supported for automatic detection for the plagiarized data.

However, its efficacy is being limited because of the following constraints: a) Detection reports generated cannot be downloaded in any format, but the page itself can be printed or downloaded; b) After the first scan, textual data inputs or file uploaded will be delayed for it to complete. The user will be notified through email as soon as it completes the scanning for plagiarized data or text; c) For the files or text to finish the scanning in few minutes, paid subscription will be required for the end-user; and d) There is no side-by-side comparison for the reports generated after the detection process.

# PlagScan (http://www.plagscan.com)

This detection tool is also an online web service for detecting plagiarized textual data. Its web interface provides the end-user something to follow during input of textual data and interpreting its results.

Its strong points are as follows: a) this free service for textual detection requires 1000 words or less per documents for an unlimited number of detection; b) copy and paste of data for detection and file uploading is supported also to minimize procedure for textual pasting into the text box; c) new signed-up users are being offered with initial credits for a faster detection and side-by-side comparison after its detection process has been completed; and, d) deep search is available for further relevance of the phrases to other sites.

Nevertheless, this tool has limitations since some features are being omitted and made available to paid subscribers only such as the side-by-side comparison and extended number of papers or words per document. Furthermore, reports generated cannot be downloaded into other formats due to the integration of the output onto its page; but it can be printed as the whole page or it can be saved to the local disk for reference purposes.

### **DupliChecker** (http://www.duplichecker.com/)

This tool is a completely free online web service for plagiarism detection. Its web user interface is the same with the others, but it reports an empty file during file upload at the time of testing.

There are some areas where this tool is considered strong points such as: (a) there is unlimited number of textual check anytime unless the user is registered; (b) there is no cost during user registration process; (c) aside from the copy-paste procedure for textual inputs, it also allows the user to upload file for automatic detection; and, (d)side-by-side comparison is available; however end-user must compare it against the source file or text with the detected plagiarized text or data one at a time to make a proper citation. These tool is being limited by reports generated cannot be downloaded into other format but the page itself can be saved or printed as well.

# PaperRater.com

This detection tool consists of simple and easy web interface to use their plagiarism detection tool. The website requires the user to implicitly accept the terms of service every check. The website requires the user's acceptance of its terms of service every time that they would check source data for plagiarized text.

This tool had been noted with the following strong points such as: a) it is easy to follow user web interface; b) there is unlimited numbers of textual data check through copy-paste on their input text box; and, c) the detection results clearly suggest the verdict for the processed textual data.

However, this tool has the following constraints a) no side-by-side comparison between the sources and plagiarized textual data; b) a generated report is included into its page. Its results can be printed along with the input text; and, c) the result is mainly based on search engine hits which limit the number of text that will be used for searching over the internet sites for the same contents.

Table 1. The seven online tools for detecting plagiarism according to usefulness ease of use, efficiency, and learnability

TOOLS	Criteria(WM)									
TOOLS	Usefulness		Ease of Use		Efficiency		Learnability		Weighted	D 1
	WM	SD	WM	SD	WM	SD	WM	SD	Mean	Rank
Plagiarism Checker	2.6	.50	2.5	.51	1.8	.53	2.3	.46	2.3	1
Plagiarism Detector	2.2	.76	2.4	.82	2.0	.65	2.0	.64	2.2	2.5
Check for Plagiarism	2.3	.46	2.2	.37	2.2	.69	2.0	.57	2.2	2.5
Plag tracker	2.3	.48	2.0	.58	2.2	.91	1.8	.91	2.1	4.5
Duplichecker	2.0	.65	2.0	.76	2.4	.40	2.0	.41	2.1	4.5
PaperRater	2.0	.59	2.0	.58	2.0	.76	2.0	.79	2.0	6.5
Plag Scan	2.0	.70	2.2	.71	1.8	.42	1.8	.42	2.0	6.5

Along with the table, it shows the weighted mean of each tool based on the criteria presented after they tested the seven tools one at a time using the provided test materials that contain texts that were derived from different websites. The source of the text has been lifted from different file formats such as DOCX, PPT, HTML, and PDF, which can be found from different search engines such as like Google, Yahoo search, and Bing.

### A. Usefulness

Among the seven tools, the usefulness of Plagiarism Checker was perceived with weighted mean of 2.6 which can be described as very useful. This implies that the test results of this tool in detecting plagiarised text is as much as closer

to the expectation of the respondents based on the test materials that had been used during the testing. The source sites where the plagiarised text can be found is properly listed in accordance with the unoriginal text that can be found from the sample textual data. Thus, the clearer the results of the tool for detecting plagiarized text, the more useful it is to the respondents. Atkinson's (2008) study further emphasized that a plagiarism detection tool results should offer a more comprehensive listings of plagiarised sources to further verify the existence of the unoriginal text.

### B. Ease of Use

The plagiarism Checker tool sets by the respondents to be the easiest tool that can be used for detecting plagiarized text on the internet based on the sample data that has been provided. Its perceived weighted mean by the respondents is 2.5 which described as very easy to use. This implies that the respondents' perception can be attributed to the less number of controls on it user interface and less number of procedures to be used or followed during the detection process. Atkinson (2008) strengthened that the user interface of the plagiarism detection tool should be straight forward to allow an easy user's learning curve. He added also that it should be simple and easy to use for the end users.

# C. Efficiency

The efficiency of the plagiarism tool to detect plagiarised text from any internet source is always affected by the user and server internet bandwidth. Thus, most of these free online plagiarism detection tools limit their internet clients on the utilization of it so other clients worldwide would have the chance to use the tool. Moreover, they limit the query or the number of times for textual data entry and processing to these tools in an hourly or daily basis.

Most of the respondents set the Duplichecker to have the highest efficiency among the other tools that have been tested. Based on their perception it has the weighted mean of 2.4 during the time of testing. This implies that the respondents notice that Duplichecker has the higher rates of query other than the tools that had been listed. The advantage of this tool is it allows the endusers to have a maximum of 50 queries per day if they will be registered, where registration is still free. This finding is supported by McCullough (2005) that the efficiency of cross-checking unoriginal text can be done also using search engine like Google, this denotes that the plagiarism detection tool can accept queries as many as users can to extensively verify the textual data for existence or not in any

online database or open access journals which is available in the internet. As he further disclosed that Google search engine is efficient and can be used to verify the unoriginal text in a per sentence manner but would be too rigorous in terms of searching any online sites that would possibly match the given textual data.

### D. Learnability

Among the seven tools, the Plagiarism Checker has the highest weighted mean of 2.3, this perception denotes that the users requires more time to understand and familiarize the interface of each plagiarism tools. This implies that respondents on this study needs to familiarize the user interface of each tool on how to use each part and possibly interpret the results of the plagiarism detection tools test. The respondents' perception may be attributed that due to different designs of each tool, each part has its own purpose on how it could test the textual data for plagiarism.

### Recommended Anti-plagiarism Tool(s)

Based on the criteria used by the respondents during the testing of the free online tools that had been tested, figure below shows its summary. Among the tools used which were free on the internet for detecting plagiarized text on the internet, the Plagiarism Checker has an overall weighted mean of 2.3. This recommendations were based on the cited criteria in which these free and online web-based plagiarism tools were tested, the Plagiarism Checker captured the attention of the respondents which it earned the highest rating among the others. The perception of students on the efficiency of the Plagiarism checker is being supported in their observation that it detects more online sources than what they are expected based on the textual data that were used during the testing. The efficiency of the Plagiarism Checker is supported in the study of Stamatatos (2011) that the most important part of plagiarism detection is that it could detect the exact text passage from any source that can be found online or captures any suspicious between the source and the original passage. According to Chester (2001), the users' first issue in using plagiarism detection system is the ease of use of the software. It had been emphasized that their respondents quickly appreciate its utilization if they could use it with minimal supervision for them to check their own work. Since the plagiarism Checker is an online web-based services, any client can use it to check his own literary works anytime he wants and make the necessary corrections.

The utilization of these tools were mostly online in nature in which the users

should have an internet connection to interact with the general user interface of these tools to detect plagiarized text from the source. The automatic detection method for the plagiarized text from the source enables the user to easily interact and pinpoint what parts of the source text had been copied from any source that is available on the internet. Each of the listed online plagiarism tools has its own constraints or weaknesses in detecting plagiarized text. These constraints serve as the user's basis to weight the efficacy of these tools. These also represent the features in each tool in the process of detecting plagiarized text based from the source. The summary of a comparison of other tools for detecting plagiarism is shown below for the purpose of alternative usage.

Thus, the Plagiarism Checker has the highest overall weighted mean based on the respondents' perception; this tool will be recommended most. However, since the nature of these tools was mostly online, there will be such times that due to bandwidth degradation its operation can also be limited. Therefore, the Plagiarism Detector and Check for Plagiarism Tools can be used alternatively.

Table 2. Comparison of free software/online services for plagiarism detection

Name	Source website	Туре	Method	Constraints
The Plagiarism Checker	http://www.dust- ball.com/cs/pla- giarism.checker/	Online	Automatic	<ul> <li>Copy-paste method for textual data input</li> <li>File uploads for detection are permitted for paid sub- scriber only</li> </ul>
Plagiarism De- tection on the Internet	Http://www/pla- giariasmchecker. com/	Online	Automatic	<ul> <li>No file upload for detection contents</li> <li>Detection is based on search engines hits and results</li> </ul>
Check for Plagiarism	http://smallseoto- ols.com/plagia- rism-checker/	Online	Automatic	<ul><li>Internal database checking</li><li>Google Search Engine based for external checking</li></ul>
Plag tracker	https://www. plagtracker.com/ report/1ac7d3caf 141d39432976c 6fd7d5e4a0/#	Online	Automatic	<ul> <li>Internal Database Checking</li> <li>File uploads for automatic detection are limited to paid subscriber only.</li> </ul>
PlagScan	http://www. plagscan.com/ seesources/search. php?	Online	Automatic	<ul> <li>Internal Database checking but sufficient enough to locate phrases/words for detection</li> <li>(extended deep search that makes this online detection service remarkable)</li> </ul>

DupliChecker	http://www.du- plichecker.com	Online	Automatic	<ul> <li>Google Search Engine based detection</li> <li>User signup to access un- limited queries</li> </ul>
PaperRater	www.paerrater. com	Online	Automatic	<ul> <li>Search engine-based checking and extends the output to actual site for crossverification</li> <li>Side-by-side comparison is unavailable after the detection process is completed.</li> </ul>

The plagiarism detection tools that were listed in the table above used the automatic detection process. This process allows the user to paste textual data in the designated parts of their home page. The common results in these tools were the phrases and source location of the unoriginal text. Most of the limitations on these tools were the number of words that can be pasted in their designated input area for detecting plagiarized text. However, some of them offered file uploads using the MS-Word format but it is available only on premium users or the results will be processed after several hours or days depending on the number of files uploaded by the other users.

### CONCLUSIONS

There were seven online plagiarism tools that hits on search engines like Google and Yahoo sites: Plagiarism Checker, Plagiarism Detector, Check for Plagiarism, Plag Tracker, Plag Scan, DupliChecker, and PaperRater. Among the seven plagiarism tools that had been tested, the Plagiarism Checker is the easiest tool to learn and more efficient in searching for similar sources for textual data that can be found online. Hence, the ability of the Plagiarism Checker to cross-check the textual data source to internet sources makes its output more reliable that it exists or not. Thus, the tool is far more efficient than the others. The simplicity of the user interface design of the Plagiarism Checker allows the end-users to work on it with minimal supervision. Its ease-of-use offers a greater flexibility to the end-users. The Plagiarism Checker is more robust than the others based on the criteria as perceived by the respondents. This tool has the minimal number of interface for user's needs in detecting plagiarized textual data. Its results on plagiarised text can be easily learned and interpreted.

### TRANSLATIONAL RESEARCH

The nature of free and web-based format of the Plagiarism Checker enables every faculty and student to check their own literary works whether it has the same textual data that had been posted in the internet earlier. Student and some faculty were prone to copy-and-paste type of plagiarism due to a lot of paper works, however, for them to practice an utmost honesty in their academic articles, this tool will be a good start for them to check their work.

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