

Plagiarism: Examination of Conceptual Issues and Evaluation of Research Findings on Using Detection Services

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Abstract

The purpose of this review is to analyze and evaluate the research findings on using Plagiarism Detection Services (PDS) in universities. In order to do that, conceptual issues about plagiarism are examined and the complex nature of plagiarism is discussed. Subsequently, the pragmatic forms of student plagiarism are listed and PDS strategies on detecting plagiarism are accounted briefly. Research findings are categorized into four interconnected areas: (a) effectiveness and efficiency of PDS; (b) university and course context; (c) perceptions and attitudes towards use of PDS from educators; and (d) perceptions and attitudes towards use of PDS from students. Finally, the authors discuss their own perspective on the issue of implementing PDS in various educational contexts.

Keywords: *Plagiarism detection services; Plagiarism forms; Plagiarism prevention; Academic integrity; Perceptions about plagiarism.*

Introduction

A plethora of educational institutions is using Plagiarism Detection Services (PDS), yet their adoption in educational settings is often troublesome. Therefore, this review purports to evaluate the research findings on using PDS in universities. However, prior to that, conceptual issues about plagiarism are examined in order to appreciate the complex nature of plagiarism. The pragmatic forms of potential student plagiarism are then listed, so as to share a clear view of the real-world dimensions of the subject. On the same venue, PDS strategies on detecting plagiarism are accounted briefly. Finally, research findings are analyzed and evaluated discussing the authors' perspective on the issue of implementing PDS in educational contexts.

Conceptual Issues about Plagiarism

Although it is easy to confine plagiarism definition in a few sentences it is rather difficult to share a clear understanding about acceptable and unacceptable practice. Park, for example, summarizes several plagiarism definitions to the 'theft of words or ideas, beyond what would

normally be regarded as general knowledge' (2003, p. 472). While the definition is rather clear and unambiguous, several complications arise as soon as it is applied to real-world settings.

The first problem arises from the breadth of the term; plagiarism covers a wide range of situations 'from sloppy documentation and proof-reading to outright, premeditated fraud' (Wilhoit, 1994 quoted in Park, 2003, p. 475). While it is easy to discriminate a case of wholesale plagiarism as malpractice, we only have a roughly common view about acceptable and unacceptable practice in general. For example, original text should be paraphrased in order to avoid the charge of plagiarism, yet it is unclear how much it should be altered.

Another major issue derives from the fact that ideas are flexible and changeable therefore it is not always easy to credit the author. Firstly, people may 'mistakenly believe that they have produced an idea when in fact they have simply unwittingly retrieved an old, previously encountered idea from memory' (Macrae et al., 1999 quoted in Park, 2003, p. 476). Additionally, according to the definition of plagiarism, "general knowledge" does not need referencing, but there is uncertainty about 'the point at which an idea passes into general knowledge in a way that no longer requires attribution' (Leatherman, 1999 quoted in Park, 2003, p. 475). And to add to the complexity, "general knowledge" is discipline-specific also; information that is common within a discipline might be unknown for an outsider (Yale University, 2009).

Additionally, while plagiarism is about "theft of words or ideas", international students may in fact struggle to compete on an academic level, subsequently developing "patch-writing" strategies in order to enrich their writing (Hayes, 2009). However, this may well be a stage in the process of developing academic writing skills (O'Regan, 2006). Moreover, Yilmaz (2007) argues that borrowing simple sentences should not be seen as plagiarism, while Bouville (2008) concurs that copying some sentences that contain no original idea is of least importance. Finally, plagiarism definitions tend to be abstract and out of context of education; thus where students' assignment is concerned hard effort is needed in order for them to understand how to avoid plagiarism. Indeed, plagiarism definitions, as most term definitions, seek to be as concise and succinct as possible, yet this possibly sacrifices comprehensibility. Burg et al. (2007) in the "Writing with Internet Sources" Harvard Guide for students silently diagnosed this issue and subsequently provided a plagiarism definition directed to educational contexts and a taxonomy of plagiarism instances. Most important, there was a provision in the Guide for supporting understandable examples of the different plagiarism types. Similarly, Park attempted to provide 'a more specifically student-centered definition' as 'the unacknowledged use of someone else's work, usually in coursework, and passing it off as if it were one's own' (2004, p. 292). Nevertheless, there is still a lack in the literature of a student-centered and robust definition based on the pragmatic instances of plagiarism.

To conclude with this short report of conceptual issues about plagiarism we should also bring to the fore the perceptions about plagiarism that direct stakeholders in education, that is students and academics, may have. First of all, most students agree that perceptions of plagiarism are a problem (Evans, 2006). On the other side, there is no consensus about plagiarism issues, such as how much text needs to be copied to be considered plagiarism (Mulcahy & Goodacre, 2004), while Lindsay contends that the conceptual difficulties of defining plagiarism affect the detection of it (2003, cited in Badge & Scott, 2009).

The Pragmatic Forms of Student Plagiarism

Burg et al. (2007) in the "Writing with Internet Sources" Harvard Guide provide a useful taxonomy of plagiarism instances. More specifically, they group instances of plagiarism in two broad types: *wholesale* plagiarism and *mosaic* plagiarism.

- **Wholesale plagiarism.** This is the most 'blatant' type of plagiarism (Braumoeller & Gaines, 2001); the student borrows, steals or purchases material written by someone else and submits it as if it were his/her own.
- **Mosaic plagiarism** comprises three types of plagiarism:
 - **Verbatim plagiarism.** The student copies 'words or phrases' from a source 'without placing the verbatim portions between quotation marks' (Burg et al., 2007, p. 10).
 - **Conceptual plagiarism.** The student incorporates 'facts or distinctive ideas from a source without attribution' (ibid).
 - **Structural plagiarism.** The student adopts the 'original way of approaching a problem or issue' (ibid) from a source without supplying appropriate documentation.

Despite the fact that Burg et al. have structured a vigorous classification, they cautiously eschewed to report the pragmatic instances of plagiarism; in other words how students plagiarize in educational contexts. Conversely, Park (2004) acknowledged the importance of recognizing these behaviors, and subsequently categorized types of plagiarism that a student might engage in as:

1. Collusion, where a group of students secretly collaborate and produce almost identical pieces of work (ibid).
2. Commission of work which is purchased or written from another person, albeit representing it as if it were their own (ibid).
3. Duplication of the same or identical work for more than one course (ibid).
4. Copying or paraphrasing material from a source without appropriate citation (ibid).
5. Submission of another student's work, with or without that student's consent (ibid).

PDS Strategies on Detecting Plagiarism

Although PDS claim that they are able to detect plagiarism, what they actually do is that they detect and indicate non-original text. Indeed, there is no software 'that can distinguish whether a student is being academically dishonest or not' (Ledwith & Rísquez, 2008, p. 372). The vast majority of these tools (e.g., Turnitin, EVE2, Safeassign, Scriptum, etc.) check the content of submitted assignments against various sources (such as essay banks, journal articles, websites, etc.), looking for similarities between strings of text. This is based on the hypothesis that it is unlikely for two writers to use the same sequence of words beyond a certain phrase length (McKeever, 2006). Subsequently, PDS measure the level of similarity between the submitted work and their sources, and produce a report where submissions

above a certain percentage of matching text are flagged (Ledwith & Rísquez, 2008). However, the threshold of matching text is set arbitrarily (Barrett & Malcolm, 2006), while some exploration of the submitted text is still required (Anderson, 2009), and the final judgment whether a student plagiarized or not remains with teachers (Badge, Cann, & Scott, 2007). Some PDS, such as WcopyFind, have more limited scope and check only between peer assignments leaving the internet out of their search, thus focusing only in the detection of collusion among peers. Sophisticated PDS, such as Turnitin and Safeassign, not only check word by word the submitted assignments but they also preserve copies of uploaded texts in a common digital archive.

It is worth to mention that there are few PDS based on different principles for detecting plagiarism. Electronic Feedback Software, for instance, searches for possible collusion between students by measuring the similarity between feedback given to their submitted assignments by the marker. This is based on the assumption that similar work will probably generate similar feedback (McKeever, 2006). Glatt Plagiarism Services operates on a rather extreme cloze procedure relying on the hypothesis that everyone can recall their own writing style if necessary (McKeever, 2006). Students submit their assignments electronically, and subsequently they are asked to provide the words that have been systematically deleted from their assignment. However, we were not able to find any reports on using these PDS; therefore they were consequently excluded from this study.

Evaluation of Research Findings on Using PDS

Unfortunately, the use of PDS in educational contexts is largely unreported. Even more, in the few detailed reports, researchers employed several methods to measure the outcomes (i.e., plagiarism cases), while the PDS used have definitely improved their services and techniques since then. Therefore, it would be of no practical use to make a direct comparison of the measurements. Conversely, the primary focus of this study is on areas that emerge from all reports of using PDS.

In general, research findings fall broadly into four interconnected areas: (a) effectiveness and efficiency of PDS, (b) university and course context, (c) perceptions and attitudes towards use of PDS from educators, and (d) perceptions and attitudes towards use of PDS from students. Below, firstly the findings are analyzed according to these areas and secondly the authors' perspective is discussed.

PDS Effectiveness and Efficiency

PDS were viewed in relation to their effectiveness on reducing plagiarism and their efficiency on accomplishing that.

Firstly, it seems to be clear that the introduction of PDS reduces student plagiarism (e.g., Bilic-Zulle, Azman, Frkovic, & Petrovecki, 2008; Braumoeller & Gaines, 2001; Ledwith & Rasquez, 2008; among others), however we have to consider other parameters upon implementation of PDS. Although they 'appear to provide an objective measure of plagiarism' (Badge & Scott, 2009, p. 5) by measuring overlap between texts, '[t]he use of conventional phrases is not evidence of plagiarism' (Grover, 2003, p. 36). Grover called for a 'quantified definition of

plagiarism' (2003, p. 38) which would facilitate identification of plagiarized texts, though he recognizes that such definition would be subjective and thus problematic. In the same vein, Warn (2006), based on the literature, categorized plagiarism into three broad types and set some quantitative measures in order to facilitate student plagiarism detection and categorization, yet he ultimately recognized that it was difficult to apply the categorization in pragmatic instances of student plagiarism.

Secondly, PDS are neither infallible on detecting plagiarism nor have unlimited searching capacity. Mulcahy and Goodacre (2004) confirmed the assumption that a detection service can detect more plagiarism cases than a marker; yet markers identified some plagiarized papers that slipped from the PDS. Evans (2006) and Carbone (2002) proposed that intuitive Google search is more effective to catch plagiarized text than relying on PDS, since they identified several cases of plagiarism that slipped from the PDS; yet they both did not seem to consider the potential increase of the workload (McKeever, 2006; Mottley, 2004). Woolls (1999) and Bilic-Zulle et al. (2008) acknowledged that they could not detect internet plagiarism when using PDS for collusion detection (i.e., such as WcopyFind). Several other limitations were also documented upon using sophisticated PDS (Atkinson & Yeoh, 2008; Center for educational resources 2006), while Park (2003) exposed a thorny challenge; that of the online paper mills, where students can buy even customized papers. Therefore, the precise implementation of PDS in real-world settings plays a major role in their effectiveness (Badge & Scott, 2009).

PDS were also scrutinized on whether they do things in an "economical" way. Mulcahy and Goodacre (2004) suggest that imposed workload and ease of use of the PDS are important issues. While ease of use did not appear to be a problem, since both students (e.g., in Ledwith & Rísquez, 2008) and staff (e.g., in Atkinson & Yeoh, 2008) are comfortable with manipulating the PDS, there was significant extra workload for staff. Training was often required so as they were able to interpret the reports produced by the PDS, and more time was needed in order to check and confirm the detected cases for plagiarism (Atkinson & Yeoh, 2008; Mulcahy & Goodacre, 2004; Warn, 2006). Nevertheless, reports facilitate the confirmation of "blatant" plagiarism (Evans, 2006; Sutherland-Smith & Carr, 2005), and thus can be used for a plagiarism hearing (Martin, Stubbs, & Troop, 2006).

University and Course Context

University milieu and the specific course context have a strong impact on students' plagiarism and on the implementation of the PDS.

Promoting academic integrity and honor codes prevent students from cheating (Park, 2003). However, even in universities with traditional code of honor it was discovered that some students still cheat, when primitive PDS were employed (Schemo, 2001). From another point of view, Braumoeller and Gaines (2001) argue that it is fundamental to discuss and define with academic authorities the nature of penalties if a plagiarized paper is detected, in order to ensure that the use of PDS will act as an effective deterrent. Contrarily, if university policies are not modified upon the implementation of the PDS then it is possible that some educators will hesitate to report plagiarism due to the irksome procedure that follows (Atkinson & Yeoh, 2008).

Warnings against plagiarism appear to have no significant effect on students (Bilic-Zulle et al., 2008; Braumoeller & Gaines 2001), whereas informing students that PDS will be used in order to track down plagiarized papers prevented students from cheating (Johnson et al., 2004). Indeed, in all cases where students had the chance to resubmit their papers while they were already aware of the penalties, a dramatic drop of non-original text was reported (Barrett & Malcolm, 2006; Bilic-Zulle et al., 2008; Braumoeller & Gaines, 2001; Ledwith & Rasquez, 2008). However, we doubt whether this was also a fruitful learning experience, at least in some cases (e.g., Barrett & Malcolm, 2006; Braumoeller & Gaines, 2001).

Training students about plagiarism through formal lectures appears to be an equally effective way to reduce plagiarism, since very low detection rates of plagiarism were reported in a university where students underwent formal training (Badge et al., 2007). On the same venue, Davis and Carroll (2009, cited in Badge & Scott, 2009) utilized PDS as a purely learning aid to help students improve their writing skills and citation practices without imposing penalties in the first draft submission. The final drafts demonstrated significant reduction in poor writing practices.

Educators' Attitudes and Perceptions towards the Use of PDS

Educators' perceptions towards PDS are the foundation stone for the development of the PDS in educational settings.

Clearly most educators view PDS as a way to detect and deter plagiarism (e.g., Bilic-Zulle et al., 2008; Goddard & Rudzkiy, 2005; Schemo, 2001; Woolls, 1999; etc.) and assure the quality of the grades students receive (e.g., Braumoeller & Gaines, 2001; Savage, 2004; etc.), while some may view PDS as 'purely punitive tool' (Sutherland-Smith & Carr, 2005).

Nevertheless, several educators highlight that PDS should be approached as an aid to a 'positive educational approach to academic honesty, rather than as a quick shortcut to stop plagiarism and cheating' (Ledwith & Rísquez, 2008, p. 383). These educators view PDS as one tool among others used in university to assist students improve their scholarship (e.g., Atkinson & Yeoh, 2008; Mulcahy & Goodacre, 2004; Whittle & Murdoch-Eaton, 2008; etc.), or as part of the educative process (Bretag & Mahmud, 2009; Ledwith & Rísquez, 2008).

Students' Attitudes and Perceptions towards the Use of PDS

The way that students will behave towards PDS implementation is, perhaps, the most crucial part on implementing PDS in educational settings.

Students hold both positive and negative stances on the use of PDS. They believe that using PDS raised their awareness of plagiarism, while it is a practical means to check the originality of their work (Green, Lindemann, Marshall, & Wilkinson, 2005; Ledwith & Rísquez, 2008; Whittle & Murdoch-Eaton, 2008). Additionally, it is broadly recorded that students are positive on the introduction of PDS because they believe that they will block cheaters (e.g., Chester, 2001; Green et al., 2005; Martin et al., 2006; Wojtas, 1999; etc.), and make the assessment results fairer (Mulcahy & Goodacre, 2004). They also ask for a broader use of the PDS in all modules (Chester, 2001; Whittle & Murdoch-Eaton, 2008).

However, students expressed several concerns over the use of PDS. When sophisticated PDS were used and essays were archived in a database external to the university, they felt that their privacy and copyright rights were breached (Mulcahy & Goodacre, 2004; Savage, 2004). They were also concerned that private organizations, such as Turnitin, were making profits through the efforts of students (Fine, 2003; Savage, 2004). Additionally, they felt that by submitting their assignments for scrutiny they assumed guilt and had to prove their innocence (Savage, 2004); yet Evans (2006) claims that if PDS are routinely integrated in assessment procedure then trust will not be undermined. Finally, students expressed anxiety and discomfort for the existence of the PDS, worrying that they would be accused for plagiarism (Green et al., 2005; Mulcahy & Goodacre, 2004; Savage, 2004).

Discussion

Our thesis is that PDS are in general effective and necessary in contemporary educational environments, yet their implementation should not be considered as a panacea against plagiarism. In today's internet world, copying is much easier than before while 'detection is difficult as the potential plagiarist has access to more information sources than any instructor could ever master' (Townley & Parsell, 2004, p. 273). Additionally, students are not always capable to fully understand which practices are acceptable and which are not. Therefore, we believe that if educational institutions employ PDS in seeking only to catch the cheaters, then they will be possibly trapped in a futile cat and mouse game as the cheaters will try to beat the system. Contrarily, educational institutions should adopt a holistic strategy to promote academic integrity. Establishing honor codes is a good measure to prevent students from cheating, yet it should not be assumed that '[students] hold academic honesty policies in as high esteem as we [academics] do' (DeVoss & Rosati, 2002, p. 195). Educators should approach PDS as a tool to initiate class discussion around academic writing and plagiarism. Furthermore, PDS should be integrated in assessment procedure as another educational tool and certainly not as a punitive tool. On the other hand, the majority of students seem to be concerned about the quality of their award. It is essential, therefore, that blatant plagiarism is penalized, and as research has shown, PDS can be very effective in detecting such cases. Finally, students expressed several ethical concerns which should be taken into account by university authorities. We believe that most of their concerns are justified and especially that student assignments should not be stored in commercial digital archives. It seems paradox to promote academic integrity while students' rights might be at risk. Therefore, universities should consider developing their own PDS, rather than relying on commercial ones; even in the expense of effectiveness in detecting plagiarism.

Conclusion

This study aimed to evaluate the research findings on using PDS in educational settings. For that purpose conceptual issues about plagiarism were examined, pragmatic instances of student plagiarism were listed, and the PDS strategies on detecting plagiarism were reported. Finally, in our evaluation analysis, we support the perspective that PDS employment can only have positive outcomes within a multi-facet strategy to promote academic integrity in an educational institution.

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