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University 'Pay-for-grades': the bait and switch search engine optimization strategies of contract cheating websites in the United States

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Abstract

This paper presents the first systematic investigation into the search engine optimization practices of major contract cheating websites in the United States. From a business perspective, visibility in organic search engine results is considered one of the top client recruitment tools. The current understanding of student recruitment strategies by these companies remains largely unexplored in both academic literature and popular press. Replicating the business research practices used in the search engine optimization industry, comprehensive search engine ranking and traffic data was obtained for the 38 largest contract cheating websites in the US. The overall objective was to illuminate the strategies that these companies take to get their services at the top of the search results of as many students as possible – not just the relatively small proportion of students actively cheating. The results show that these companies dominate the search results for not just students searching to cheat, but also for naïve search efforts, when students are simply doing genuine research or classwork. These nefarious companies use highly sophisticated search engine manipulation strategies to bait naïve student searchers onto their sites, thus enabling the potential to switch them to cheaters. Higher education institutions, armed with the specific details provided in this study, can use the strategies outlined in the discussion to directly and negatively impact on the success of these contract cheating services.

Keywords: Search engine optimization, Academic integrity, Contract cheating, Text mining, Plagiarism, Higher education

Introduction

One of the most used problem-solving techniques in the modern world is consulting search engines for answers. Search engines have become such an ingrained habit that the 6th most searched word on Google is 'Google' (Soulo 2020). As a function of this reliance, search engines play a significant role in any businesses that have web presence (Hernández et al. 2009). Striving to rank above the competition for search queries related to a business is a never-ending battle, fought by both small and large enterprises (Aswani et al. 2018).

This competitive battle is refered to as Search Engine Optimization (SEO). This term captures both the marketing technique itself and the industry built around it. Appearing as high as possible in search results is vital for brand awareness (Dou et al. 2010) and a powerful signal of legitimacy or credibility (Haas & Unkel 2017). Rangaswamy et al. (2009) note that being the first ranked result is one of the best ways to recruit customers online.

Search engines are ingrained into the study and research process of students. Weber et al. (2019) report more than 75% of undergraduate students surveyed use Google – more than Wikipedia, physical or online library catalogs, or academic journal databases. It therefore stands to reason that companies with services that would be helpful for these student learning activities would benefit from search prominence. One such service industry are the companies that complete assessments on behalf of students, usually for a financial return – typically referred to as 'contract cheating' companies (Clarke & Lancaster. 2006). Recent research has demonstrated that contract cheating websites (henceforth referred to as CCWs) feature in the organic (unpaid) search engine results for search terms directly and closely related to this form of academic misconduct. For instance, both Lancaster (2020) and Rowland et al. (2018) profiled search terms such as 'write assignment for me' or 'business essay' – finding that most search engine results for these searches were CCWs.

Students who are actively looking, and potentially searching, to cheat in such a way are likely the minority. Both Bretag et al. (2.2% of 14,056 undergraduates; 2019) and Curtis and Tremayne (3.5% of 1099 undergraduates; 2021) report low numbers of Australian students who had illicitly obtained an assignment for submission. Similar numbers are reported in Czechia (7.6%; Foltynek & Kralikova, 2018) and Iran (7.9% Masters-level; Zafarghandi et al. 2012) Even if self-reports of student misconduct are thought to be historically underreported (Curtis & Clare 2017), this is still a small proportion of students– though recently modest growth in these proportions have been reported (e.g. Curtis & Tremayne 2021). Similarly, from a search engine strategy perspective, the 'cheating' search terms are relatively few in number – a minimal and scarce resource—and only a handful of CCWs can rank highly on those competitive searches. However, within the majority of the 'non-cheaters' market segment there is a significant growth opportunity for contract cheating companies. For instance, a series of choice experiments found that up to half of the surveyed UK students would buy a contracted paper under the right circumstances (Rigby et al. 2015). Similarly, Rowland et al. (2018) described the 'vulnerable student' as one who did not set out to cheat but was induced to by various sales and marketing techniques. If CCWs can lure these students onto their sites with legitimate useful content that shows up in their assignment research, then it allows them to use these sales techniques to convert them into clients for their illicit service (termed bait-and-switch marketing (Lazear 1995). What is currently unknown is whether CCWs in fact do infiltrate the search engine results of the more naïve 'vulnerable' student, and if so, how? This research explores this topic and its considerable implications for both individual educators and institutional policy.

Research objectives and questions

The overall theme of this study was to explore the organic search engine marketing strategy of CCWs in the United States (US). The end objective was to identify the search terms that lead students to these websites and reverse-engineer the search engine optimization strategies from these search terms. Thus, enabling actionable policy to

combat these strategies. This objective was operationalized by investigating the following research areas:

1. Investigating the depth of search term coverage by answering the question: From which search terms does this set of CCWs derive most of their organic search traffic?
2. Mapping the breadth of search term coverage by answering the question: How many search terms, and for which overall topics, do these CCWs have the first ranked search engine position?

This study employed the same data-gathering method that these search engine professionals use when engaging in measuring and optimizing their search marketing activities. Specifically, the market-leading SEO research tool (SEMRush) was used to capture the required data over the calendar year 2019 within the United States search database.

Background

This section is organized into two parts. First, it provides a brief overview of contract cheating as a form of academic misconduct – and research into how these services are marketed to prospective students. Second, the technique of search engine optimization is explained while advancing discussion on the current state of SEO research within a contract cheating context.

Contract cheating

Contract cheating is defined as compensating any third party for the production of assessed work and then submitting it as one's own (Clarke & Lancaster 2006). This might involve written assignments, presentation decks, and even sitting of actual examinations (Bretag et al. 2019; Lancaster & Clarke, 2016). Contract cheating services have become increasingly accessible and economically rational to students via several technological developments. For instance, the explosion of secure and encrypted messaging services (e.g., Whatsapp, Signal, and Telegram) allows small scale services and even independent operators to conduct business with relative impunity. On a larger scale, and the focus of this paper, are the sophisticated online businesses that utilize encrypted and anonymous payment and cloud technologies to make contract cheating for students easy and safe (Rowland et al. 2018). The scope of the contract cheating problem is severe enough for some countries, such as Australia, to move to outlaw the practice (Ross, 2019). Suggestions for prevention tactics are varied across the literature, with the most common suggestion being focused on promoting academic integrity and honor codes within the student body as well as varying the types of assignments and assessment contexts (for an in-depth review of integrity approaches see Amigud et al. 2018).

Recently, research into the contract cheating industry has proliferated. Insights into perceptions of the issue among faculty (e.g. Harper et al. 2019) and students (e.g. Bretag et al. 2019), student motivations to contract cheat (e.g. Amigud & Lancaster 2019) economic rationality of this cheating for students (e.g. Rigby et al. 2015), understanding of the consequences (e.g. Yorke et al., 2022), and the business practices of such operations (e.g. Ellis et al. 2018), have all increased the overall understanding of this multifaceted issue. A common theme is that contract cheating ranks as one of the most significant

integrity challenges faced by educators today, with recent research even proposing the use of digital forensics tools employed by law enforcement bodies as a possible solution (Johnson et al. 2022). The next section will illustrate the literature regarding industry marketing practices.

Marketing of contract cheating

There is little research about the marketing strategies of contract cheating companies. In terms of converting prospective customers to paying customers, three recent studies (Medway et al. 2018; Rowland et al. 2018; Sutherland-Smith & Dullaghan 2019) examined the persuasion techniques used in the landing-page text of prominent CCWs once the student arrives on the site. Each study found variations of messages around expertise, reliability, quality, value, and empathy—with a focus on reducing perceived risk. Sutherland-Smith and Dullaghan (2019) also noted that these services employ aggressive after-contact sales tactics.

Even less is known about how prospective clients find these sites in the first place. Amigud (2019) found that CCWs on Twitter (as well as independent operators) use various combinations of reply-bots and human interaction to target user Tweets containing specific keywords such as 'assignment due' or 'write essay'. This deliberate push sales technique results in finding potentially naïve students (posting about an essay in general) and those who are actively looking to cheat. Similar explorations of push marketing have been conducted by Kaktiņš (2018) and Lancaster (2019).

To-date one of the dominant marketing techniques to create awareness and thus, new customers has been largely overlooked: being visible to potential clients on search engines such as Google and Bing. This specifically relates to the practice (and indeed industry) of SEO. The remainder of this background section will introduce the basics of SEO and contextualize the practice of CCWs.

Search Engine Optimization (SEO)

Given that the most common way that individuals gather information is currently via search engines (Berman & Katona 2013), it is important for CCWs to be visible to prospective clients on these sites. Search engines offer two avenues to consumers, paid search advertising (SEA) and organic search results (which usually are regular website links but could also include map packs, image results, or video). On any given Search Engine Results Page (known in the industry as a SERP), one is likely to find a mix of these strategies. In general, the higher on the SERP a link is, the more likely that the searcher will click on the link to that page (Berman & Katona 2013).

Search engines have been known to restrict SEA for CCWs in some countries (Amigud 2020). Currently, no such restrictions exist when it comes to appearing organically. The distinction is that a company cannot directly pay a search engine to rank higher organically. Instead, this is achieved by a wide array of best practices that fall under the umbrella of SEO. These practices create the two main components of SEO: off-site and on-site. Off-site involves obtaining links to a focal page *from* other websites. These links act as signals to search engines that a site is a part of the knowledge network. However, this research focuses exclusively on the on-site practices of CCWs. On-site SEO focuses on the creation and technical optimization of keyword or 'search term' relevant content

(such a blog posts) that search engines can identify as a good fit for the user's search query. For example, if a company wanted to rank on the search term 'argumentative essay topics' a keyword optimized blog post about 100 argumentative essay topics would potentially rank highly on the SERP.

The current body of knowledge related to the search engine activities and presence of CCWs is limited – and are often overlooked as a marketing practice. For instance, Medway et al. (2018) used Google with the search terms 'essay writing services UK' and 'essay writing help UK' to identify the five focal websites for their investigation into the sales practices of CCWs. However, they did not include the SERP data in their subsequent analyses. Only two studies have made a systematic examination of the organic search engine rankings of CCWs. Firstly, Rowland et al. (2018) identified the top 25 search engine ranked CCWs in Australia as part of their study into the persuasive on-site marketing techniques. The identification was made by entering three search terms explicitly related to contract cheating (buy university assignment', 'write assignment for me', and 'purchase university assignment') across four search engines. Similarly, Lancaster (2020) conducted an exploratory study of the types of websites that rank in the top ten on the UK Google SERP on 19 discipline-specific search terms that are contract cheating adjacent such as 'nursing essay', finding that 39.5% of the search results belonged to CCWs.

Both papers worked from the assumption that the terms used by students and targeted by CCWs are known a priori. The main objective of this research is to identify the full spectrum of terms from which CCWs receive traffic. In addition, SERPs fluctuate over time and per user. As stated by Google (2020), 'Information such as your location, past Search history and Search settings all help us to tailor your results to what is most useful and relevant for you in that moment' (Google.com). These previous studies did basic browser searches on a specific day, with Lancaster (2020) noting the use of a private browser. To create a more robust understanding of this issue, the current study employs the same SEO data gathering techniques, including the industry standard subscription service, used by SEO industry professionals, reducing personalization and seasonality effects in the data.

Methodology

The SEO industry best-practice tool SEMrush.com was used to capture the extensive data required. This tool has over five million end-users, ranging from multinational companies such as Vodafone and Amazon, through to small and medium local businesses (SEMrush, 2020). As per their marketing, the system tracks over 16.4 billion keywords via Google's search results interface with monthly updates. Though other tools are available – SEMrush is the most widely used and has the most extensive database for the information of interest. This data collection method replicated the process of major digital marketing agencies and in-house digital marketers.

The first stage of data collection required the construction of a comprehensive list of CCWs with visibility on Google (all data described is from the US database for the 2019 calendar year). To begin, a simple Google search was done within a private browser in the United States for 'business essay', using the same method as Lancaster (2020). This search produced a SERP from which to begin constructing the database. The first website listed in the organic search was inputted into the SEMrush database to produce an

overview of the organic reach. By exporting the data of the 17,549 organic search competitors attributed to this CCW, it was possible to construct the competitive set. This set was filtered via the SEMrush metric 'competitor relevance' (ratio of how many organic search terms the sites have in common) to ensure that sites such as Wikipedia did not enter the competitive set. This process was replicated iteratively for each CCW added to the list, in descending order of organic traffic – compiling a competitor list. At the 17th iteration (and again the 18th), no new CCWs entered the list. To keep the dataset to a meaningful but still manageable size, an average monthly organic search traffic inclusion criterion was applied. There is no rule of thumb available to judge the meaning of a certain volume of search traffic, however 15,000 visits-per-month is a sizeable amount of traffic. Sites smaller than this are unlikely to have a successful SEO strategy, negating their value to this study. Applying the 15,000 visits-per-month threshold resulted in a total of 38 focal CCWs for investigation. These CCWs accounted for a total of 1.818 million organic site visits in the United States for 2019. The average number of terms that these sites ranked for in the top 100 was 21,686. As at December 2019, the focal CCWs had claimed a total of 10,467 number one rankings for unique search terms on Google (a full organic search profile of these CCWs is shown in Appendix A).

The next stage involved obtaining the database of organic search terms that each of these CCWs ranks for within the top 100 on Google. The information obtained for each CCW included: every top 100 ranked search term; the Google ranking of each search term as at Dec 2019; the specific URL's that ranked for each search term; the estimated monthly search volume (henceforth referred to as 'search volume'); and the estimated monthly organic traffic (henceforth referred to as 'traffic') from each search term. This created a dataset that would enable investigation of the coverage that these CCWs have on Google, across the spectrum of organic search. The dataset supporting the conclusions of this article is available by request to the corresponding author.

Analysis and results

High-volume search term strategies

The first research question explored the high-volume search term strategies used by the focal CCWs. In order to assess both high volume and importance to these specific companies (given there were more than 21,000 search terms per CCW) it was again necessary to use some thresholds for inclusion. Specifically, a) the search term volume was above 6,000 average searches per month for 2019, and b) the 38 examined sites needed to account for more than 15% of the combined estimated monthly traffic for a given term. These thresholds combined allow the inclusion of high-volume terms that were relevant within the focal companies. There was a total of 173 search terms that had a search volume above 6,000. Out of these, 128 fell under the 15% combined traffic threshold, resulting in 44 focal keywords. The top 20 are presented in Table 1, with the remainder shown in Appendix B.

Three experienced academics categorized these search terms into three major categories, 1) contract cheating specific, 2) contract cheating adjacent, and 3) naïve education-related searches. In the contract cheating specific group, the search terms include 'essay writing' and 'write my essay' and CCW brands. Most of the landing pages for these searches are the CCW homepage itself (35 out of 62 instances). This category

Table 1 Top 20 High volume search terms with rankings data and estimated search volume and associated traffic

Keyword	*Ave. Position*	*Ranking Range (# of Domains)*	*Est. Search Vol./ Traffic to CCWs*
essay writing*	8.2	1–20(9)	74,000/66082
informative speech topics	6.0	1–10(7)	40,500/30780
edubirdie*	1.0	1–1(1)	27,100/21680
argumentative essay topics	6.9	1–13(8)	27,100/20920
persuasive speech topics	8.8	4–14(8)	60,500/17362
write my essay*	6.6	1–12(8)	18,100/13629
nacl molar mass	1.0	1–1(1)	27,100/12737
custom writing*	1.5	1–2(2)	14,800/12224
buy essay*	6.8	1–11(8)	14,800/11647
essay format	4.8	1–10(4)	18,100/11584
essay outline	4.0	1–8(4)	14,800/10064
essay help*	5.0	1–9(9)	9900/9504
persuasive essay topics	6.0	1–11(5)	12,100/8675
argumentative essay**	6.3	2–13(4)	33,100/8572
essay writing service*	6.5	1–11(8)	9900/8385
essaypro*	1.0	1–1(1)	9900/7920
persuasive essay**	2.0	1–3(3)	9900/6831
compare and contrast essay**	4.5	1–8(2)	12,100/6050
literary analysis	5.0	1–10(3)	9900/5643
who invented homework	5.0	1–8(3)	9900/5445

*denotes contract cheating specific term; **denotes contract cheating adjacent term; all others are naïve education-related terms

Fig. 1 Screenshot of CCW homepage

accounts for 29.4% of the total captured search volume, and 43.7% of the traffic. Figure 1 is a screenshot of the landing page that greets those who click on the number one ranked result for 'write my essay.' Not unexpectedly, the focal CCWs have a secure grip

on the SERPs for this category. For instance, for the search term 'write my essay,' the focal CCWs account for 8 of the top 12 search positions (including the coveted first position) and 75.3% of the total search volume. In total, the focal CCWs capture 80.8% of the traffic to these searches.

The second group of search terms is similar to those used by Lancaster (2020), in that they are mostly related to searches for particular types of essays. For instance, 'argumentative essay' or 'persuasive essay.' Every landing page from these search terms is framed as an informative blogpost, with zero instances of these search terms leading to a CCW homepage. This category accounts for 14.3% of the total captured search volume, and just 8.6% of the traffic. The focal CCWs have a less dominant position in the SERPs for this category. In total, the focal CCWs capture 32.6% of the traffic to these searches.

The third category is those search terms that were not directly related to contract cheating search terms – termed *naïve searches*. The majority of these are somewhat general and likely used at the very beginning of an assignment. Again, 100% of these search terms lead to a content blog post. Most have a variation on the themes of 'topics' and 'outlines,' suggesting that they are done by students not sure where or how to start their assignment. This category accounts for 56.3% of the total captured search volume, and 47.7% of the traffic. The focal CCWs have a strong position in the SERPs for this category. In total, the focal CCWs capture 46.0% of the traffic to these searches.

This section explored only the 44 highest volume search terms. However, across the 38 CCWs in this research, the number one ranking position is claimed for over ten thousand unique search terms. The next section explores this set of search terms.

Breadth of search coverage

The second research question focused on the unique search terms for which one of the CCWs in this study had claimed the number one search result. The types of search terms ranged from predictably similar to the search terms from Table 1 through to some more unexpected results. For instance, similar searches to 'write my essay' (from Table 1) included lower volume, more specific searches such as 'how can I pay someone to write my essay' and 'write my essay for me cheap.' However, within the ten thousand plus unique searches are many more obscure searches: 'famous funny quotes about education' and 'Star Wars goals.'

Several challenges had to be overcome to extract meaningful and replicable insights from this dataset. The first was the high volume (10,467) of search terms. Traditional manual content analysis would unreasonably limit the replicability of this study. Relatedly, with the high velocity of data created in this area (for instance, the number one rankings change month to month), it was vital to use an information processing technique that could be replicated consistently and in a timely fashion. The second challenge with this data was the variety within the search terms, both in terms of search term length and content. A primary aspect of this is that the search term length varied from one (0.3% of the total terms) to ten words, with an average term length of 4.82 words (SD = 1.82). This effectively eliminates traditional bag-of-words text processing techniques such as linguistic word counts.

These challenges were addressed by combining text mining with manual coding. Text mining automatically, and at a large scale, extract patterns, trends, and groups within

varied textual data (He et al., 2015). There are a variety of techniques within this developing field. Best suited to the challenges above and objectives of this research question is the computation technique Automated Phrase Mining (AutoPhrase) developed by Shang et al., (2018). This technique has several unique advantages (see Yun et al. 2020a, b for a full review). Briefly, these include 1) being domain- and context-independent, 2) the ability to weight quality phrases over others, and 3) being capable of handling undefined and varying phrase lengths. The technical and coding requirements to implement this technique are significant.

The AutoPhrase application hosted within a graphical user interface on the Social Media Macroscope (Wang et al., 2019; Yun et al., 2020b) was used to analyze the 10,467 search terms. A minimum phrase occurrence of 30 was applied to filter out some of the noise, at the suggestion of the AutoPhrase guide. Autophrase appends a phrase quality index to each extracted phrase. Though there is no established rule of thumb for how to use the Quality Score output, it appeared that the quality of extracted phrases dropped off markedly below the 0.1 point – thus 0.1 was used as the minimum threshold for inclusion. This resulted in 52 extracted phrases (the top 20 are presented in Table 2, the remainder in Appendix C) that account for 48.6% of the total set. Each search term within each extracted phrase set was then manually coded into the same three categories as the previous research question.

The largest phrase group with a majority of contract cheating specific terms was 'write my' (128 searches; 92.2% explicitly contract cheating), containing search terms such as 'write my paper for me free' and 'hire someone to write my thesis. Similarly, 'writing service/s' (108; 98%), 'do my' (72; 93.1%), 'term papers' (85; 56.5%), and 'assignment help' (69; 98.6%) were all major phase groups with a majority of search terms being contract cheating specific. Based on the extracted phrases – only 742 (14.6%) of the individual search terms in these phrase groups were attributable to seeking CCW services. In the contract cheating adjacent category, the largest phrase group was 'essay examples' (104; 81.7%). Similarly, 'thesis statement' (66; 78.8%), 'case study' (61, 63.9%), 'descriptive essay' (61, 57.4%), and 'expository essay' (44, 52.3%) were all major phase groups related to CCW adjacent searches. Based on the extracted phrases – only 856 (16.8%) of the grouped search terms were attributable to CCW adjacent searches.

Table 2 Top 20 (of 52) Extracted #1 ranking phrase groups

Focal Phrase	*Number of #1 searches*	*Focal Phrase*	*Number of #1 searches*
research paper	653(16.4/18.4)	compare and contrast	108(20.4/0.9)
how to write (a/an)	486(0/0.2)	writing service/s	108(98.1/0)
essay topic/s	485(0.2/0)	essay examples	104(2.9/81.7)
argumentative essay	262(6.5/43.9)	high school	104(6.7/19.2)
paper topics	179(0/0)	about yourself	96(2.1/42.7)
persuasive essay	162(1.9/40.1)	book report	87(16.1/32.2)
research topics	150(0/0)	cause and effect	86(0/36)
how to start	129(0/0)	term paper/s	85(56.5/12.9)
write my	128(92.2/0)	for college students	79(2.5/7.6)
essay outline	121(1.7/0)	do my	72(93.1/0)

The figures in brackets are first the percentage of search terms contract cheating specific, and second, the percentage of search terms contract cheating adjacent

The bulk of these search terms fell into the naïve searching category (3,484; 68.6%). The largest phrase group in the naïve category was 'research paper' (653; 65.2%). Other large groups included 'how to write a/an' (486; 99.8), 'essay topics' (485; 99.8%), and 'paper topics' (179; 100%). A common theme was clear when examining the totality of the phrase groups in this category. Many phrase groups are likely to be searched at the beginning of the assessment process. For instance, many groups contained the word 'topic,' which would be expected to be searched at the beginning of a project. Similarly, 'how to write a/an,' 'how to start,' 'essay outline,' 'research proposal,' how to make,' 'how do you,' and 'research questions' are indicative of searches before making major progress. The is also a considerable coverage around high school searchers. Phrases such as 'high school,' 'topics for high school,' and 'book report' have a distinct high school focus.

Discussion

This section explores the themes uncovered in the previous section and presents the strategies used by CCWs to be discoverable by potential clients on search engines. In addition to these strategies, the potential risk to naïve searchers is discussed, with recommendations as to how educators and educational institutions can mitigate the harm and combat these strategies.

The results of this study demonstrate two major search targeting strategies designed to capture three different target markets. The first was targeting searchers actively looking to cheat. This involved targeting search terms closely related to the very concept of contract cheating, such as the high-volume terms 'write my essay,' 'buy essay,' 'essay writing service,' and even the brand name of a large service provider *(Edubirdie).* For instance, 'buy essay' shows that CCWs have 8 of the top 11 SERP spots and account for almost 80% of the organic traffic for that search. This was extended even further, looking at the types of search terms for which the CCWs had taken the number one ranking position. Although these searches made up a high proportion in the high-volume terms, there was much less breadth when examining the number one ranked terms. The student searchers using these terms are likely ready to cheat, and quite possibly just looking for options. The CCWs in this research unsurprisingly dominate these searches – it is their core business. In sum, when a searcher wants to find someone to do their assessments for them, they will find these sites with a single search. The same results pattern was found for the contract cheating adjacent search terms, in line with Lancaster's results (2020).

It is the second strategy targeting naive searches, termed here the 'bait-and-switch strategy' that is of most significant concern from an academic integrity point of view. Throughout this analysis of the search terms targeted by CCWs, it has been demonstrated that a lot of the search traffic to these sites comes from 'naïve' searches. This was especially prevalent when considering the breadth of coverage across top rankings. A simple walk-through of the process demonstrates how effective this bait-and-switch strategy could be. For instance, an undergraduate psychology student is asked to come up with a research topic for a project. Habitually this student, goes to Google as the first point of call. After typing in 'psychology research topics,' the first result is for a blog post titled '108 Psychology Research Paper Topics' – this is the bait. This link appears to be an excellent fit for the searcher. After clicking the link, the student is shown the landing

page in Fig. 2 (as at June 25th, 2020). The page does list 108 research paper topics – but the blatant sales and marketing push for contract cheating services overwhelms the page, including discount offers, free sample reports, a live chat box, and a price calculator – all above the fold on the page. This is the switch. Many of the persuasive tactics found by Rowland et al. (2018) are present. Importantly, none of this means that the student will cheat, but it does put the temptation in front of them. The first stage in the marketing process is awareness – and this has now been achieved, in a particularly unethical way.

At the operational level, the results show that CCWs take two complementary approaches to capture as much of their target markets as possible. The first is by dominating the SERPs for high-volume search terms used by their two target markets. The data outlined in Table 1 demonstrated that for some significant, non-CCW related, searches there is almost no way for students to avoid these sites on the first SERP. The second is by blanketing across the broadest number of contract cheating (and adjacent) and naïve searches possible – regardless of volume. Just the 38 CCWs analyzed in this paper had claimed over ten thousand number one ranking spots. Although the vast majority of these were small in terms of average monthly search volume (with many between just 50 and 20 searches per month), it is still an effective tactic at a high enough scale. This is also a resource-efficient tactic – with an overall average of 3.4 number one search terms for every unique URL.

One of the biggest challenges facing CCWs is perceived legitimacy. This was noted by Amigud (2020, p. 702) in a discussion around social media marketing for CCWs '*there is no assurance that any work will be done after students remitted the payment, let alone that the contractor will remain in business to provide assistance for the rest of the*

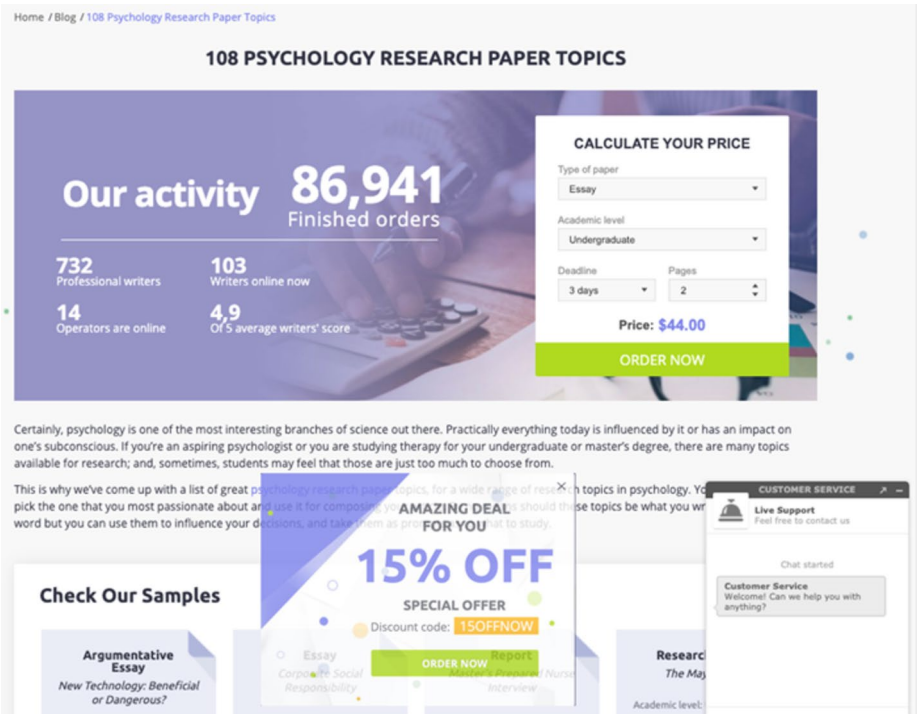

Fig. 2 Screenshot of a bait-and-switch blog post

semester'. Unfortunately for educators, CCWs have a powerful credibility ally in Google, Bing, and other search engines. Research has consistently shown that ranking first (or higher than other options) is a powerful signal of attribute credibility and trust (e.g., Hargittai et al. 2010). For instance, Pan et al. (2007) demonstrated that Google's positioning of a website outweighed their subject's own rational evaluation of the provided alternatives. A more recent experimental investigation by Haas and Unkel (2017) found that users' propensity to select the first ranked result was stronger than the perceived credibility of the source itself. Thus, the first-placed search results assessed in this study act as ten thousand plus signals of credibility and legitimacy for CCWs.

Implications

The use of SEO tactics and strategies by CCWs is just one part of their overall digital marketing strategy. These sites also employ strategies such as (but not limited to) social media outreach (e.g. Amigud 2020; Lancaster 2019), paid search marketing (e.g. Rowland et al. 2018), instant messaging services such as Whatsapp and Signal, as well as paid social media promotion. However, the overall takeaway from this study is that CCWs are incredibly sophisticated in their approach to SEO and even more committed. Most importantly, their use of the bait-and-switch marketing tactic means that they do not rely on students who are actively researching cheating methods to get people onto their websites, far from it. This means that academic integrity offices and higher education institutions are at a massive disadvantage. It appears that CCWs are running (or outsourcing) highly skilled professional SEO operations, at a far more sophisticated level than higher education institutions do for their products, let alone their academic integrity offices. This trend is likely to continue unless interventions are staged both within individual institutions to mitigate the harm, and for the community at large to make a significant negative impact on the SEO plans of CCWs.

At the top level, academic community perspective, there is a potentially very impactful strategic option that university academic integrity offices could employ to benefit the greater good. Specifically, targeting the high-volume naïve search terms from Table 1 with University blogs and content pages. This is perhaps the essential move to make in protecting students from these bait-and-switch tactics. University domains are usually very high authority within search networks. That means that pages on these domains tend to outrank other similar pages more efficiently. To illustrate, the SEMrush Domain Authority of five prestigious universities from different parts of the world are: *University of Melbourne* (Domain Authority = 75), *University of Toronto* (78), *University of Kassel* (71), *Dublin City University* (68), and *Tsinghua University* (75). Compared to the top five CCWs from this research *€dubirdi€* (61), *ju$tbuy€$$ay* (53), *pap€r$owl* (51), *grad€min€r$* (71), and *bid4pap€r$* (50). The university websites hold the advantage. Employing even basic on-site and off-site tactics would bear fruit to this strategy, without the need to hire an SEO agency. In fact, many universities would have digital marketing courses that could use this as a class exercise. If multiple universities put effort into creating content to displace the CCWs content from high volume searches, a significant blow could be dealt to the business of contract cheating both in the US and globally.

In a more obstructionist vein, there are relatively simple fixes that individual institutions could make – primarily designed to protect the naïve searcher from these bait-and-switch blog posts. Potentially the most impactful would be to block access to the offending

domains within the on-campus computer network. This research demonstrated a clear and simple procedure for identifying large CCWs in a particular country. Ideally, these blocked sites would redirect to a writing resources page – or even an explainer about why the site was blocked (Seeland et al. 2020), and the dangers of using these services. Recent findings by Yorke et al. (2022) for instance found that making students aware of blackmail potential reduced the likelihood of contract cheating by half. Of course, this would do little to deter the determined cheater, as there are myriad ways to access these sites avoiding campus Internet. However, it may even slightly put doubt in their mind, which is a positive.

Conclusion

This study makes two significant contributions to our understanding of the digital marketing practices of CCWs. First, this study extends the current understanding of the search term targeting strategies of CCWs in the United States. The uncovering of the extensive use of bait-and-switch marketing (luring customers with legitimate content to sell them illicit services) is a potentially game-changing discovery in the efforts to mitigate the reach and thereat of CCWs. The associated limitation in this research is that SEMrush is just one of many SEO-research tools available. At the time of writing, it has the most extensive search term database, but the figures in this research are likely underreported. Future research could use different database tools and even compare and contrast the results of these tools. There is also significant research opportunity expanding this research to countries outside of the United States.

Second, by explicitly profiling the search terms and common phrases targeted within these strategies, this research provides a straightforward road map for actively combatting these strategies. Like the Twitter accounts profiled by Amigud (2020), these sites are well ahead of universities and other educational institutions in terms of marketing sophistication. Researching the knowledge and attitudes of university administrators regarding search engine optimization would help identify the expertise gaps that are impediments to progress.

Additionally, the data collection and unique search term analysis technique (phrase mining combined with manual coding) used in this study is designed to be both rigorous and directly repeatable longitudinally and across different country contexts. The downside to this strategy is that there is a massive amount of data, and no established rules of thumb as to what volume of search terms is meaningful, or how many terms to include in an analysis. Within the method section there are several thresholds applied to the data that do not have the rigorous justification that is ideal in scientific research. As research in this area continues these rules of thumb should become more established.

One of the major positives of this approach, however, is that any interested academic integrity officer would be able to replicate this research within their specific context and enact mitigation strategies based upon their results. This is important because SERPs are country-specific, so what applies in this US context may not be universal. Indeed – in such a rapidly changing environment (Google algorithms are updated regularly), it might be necessary to revisit this over time regardless of country. This is a clear limitation in this study – it is challenging to stay up to date. Future research should examine similar strategies in countries outside of the US. Also, research that examines how students react to these search results, and the resultant landing pages would be valuable.

Appendix A: Organic search profile of the top CCWs

Domain	Organic Search Terms	Organic Traffic	# ranked 1	Unique URLS	# ranked 2–3
€dubirdi€ dot com	50,139	244,476	1,501	139	2,182
ju$tbuy€$$ay dot com	22,129	121,020	706	27	687
pap€r$owl dot com	34,302	114,508	535	85	1,308
grad€min€r$ dot com	39,593	114,043	481	100	670
bid4pap€r$ dot com	12,941	91,894	325	21	440
$tudymoo$€ dot com	99,363	70,796	1,114	848	1,307
payfor€$$ay dot n€t	18,466	70,002	97	10	348
grad€$fix€r dot com	104,165	65,226	1,057	639	865
writ€my€$$ay4m€ dot org	20,797	61,885	285	25	822
cu$tom-writing dot org	34,928	57,005	399	73	767
€lit€€$$aywrit€r$ dot com	34,224	55,312	154	41	561
€$$ay$hark dot com	31,402	54,999	525	144	770
$am€day€$$ay dot com	3,371	48,458	9	3	26
$tudybay dot com	19,649	48,412	83	28	86
€du$$on dot com	23,153	44,269	399	50	617
€$$aytig€r$ dot com	11,259	40,083	244	36	322
€$$ayclick dot n€t	14,449	38,749	225	29	475
cu$tomwriting$ dot com	14,078	31,829	199	89	138
€$$aypro dot com	8,767	31,017	73	24	269
acad€miz€d dot com	5,578	30,517	329	80	437
pro-€$$ay-writ€r dot com	12,075	30,269	89	12	534
mya$$ignm€nth€lp dot com	29,129	28,958	362	219	803
coll€g€-hom€work-h€lp dot org	10,732	28,636	82	14	271
king€$$ay$ dot com	8,601	26,612	40	11	175
chi€f€$$ay$ dot n€t	16,394	24,266	17	7	226
€$$aydragon dot com	8,313	22,869	65	9	215
affordabl€-pap€r$ dot n€t	7,322	22,511	8	2	45
b€tcutomwriting dot com	14,975	21,626	158	42	291
ultiu$ dot com	21,502	20,689	147	95	328
€$$ay-lib dot com	11,065	19,766	90	15	130
writ€mypap€r4m€ dot org	14,372	19,101	40	12	157
wi$€€$$ay$ dot com	8,142	18,783	96	29	337
ma$t€rpap€r$ dot com	19,373	17,977	40	8	117
ju$tdomyhom€work dot com	8,560	17,953	138	17	297
b€$t€$$aytip$ dot com	9,010	16,858	82	13	105
writ€mypap€r$ dot org	12,695	15,777	239	76	374
writingb€€ dot com	4,104	15,610	23	5	48
pap€rnow dot org	4,962	15,487	11	3	37

In order to ensure that this paper does not add to the visibility of these sites, each occurrence of the letter "s" has been replaced with the symbol "$" and each occurrence of the letter "e" has been replaced with the symbol "€". These symbols will obscure the brand names from appearing in any searches. The choice of currency symbols was purposeful.

Appendix B: 21st through 44th high volume search terms with rankings data and estimated search volume and associated traffic

Search term	*Ave. Position*	*Ranking Range (# of Domains)*	*Est. Search Vol./ Traffic to CCWs*
write an essay for me[a]	4.2	1–7(6)	6,600/5,346
argumentative essay outline	7.3	1–11(6)	8,100/5,321
argumentative topics	4.2	1–7(5)	6,600/4,752
research paper outline	4.5	2–9(4)	14,800/4,736
rhetorical analysis	4.0	2–7(3)	18,100/4,706
what is a claim	1.0	1–1(1)	9,900/4,653
research paper topics	6.0	3–10(4)	18,100/4,163
rhetorical analysis essay[b]	3.3	1–6(3)	6,600/4,026
essay topics	5.7	1–11(3)	6,600/3,742
concluding sentence	5.0	1–9(3)	6,600/3,635
how to start an essay	6.8	3–11(5)	9,900/2,742
research topics	7.4	2–11(5)	9,900/2,742
expository essay[b]	6.7	3–11(3)	12,100/2,262
narrative essay[b]	6.3	4–9(3)	14,800/2,220
buy essay online[a]	6.2	2–11(5)	6,600/2,092
Precis	5.3	2–8(3)	9,900/2,079
write my papera	6.6	4–11(5)	6,600/1,696
conclusion examples	3.7	2–5(3)	6,600/1,650
thesis generator[b]	5.7	3–10(3)	8,100/1,539
topic sentence examples	2.5	2–3(2)	6,600/1,452
types of essay	4.3	3–6(3)	6,600/1,386
how to write an argumentative essay	6.3	3–10(3)	8,100/1,377
informative speech	5.0	3–7(3)	6,600/1,188
speech topics	5.7	4–7(3)	6,600/1,056

[a] denotes 'Contract Cheating Specific' search terms

[b] denotes "Contract Cheating Adjacent" search terms.

Appendix C: 21st through 53rd Extracted #1 ranking phrase groups.

Focal Phrase	*Number of #1 searches*	*Focal Phrase*	*Number of #1 searches*
assignment help	69(98.6/0)	narrative essay	38(18.4/34.2)
thesis statement	66(19.7/78.8)	criminal justice	37(0/24.3)
research proposal	62(14.5/12.9)	research questions	37(0/0)
case study	61(29.5/63.9)	help with	36(91.7/0)
descriptive essay	61(4.9/57.4)	social media	36(0/88.9)
assignment help	69(98.6/0)	critical analysis	35(2.9/40.0)
persuasive speech	56(3.6/46.4)	start an essay	35(0/0)
topic ideas	55(0/0)	argument topics	34(0/0)
how to make	54(5.6/0)	capstone project	34(8.8/17.6)
lab report	52(15.4/25.0)	dissertation topics	34(0/0)
how do you	51(2.0/5.9)	literary analysis	34(0/14.7)
rhetorical analysis	50(2.0/18.0)	paper for plagiarism	34(0/0)
expository essay	44(0/52.3)	pay someone to	33(100.0/0)
topics to write about	44(0/0)	plagiarism checker	33(0/0)
ways to	42(42.9/0)	disadvantages of	31(0/74.2)
thesis topics	40(0/0)	is plagiarized	31(0/0)
about myself	39(5.1/56.4)		

The figures in brackets are first the percentage of search terms contract cheating specific, and second, the percentage of search terms contract cheating adjacent.

Abbreviations

SEO Search Engine Optimization
CCW Contract Cheating Website
URL Uniform Resource Locator

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References

Amigud A (2020) Cheaters on twitter: an analysis of engagement approaches of contract cheating services. Stud High Educ 45(3):692–705. https://doi.org/10.1080/03075079.2018.1564258
Amigud A, Lancaster T (2019) 246 Reasons to cheat: an analysis of students' reasons for seeking to outsource academic work. Computers Educ 134:98–107. https://doi.org/10.1016/j.compedu.2019.01.017
Amigud A, Arnedo-Moreno J, Daradoumis T, Guerrero-Roldan A-E (2018) An integrative review of security and integrity strategies in an academic environment: current understanding and emerging perspectives. Com Sec 76:50–70. https://doi.org/10.1016/j.cose.2018.02.021

Aswani R, Kar AK, Ilavarasan PV, Dwivedi YK (2018) Search engine marketing is not all gold: Insights from Twitter and SEOClerks. Int J Inf Manage 38(1):107–116. https://doi.org/10.1016/j.ijinfomgt.2017.07.005
Berman R, Katona Z (2013) The role of search engine optimization in search marketing. Mark Sci 32(4):644–651. https://doi.org/10.1287/mksc.2013.0783
Bretag T, Harper R, Burton M, Ellis C, Newton P, Rozenberg P, Saddiqui S, van Haeringen K (2019) Contract cheating: a survey of Australian University Students. Stud High Educ 44(11):1837–1856. https://doi.org/10.1080/03075079.2018.1462788
Clarke, R., & Lancaster, T. (2006). Eliminating the Successor to Plagiarism? Identifying the Usage of Contract Cheating Sites. Paper presented at the Second International Plagiarism: Prevention, Practice and Policy Conference, Newcastle, June 19–21.
Curtis GJ, Clare J (2017) How prevalent is contract cheating and to what extent are students repeat offenders? Journal of Academic Ethics 15(2):115–124. https://doi.org/10.1007/s10805-017-9278-x
Curtis GJ, Tremayne K (2021) Is plagiarism really on the rise? results from four 5-yearly surveys. Stud High Educ 46(9):1816–1826. https://doi.org/10.1080/03075079.2019.1707792
Dou W, Lim KH, Su C, Zhou N, Cui N (2010) Brand positioning strategy using search engine marketing. MIS Q 34(2):261–279. https://doi.org/10.2307/20721427
Ellis C, Zucker IM, Randall D (2018) The Infernal business of contract cheating: understanding the business processes and models of academic custom writing sites. Int J Educ Integr 14(1):1–21. https://doi.org/10.1007/s40979-017-0024-3
Foltýnek T, Králíková V (2018) Analysis of the contract cheating market in Czechia. Int J Educ Integr 14(1):1–15. https://doi.org/10.1007/s40979-018-0027-8
Google. 2020. "How Search Algorithms Work." *Google*, Accessed 23 Jun 2020. https://www.google.com/search/howsearchworks/algorithms
Haas A, Unkel J (2017) Ranking versus reputation: perception and effects of search result credibility. Behav Inform Technol 36(12):1285–1298. https://doi.org/10.1080/0144929X.2017.138116
Hargittai E, Fullerton L, Menchen-Trevino E, Thomas KY (2010) Trust online: young adults' evaluation of web content. Int J Commun 4:468–494
Harper R, Bretag T, Ellis C, Newton P, Rozenberg P, Saddiqui S, van Haeringen K (2019) Contract cheating: a survey of Australian University Staff. Stud High Educ 44(11):1857–1873. https://doi.org/10.1080/03075079.2018.1462789
He W, Wu H, Yan G, Akula V, Shen J (2015). A novel social media competitive analytics framework with sentiment benchmarks. Information & Management 52(7):801–812.
Hernández B, Jiménez J, Martín MJ (2009) Key website factors in e-business strategy. Int J Inf Manage 29(5):362–371
Johnson C, Davies R, Reddy M (2022) Using digital forensics in higher education to detect academic misconduct. Int J Educ Integr 18(1):12. https://doi.org/10.1007/s40979-022-00104-1
Kaktiņš L (2018) Contract cheating advertisements: what they tell us about international students' attitudes to academic integrity. Ethics and Education 13(2):268–284. https://doi.org/10.1080/17449642.2017.1412178
Lancaster T, Clarke R (2016) "Contract Cheating: The Outsourcing of Assessed Student Work." Chapter 44 in Handbook of Academic Integrity, edited by Tracey Bretag, 639-654. Singapore, Springer. https://doi.org/10.1007/978-981-287-079-7_17-1
Lancaster T (2019) Social Media enabled contract cheating. Can Perspect Acad Integ 2(2):7–24. https://doi.org/10.11575/cpai.v2i2.68053
Lancaster T (2020) Academic discipline integration by contract cheating services and essay mills. Journal of Academic Ethics 18:115–127. https://doi.org/10.1007/s10805-019-09357-x
Lazear EP (1995) Bait and switch. J Polit Econ 103(4):813–830. https://doi.org/10.1086/262004
Medway D, Roper S, Gillooly L (2018) Contract cheating in UK Higher education: a covert investigation of essay mills. Br Edu Res J 44(3):393–418. https://doi.org/10.1002/berj.3335
Pan B, Hembrooke H, Joachims T, Lorigo L, Gay G, Granka L (2007) In google we trust: users' decisions on rank, position, and relevance. J Comput-Mediat Commun 12(3):801–823. https://doi.org/10.1111/j.1083-6101.2007.00351.x
Rangaswamy A, Giles CL, Seres S (2009) A strategic perspective on search engines: Thought candies for practitioners and researchers. J Interact Mark 23(1):49–60
Rigby D, Burton M, Balcombe K, Bateman I, Mulatu A (2015) Contract cheating & the market in essays. J Econ Behav Organ 111:23–37. https://doi.org/10.1016/j.jebo.2014.12.019
Ross J (2019) Australia introduces law against contract cheating services. Times Higher Education. Retrieved from https://www.timeshighereducation.com/news/australia-introduces-law-against-contract-cheat
Rowland S, Slade C, Wong K-S, Whiting B (2018) "Just Turn to Us": the persuasive features of contract cheating websites. Assess Eval High Educ 43(4):652–665. https://doi.org/10.1080/02602938.2017.1391948
Seeland J, Stoesz BM, Vogt L (2020) Preventing online shopping for completed assessments: Protecting students by blocking access to contract cheating websites on institutional networks. Canadian Perspect Acad Integ, 3(1), 55–69. https://doi.org/10.11575/cpai.v3i1.70256.
SEMrush. (2020). Where does SEMrush data come from? SEMrush. Retrieved from https://www.semrush.com/kb/998-where-does-semrush-data-come-from
Shang J, Liu J, Jiang M, Ren X, Voss CR, Han J (2018) Automated phrase mining from massive text corpora. IEEE Trans Knowl Data Eng 30(10):1825–1837. https://doi.org/10.1109/TKDE.2018.2812203
Soulo, T. (2020, April 12). Top Google searches (as of 2020). ahrefs. Retrieved from https://ahrefs.com/blog/category/keyword-research
Sutherland-Smith W, Dullaghan K (2019) You don't always get what you pay for: User experiences of engaging with contract cheating sites. Assess Eval High Educ 44(8):1148–1162.https://doi.org/10.1080/02602938.2019.1576028
Wang C, Marini L, Chin CL, Vance N, Donelson C, Meunier P, Yun JT (2019) Social Media Intelligence and Learning Environment: an Open Source Framework for Social Media Data Collection, Analysis and Curation. In 2019 15th International Conference on eScience (eScience) (pp. 252-261). IEEE.

Weber H, Becker D, Hillmert S (2019) Information-seeking behaviour and academic success in higher education: Which search strategies matter for grade differences among university students and how does this relevance differ by field of study? High Educ 77(4):657–678. https://doi.org/10.1007/s10734-018-0296-4

Yorke J, Sefcik L, Veeran-Colton T (2022) Contract cheating and blackmail: a risky business? Stud High Educ 47(1):53–66. https://doi.org/10.1080/03075079.2020.1730313

Yun JT, Duff BRL, Vargas PT, Sundaram H, Himelboim I (2020a) Computationally analyzing social media text for topics: a primer for advertising researchers. J Interact Advert 20(1):47–59. https://doi.org/10.1080/15252019.2019.1700851

Yun JT, Vance N, Wang C, Marini L, Troy J, Donelson C, Chin C-L, Henderson MD (2020b) The social media macroscope: a science gateway for research using social media data. Futur Gener Comput Syst 111:819–828. https://doi.org/10.1016/j.future.2019.10.029

Zafarghandi AM, Khoshroo F, Barkat B (2012) An investigation of Iranian EFL masters students' perceptions of plagiarism. Int J Educ Integr 8(2):69–85. https://doi.org/10.21913/IJEI.v8i2.811

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