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Hidden trap behind the dominance of googling in learning: A study on high school students in Yogyakarta

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Abstract

This study seeks to see how students use search engines in learning and uncover the side effects of googling for students during a pandemic. This study combines a phenomenological approach to explore the condition of students while using a search engine and digital ethnography by looking at historical search data. The researcher conducted interviews with high school students in Yogyakarta from various backgrounds and traced the digital footprint of their search accounts. The research results show that googling for students changes learning activities into searching for information. During the pandemic, googling replaces the role of the teacher and becomes a student's study buddy. Learning becomes an individual activity, "Do It Yourself" becomes a jargon for learning, and the easiest way to learn is to use a search engine. However, googling has hidden dangers that slowly reduce learning abilities, stunting students' critical thinking. Behind the ease of googling, there are side effects of using search engines that are not realized: (1) Googling eliminates long-term memory, (2) makes students indolent to read in-depth, (3) increases academic dishonesty and (4) reduced critical thinking.

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Introduction

The emergence of the internet with unlimited sources of information has undermined the dominance of textbooks and physically documented knowledge. The use of the internet in education started in 1960, at which time the University of Illinois used an intranet for students to share teaching materials online (Tom, 2017), and since then, education has never been separated from the use of internet technology.

Internet technology provides benefits for access to knowledge. According to Park (Dogruer et al., 2011), the advantages of using the internet in education are a repository of information, providing seamless communication, online interactive learning, accessing online/electronic references, and providing an information catalogue. The vast and open nature of the internet allows everyone to provide and access information (Gofron, 2014), resulting in an overflow of information. According to Postman (1992), technology is like a coin with two sides. On the one hand, it becomes a burden, but on the other, it becomes a blessing. Technology becomes a burden when developing technology results in something no longer being done. Technology is a blessing because technology opens up new opportunities.

Booming information makes it difficult for individuals to select. At this point, search engines are present to help find the preferred information. Quoting to Digital Marketing Asia (2022), in 2021, the most frequently used search engine in many countries is Google. In Indonesia, Google penetration reached 97%; the Philippines 95%; Thailand 98%, meaning that in ASEAN countries, Google is very popular and is used by almost all individuals who access the internet.

The existence of search engines (Google) has overturned the old establishment in seeking knowledge. The ability of search engines to browse for information instantly makes it easier for individuals to get the information/knowledge they want. Googling deconstructs the established physical search culture and replaces it with a mechanistic search process. When compared, search engines are stronger in coverage and accessibility, while libraries have an advantage in terms of the quality of results (Brophy & Bauden, 2005).

A search engine (Google) is a mechanistic engine that works by processing information on the network, selecting (indexing) and then ranking them to provide the information that individuals need appropriately (Web, 2015). According to Hillis (Bilic, 2016), the idea of a search engine (Google) is to make the search process according to needs. The closer to the search needs, the better and searching through search engines will provide benefits and make individuals explore more often.

At this point, googling has succeeded in providing convenience in finding information. Behind the efficiency in the search process, googling creates many problems in education. Googling creates a paradox where unwittingly, the ease of getting information experiences bias and manipulation. According to Vaidhyanathan (2011), Google is more to refract than reflect what we think is valid and important. Google filters and focuses questions and searches them in the jungle of digital information and creates the illusion of something relevant, comprehensive and precise. Google creates (manipulates) awareness of information. Googling encourages individuals to think more mechanistically, which suppresses the ability to think critically.

In his book *The Death of Expertise* (2019), Tom Nicols states that the sheer size and volume of the internet and the inability to separate meaningful knowledge from random noise cause good information to be surrounded by bad and strange information. Searching for a search engine is simply an activity of entering a question

into a programmed engine that cannot understand humans. The existence of the internet/googling changed the way of reading, explaining, and even thinking worse than before. Individuals always expect information quickly and have been cut up and presented pleasantly. Reading which is a process of seeking and digging for knowledge, is reduced to a process of seeing at a glance.

The act of seeking knowledge of information makes individuals feel they have learned. Even though they are immersed in much data that is not understood, in this context, technology keeps individuals from implementing real experiences (Lovlie, 2006). Individuals who carry out the search process (googling) feel more aware than individuals who know (experts).

In Indonesia's education systems, searching for information today is vital for developing knowledge. Teaching in schools has been synonymous with physical touch to gather information. Knowledge is obtained from the teacher and reading in the library. The presence of technology changes the building of education. Indonesia's education policy currently emphasizes using information and communication technology to accelerate knowledge. Minister of Education and Culture Regulation No. 22/2016 concerning the standard of primary and secondary education processes regulates the use of information and communication technology to improve the efficiency and effectiveness of learning. Learning is directed to build knowledge which has consequences on teaching. Learners have a more significant proportion of studying independently. The need for information retrieval through technology is the main carrying capacity.

During the pandemic, the use of Google increased significantly. Quoted from Semrush Research (Wearesocial, 2022), Google is the most frequently accessed website and is a gateway for conducting advanced searches. In learning, Google replaces the role of the teacher and becomes the main learning resource. With the various paradoxes accompanying it, this study seeks to uncover the practice of using a search engine (Google) in learning, especially in high school and examine the after-effects of massive use of Google.

Method

This research was conducted on high school students in Yogyakarta, Indonesia. Interviews and digital tracking were conducted with 15 students from various criteria. The informant criteria are based on major, grade, gender, and school origin (public or private school). This study used a phenomenological approach to investigate human experience (Holstein & Gubrium, 2009). The phenomenological approach used in this study tends towards descriptive phenomenological research (FPD), where this version of the study emphasizes describing the experience to the essence of the experience itself (Kahija, 2017). Phenomenology is used in this study to see the experience in the formation of Googling from the student by deepening the activities and experiences of surfing in search of information. In this study, the phenomenological approach was insufficient to reveal the data.

Research on Googling requires understanding the digital world to search for data or information usually searched through search engines. A digital approach/method is needed to explore the data in the history data when individuals search in the digital realm. A digital method approaches the website as data (Rogers, 2015). The digital approach used in this study is more inclined towards digital ethnography. According to Dhiraj Murthy (Pink et al., 2016), digital ethnography is the core of data retrieval methods originating or mediated by computers. In this study, digital ethnography

(sociology) methods are used to see how people use digital equipment at the technical level and in activities. Digital ethnography (sociology) applies social methods to analyze digital social life and looks at the relationship between social life and its analysis related to changes in the context of digitalization.

Data analysis was carried out based on the phenomenological approach developed by Moustakas (2010). First, a phenomenological reduction is carried out by reading the interview transcript repeatedly, aligning data from all informants and grouping them. The grouped data are described, interpreted and synthesized to obtain essential findings. Analysis was also carried out from digital traces to explore data based on search attributes, classify them and interpret them to support the findings from the interviews.

Results and Discussion

The following results and discussion are divided into 2 (two) parts. The first part discuss the practice of using search engines in learning, and the second part discuss the undesirable impact of the increasing number of students doing searches by googling.

Googling in Learning

Searching for learning at school for students

Learning is a natural process carried out by students, especially in formal education. The learning process involves individuals (students) internally and schools (teachers) as providers of access to education. The relationship between teachers and students is an interaction to develop knowledge. Teachers provide knowledge based on a curriculum that the government has designed in accordance with educational goals.

The elaboration of learning is carried out in various ways by each teacher. The latest Indonesian curriculum (2013) has the energy to give a more significant portion of student participation. The teacher will provide activities where students can be actively involved in constructing the knowledge developed according to the level of education.

There are various ways that teachers use to develop students' knowledge skills. Learning at school classes is traditionally done using textbooks in modules, student worksheets, and handouts. Textbooks are a source of learning for students where the contents of this textbook have been adapted to the applicable curriculum. Each school generally has one compulsory textbook.

The learning process is usually carried out by encouraging students to study the material according to their subjects and majors. Students will start to open the textbook and start searching for the information. Formerly textbooks became the primary reference in the learning process. The textbook seems to be a holy book for teachers' and students' learning. In some cases, different publishers will cause different materials to be developed. Ironically, these textbooks are relatively limited in some schools, for students are only given one handbook.

Along with the development of technology, seeking knowledge does not only focus on books but also on utilizing the internet network to develop learning materials. Students began to use search engines to seek knowledge. Learning by searching becomes a keyword that becomes a new habit and culture for students. Roni, one of the students at a private high school in Yogyakarta, admitted that from the beginning of learning in high school was familiar with search engines. Roni was usually googling for any information he wanted to know. Googling in the learning process increases along with the implementation of learning from home. According to Roni, before the pandemic, he was constantly googling

almost every day, both used for learning and looking for other things. The increase in the use of search engines during the pandemic was also felt by Muna, who said that search engines became widespread and used to find out something unknown in the learning process during the pandemic.

> *"Like, for example, in a lesson, there are words that I do not know, so I have to Google them. Also, sometimes there are scientific words that must be looked for meaning in biology. When I have difficulty in learning, I always googling." (Muna, 2021)*

Students google almost all anonymous information. Google has become the primary tool in learning activities. When students have difficulty in learning, they can easily search. Moreover, the appearance and the way of use are easy; by typing the keyword, the search engine will offer a list of results.

Learning by googling feels much easier for students. Their learning needs are met with Google. Google offers practicality in the search process so that learning resources can be easily obtained, although, in the end, resources are also concentrated on Google. Instead of providing varied learning resources, search engines eventually replace the role of textbooks. Learning by googling is a keyword for education. Knowledge is obtained by carrying out the discovery process. The search that has been carried out so far needs to be pursued by reading, studying, until finally being able to understand shifts to search, reading at a glance, and when the knowledge is needed again, students do not need to remember, but then just googling it.

Shortcut to knowledge

Search engines are one of the inventions that make it easy for humans. Booming information due to the development of the internet makes people think about simplifying the process of filtering information. Like an extensive library with many sources of books, when someone wants to find information, it will not be easy. It requires classification, arrangement of book layouts and digging up existing books to get information. This search process is not easy. It takes a long time, so the library creates a way to carry out the search process. Libraries develop catalogues to make searching easier (Muntahanah et al., 2017).

The existence of a catalogue simplifies a library's search process, but it still has limitations. The catalogue does not necessarily contain the words a book includes, even if there is a keyword/index. Imagining the process of seeking knowledge that occurs in the real world (libraries), it appears that a way to search is crucial. The existence of a search system with a catalogue model may still be possible for books in large quantities. When that information becomes multiplied and can be produced by each individual, it will create an enormous information bubble. The internet/website provides the possibility for everyone to produce information, and as a result of increasing information, it is necessary to find a way to filter and make information easily accessible to individuals. At first, when information has limited, the need for search engines was not important, but when information was produced continuously, the need for search engines became a staple item.

The ease in the search process encourages students to look for anything unknown. Students will carry out a search process to get answers to personal questions from curiosity and questions posed by the teacher in the learning process.

> *"In learning, most often it is to answer questions, especially during this pandemic the teacher gives many assignments. Most often, googling directly to the question" (Ian, 2021)*

Googling is the most efficient choice for gaining knowledge and knowing something. During the pandemic, the use of search engines in the learning process became commonplace and dominated. The knowledge that is not conveyed perfectly due to the limitations of the distance learning process is finally manifested in the form of assignments and questions given by the teacher. Many teachers do not provide material as indirect learning but replace it with questions and assignments. This choice encourages students to maximize the function of search engines to provide quick, easy and precise answers in the learning process.

Effectiveness and efficiency are the triggering factors for the massive use of search engines in learning. The dominance of search engines has a positive effect and negative impact. Using a search engine, each individual (student) will be guided in achieving and acquiring knowledge. Search engines are like shortcuts to getting knowledge. This condition is supported by the learning process, which still prioritizes the cognitive aspect. Some students use search engines to make it easier to get answers.

> *"Just type the question on Google, then just copy and paste the question, and the answer will appear. Usually if you get it directly in the brainly." (Arga, 2021).*

Search engine algorithms direct search results to the most frequently accessed websites. Ironically, these websites are sometimes open websites, which can be accessed by someone to add answers or provide clarification on someone's questions. In this process, knowledge is generated by everyone based on individual understandings and assumptions. This is the irony in the development of knowledge through education in schools. The existence of technology (search engines) is the best invention, but behind its existence, it makes people fall asleep due to its convenience. Students tend to use it instantly to get answers to various questions given. Finally, students do not understand the essence of the question, which is intended to explore knowledge as a process.

Verify the truth

Search engines continue to grow and become the primary use by everyone, including students. Based on this study, all informants stated that they used search engines to assist in finding information. Students tend to carry out a search process when experiencing difficulties with information either in general or in the context of learning. Hootsuite (Kemp, 2021) states that most internet users search for information 63% and those related to the learning process, namely how to find something, 51.9%; find ideas/inspiration 47.6% and education, 42.6%. Information and knowledge are the most widely used subjects as reasons why someone uses a search engine.

The massive spread of information encourages individuals to look for shortcuts to find that information. The shortcut is accommodated by search engines that assist in finding something. At the end of 2020, the most popular search engine was still occupied by Google, with a market share of 91.4%, far outperforming its rival, Bing, by 2.7% (Kemp, 2021). Looking at these data and based on informants' data, it is clear that googling dominates all search activities, either through a cellphone or using a computer.

The massive use of search engines heralds a new era in how knowledge is formed and recognized. Knowledge is part of an effort to uncover the reality. In essence, knowledge is

created by humans, which develops and is recognized academically when knowledge can be accounted for and proven its validity when there has been an agreement by many people.

To truly understand and be able to apply knowledge, students must try to solve problems, find something for themselves, struggle with ideas, and apply these ideas in various situations. The task of education is not to pour information into students' heads but to engage students' minds with powerful and valuable concepts (Setyawan & Rahman, 2013). These conditions slowly change along with the use of search engines. The information available through search engines is considered valid information. This is evident from the narrative of informants who claim that they really trust every search result presented on the search engine. Most of the informants admitted that they found the information they were looking for in the first choice of the search engine display.

> *"I usually use the top one myself, because after looking for it often, the first list became the first reference I took as an answer. Compared to the bottom list, I prefer to look only at the top list" (Tono, 2021)*

The information displayed in the primary selection is then used as a reference. Students do not carry out further validation and do not see the author's source. Students believe in the information presented. Several informants stated that sometimes there were doubts about the answers. The doubt was overcome by searching again, either by changing the keywords or choosing the information in the second and third lists. From the existing data, knowledge verification is carried out autonomously. Some informants did admit that verification was sometimes done by asking the teacher, but during this pandemic period, verification was ultimately carried out by comparing the available information, again via search engines.

Student awareness of privacy and data security

Most of the informants are not aware of the attributes embedded in Google, especially the search connection with each individual's email account. Without being tampered with, all deep search history will be recorded and become a database to determine the level of relevance of search results. In the search process, the unique democratic principle of the web is put forward by using a solid link structure as an indicator of the value of a page. In essence, Google marks the link from each page as an option. In addition, Google also analyzes the pages that give these choices. The options given in the search process are weighted higher and make the page necessary. Sites that are important and of high quality will get a higher ranking and be remembered by the Google algorithm in every search (Febrian, 2008, pp. 15-16). Google's PageRank will be compared with a person's search, resulting in a unique analysis that approximates the individual's needs.

In the search process, the keywords provided by the user will become a database to determine the appropriate desire. Recording these keywords is the standard procedure (default) in search engines, especially for users who use Google and have a Gmail account. Through this procedure, the user seems to be given the answer that best suits what he wants. In addition to recording through individual student accounts, search engines or almost all browsers have a cookie mechanism that is enabled for efficiency where every search process will be recorded to provide speedy access. Although for efficiency, the presence of cookies is also used to provide a personalized experience for each individual. The recording base will generate data to map and even personalize each individual.

This factor makes all search engines

record search activity. At this point, search engines (Google) take advantage of activity data which is part of individual privacy. Ordinary individuals will never know that search activity and even surfing in cyberspace are monitored and recorded by the system. This also happens to academic users in schools. Students are never given information related to the use of search engines. There is a tendency to do more searches because students are considered to be able to do it themselves, so the teacher's role is more towards giving orders for students to look for answers or information by searching. No explanation is given, including the terms and conditions for using the search engine. Students tend to be ignorant and do not know the details in search engines. They tend not to realize that the system indirectly recorded every activity performed in googling. It is also reinforced that the settings in the search engine itself are by default tailored to the needs and policies of the provider, such as indeed providing access for all processes to be fully recorded.

Students do not widely known the settings provided on the search engine page. Students tend to directly use search engines to obtain the desired information without realizing that search activities are recorded to provide a better experience in the search process. One of the experiences used in the search is the suggestion facility (autonomous/ predictive text), which is an offer given by the search engine (Google) when students want to search. This search engine prediction arises because of data processing from habits carried out in the search process. In this way, search engines provide an effective experience, providing a way for individuals without typing in total and just clicking on the appropriate sentence. This process seems simple, effective, and without tendencies, even though in its implementation, other factors make someone "fallen/forced" to choose the option that is close to the desired sentence.

> *"I often follow predictions on Google because it is the same as what you want to type. It is more energy-efficient" (Ama, 2021)*

> *"Sometimes it follows what is predicted, although it is not exactly what you want it to be, I think it is appropriate. But sometimes it is also not, especially for the specific ones, I am afraid it does not match the predictions given" (Ano, 2021)*

The power of prediction cannot be underestimated because it spoils the user by just typing keywords/sentences that are sometimes long. Learners in the search process use more because they use it without realizing it, such as when researchers ask informants to try to find out with keywords, unconsciously, informants choose predictive features. After all, they are considered the exact/according to what will be typed. This condition is also in line with the research of Rene Morrison (2020), which revealed that students sometimes rely on the prediction feature (given by Google) so that sometimes the keywords that have been determined independently by students are "distracted" by offers from Google and students tend to get used to it (carried away) received prediction help from Google. This means that students ignore relevant keywords by directly agreeing to autocorrect and continuing to search according to what Google suggests. Approving and following search engine suggestions sometimes give different results.

Using the predictions/suggestions given is evidence of the unconsciousness of students in maintaining security/privacy in the search process. The prediction seems to be an additional feature that provides convenience, but behind this feature, there is a data processing that becomes a personification of a person and a limitation for students to carry out an advanced

search process. Learners accustomed to using this prediction/suggestion feature eventually do what the search engine wants, and unconsciously the search results have been directed according to what the search engine (Google) suggested. If this is done continuously, it tends to bias the information even since it will be sought. The information provided tends to be appropriate, but it is feared that other information that should be accessible with independent keywords from students will not be conveyed, and in the end, the information is filtered by search engines to be given to users.

Based on the context of data privacy and security, students are not aware that their activities in googling are recorded by the system either through history mechanisms or cookies. Data privacy and security have not become a significant need because using search engines today is much easier, and they feel that always providing answers and not messing with settings provides a more comfortable experience. Search activity is also a source of data that can benefit search engine providers. This recording process becomes a new business entity that will provide data and experiences, especially for advertisers to encourage advertising products to be more targeted based on user activity recording data. Indirectly, what is generated from the search results is interference from the commercialization carried out by search engines by displaying information on the main rankings based on referrals from Google sourced from search commercialization.

The hidden impact of googling

Learners try to make everything for the result. Sometimes they negate the process of searching. One of the reasons is that the education system in Indonesia tends to appreciate the actual results converted into a score. In line with the research conducted by We Are Social and Hootsuite (Social & Hootsuite, 2021) where Brainly is one of the top ten websites in Indonesia that are most accessed in terms of traffic/visitors reaching 169 M. Interestingly, Brainly is the only website related to educational content in the top 20 most visited sites. Looking at the Brainly access, it appears that the students' interest is the easiest to find answers to various questions asked by the teacher. This tendency makes learning models using technology not only bring benefits but also have undesirable effects.

The use of digital devices such as search engines (googling) in the learning process undoubtedly provides many benefits and becomes an alternative learning resource that can be used by students. Digital technology devices provide benefits for learning although on the one hand it is also difficult to transfer tacit knowledge (Sarvianto, 2020). But behind the positive aspects, the use of search engines also results in various impacts that can interfere with the learning process indirectly. These side effects are reflected in the condition of students in responding to learning:

1. *Reduced interest in reading*

   The use of search engines in learning provides convenience in obtaining information. The tendency of students in googling is to write down the keywords that are written in the search column in the search engine. Through this keyword, a list of pages relevant to the keyword will be offered. Along with the increasingly massive use of search engines, students ultimately tend to develop keywords towards the purpose of the search results. Finally, students tend to be more detailed in typing keywords. By detailing keywords there is a tendency to get more suitable results.

"Most of the time, for discussion or questions, they type the question directly. Later, you can usually brainstorm, especially during the pandemic because everything is online, all you have to do is copy and paste what the teacher wants" (Kani, 2021).

The existence of search engines makes students reluctant to read seriously (Carr, 2010). They have difficulty concentrating and have difficulty understanding reading. One of the implications of the ease of doing a search is that the answers/information tend to be close and direct as desired. This causes students to immediately get the appropriate answer. Ironically, this answer was not studied further, but was immediately given to respond to the teacher. Finally, the search process made students' interest in reading decrease, especially with the existence of search engines, very few students were willing to look for books and read in the library. Students choose to get information easily through googling. Instead of getting a deeper understanding, students are trapped in shallow understanding due to a decreased enthusiasm for sustainable reading.

2. *Hard to remember*

Efficiency and effectiveness that become jargon in the search process have an effect on short term memory. This disorder is caused by the reluctance of students to take notes or understand deeply the material discussed in learning. The ease of searching makes the recording process not run optimally. Students choose to re-search, even up to many times instead of recording and looking back in memory. In fact, sometimes what is recorded is often questioned and re-verified through the search process.

"I prefer googling than reading a book. Google is instant so I can get material faster. later if you forget, googling it again." (Mika, 2021)

This condition is also in line with the research of Fisher et al (Fisher, et al., 2015) which shows that the existence of external memory embedded in Google undermines the ability of human internal memory. In this case, students find it difficult to develop their internal memory because it is easier to retrieve external memory while not requiring more energy because of the large and easily accessible external memory capacity. Learners are easy to forget not because of memory capacity, but there is a reluctance to record in internal memory because of the speed of access provided by search engines that are getting faster with adequate results.

3. *Academic dishonesty*

The use of search engines also contributes to the development of academic dishonesty. Dishonesty here is related to the ability of students to express their ideas, especially when doing various assignments or learning activities. Copy pastes accompany the googling activity. After doing a search, students get the appropriate information and this information should be understood in depth and used as a reference, but in reality, it is used as the source content by copying all/part of the text without being changed and used as a work.

"Directly type the question on Google, then copy and paste the question and the answer will definitely appear. Usually, you get it directly on Brainly (Alan, 2021)."

The tendency of students to take directly similar and identical to the sources on the website becomes a necessity. In many schools, whether public or private, city or suburb, this case has emerged and has been suspected for a long time. However, because of the convenience of technology, especially the internet, students tend to be massive in utilizing search results instantly to answer questions or do assignments. This condition tends to popularize academic dishonesty in the learning process when the teacher has no action or direction. The search process is not only seen in technical terms, but far behind it, there is a culture and habituation that needs to be understood by students to know how to optimize the use of search engines appropriately.

4. *Loss of critical thinking*

Search engines give rise to an instant culture amid the low interest in reading among students (OECD, 2019). The habit of students to get instant results is a side effect of low interest in reading. Each subject matter only has one compulsory book provided by the government. Even this is exacerbated by the fact that these books are rarely read. Technological advances with the development of search engines exacerbate the condition of the lack of effort to read. Although learning resources on the internet are abundant, efforts to read the entire available information are minimal. Students tend to search for and be satisfied with the information obtained without reading and thorough study.

"Just write straight away, without interpreting it. Just follow Google answers. Sometimes I do not even read it first, just write the answer right away" (Mika, 2021)

Students have lost in-depth analytical power due to the ease of obtaining information. This attribution is also supported by the ease with which students get information but is not supported by a high motivation to find out more. Learners are trapped in learning rituals oriented towards the goal/end of learning without seeing that the core process of learning lies in the process of getting it. Google (search engine) seems to lull and worsen the literacy situation without a definite solution. Googling manipulates and deprives deep learning abilities (Salehi & Ashman, 2018). Ease of searching includes when it does not match, changing keywords into an experience that continues, but does not leave an immersive experience as part of the learning process. Reading activities only stop at the surface level and are taken for granted without questioning and analyzing further to be developed.

Googling creates bias and produces misunderstandings about the meaning of knowledge. Knowledge obtained from googling is considered internal knowledge. Individual memory becomes much decreased because human memory cannot remember most of the information knowledge that moves through tens of clicks. Internal memory does not experience dulling in the end due to the habit of asking (searching) through googling. It is even more terrifying that the search process will encourage human mechanistic thinking and eliminate critical attitudes. Based on the one-dimensional man theory (Marcuse, 2016), humans become forced to carry out everything according to mechanistic rules and become assertors of technical domination over humans. Humans who initially did real activities did a physical search process began to divert to search engines. Marcuse (Saeng, 2012) states that

the law that moves and regulates real objects is transferred and embodied in the principles and rules of machines, which previously searched libraries which were free to depend on human will, were replaced by machines that searched for information based on the will of machines. Technology, in this case, fully controls humans.

Technology is also inseparable from the owner's or interested parties' ideology. Covert intentions can easily be directed through domination mechanisms. Research conducted by Robert Epstein (2015) concluded that Google could control voters. In laboratory and online experiments conducted in the United States, googling increased the proportion of people liking any candidate by 37 per cent to 63 per cent after just one search session. This poses a serious threat to individual freedom of choice and, at the same time, demonstrates that search engines are not value-free. According to Marcuse (Saeng, 2012), covert cultivation of ideology and influence is a practice of control, domination, colonization, and extortion consequence of technological society. In an automated and mechanistic world, the subjugation and suppression of needs are justified and firmly institutionalized in the capitalist system, which will create humans who are numb and unaware of being manipulated and subjugated.

Conclusion

Search engines are an effective solution for the learning process, especially during a pandemic. However, search engines also have unpredictable effects related to Google's dominance that tend to be ignored. Instead of providing sharpened understanding to students, googling makes students complacent because of the convenience and speed of searching. Algorithms developed by search engines can provide relevant results. Unfortunately, the search algorithm is not neutral, so the search results unconsciously have a bias and tend to be directed. Humans who should have control over technology are dominated by technology itself. Search engines have side effects in the long run. These side effects include students becoming easily forgetful due to the ease of doing searches; the emergence of academic dishonesty by copying and pasting; decreased interest in reading in-depth; and students becoming passive to the information provided by search engines, only being recipients without questioning the validity of the information. If this continues, the dominance of technology will manifest through the manipulation of algorithmic thinking that suppresses and ultimately eliminates critical thinking.

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Declaration of Ownership

This article is our original work.

Conflict of Interest

All informants have agreed that their opinions will be included in this paper under a pseudonym.

Ethical Clearance

This study was approved by the institution.

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