Bioedunis Journal
https://jurnal.uinsyahada.ac.id/index.php/Bioedunisi
Vol. 03 No. 02 Desember 2024
E-ISSN : 2829-7601

The Analysis of Internet Usage in Biological Evolution Affecting Human Behavior

Hotmaidah Hasibuan*[1]

[1]Tadris Biologi, Fakultas Tarbiyah dan Ilmu Keguruan, Universitas Islam Negeri Syekh Ali Hasan Ahmad Addary Padangsidimpuan, Indonesia
*[1]hotmaidah@uinsyahada.ac.id

Abstract

The aim of this research is to analyzing internet usage in the context of biological evolution affecting human behavior is to understand how our increasing reliance on digital technologies influences our cognitive processes, social interactions, and overall behavior. This research uses a qualitative method with a multidisciplinary approach, involving the analysis of scientific literature and case studies. The evolution of this technology reflects biological principles found in nature, such as selection, adaptation, and diversification. In the context of human evolution, the internet has become an important extension of cognitive and social abilities, enabling the rapid dissemination of information and creating interaction spaces that transcend geographical boundaries. Biological evolution enables the emergence of intelligence in living beings. On the internet, advancements in technology such as artificial intelligence (AI) are the result of a "digital evolution" driven by data and algorithms. Human behavior has also undergone significant transformation with the presence of the internet, including patterns of social interaction, learning habits, and decision-making processes. From a biological perspective, human behavior connected through the internet can be analyzed as a phenomenon of cultural evolution, where technology acts as a new environmental factor influencing the dynamics of adaptation. The combination of technological evolution, biological evolution, and human behavior forms a complex relationship, demonstrating how humans continuously integrate technology into their existence, changing the way they live, learn, and evolve.

Keywords: Internet, Biology, Evolution, Behavior, Humans

INTRODUCTION

Evolution comes from Latin, namely Evolvo, which means to stretch. Evolution is a gradual and slow change. There are various types of evolution, namely geological evolution, astronomical evolution, evolution biological, and cultural evolution. Viewed from the part that experiences change, evolution can be divided into cosmic evolution and organic evolution. The internet has become an essential element in modern human life, affecting various aspects of life, including communication, education, and work. As a continuously evolving technology, the internet has created a digital environment that

rapidly drives changes in human behavior (Ahmed, et al. 2016).

Biological evolution in a modern context, biological evolution refers to genetic changes in human populations over time. In the modern era, evolution is not only determined by physical environmental factors, but also by the digital environment. Adaptation to Technology. The human brain is starting to adapt how it works to process fast and continuous information from the internet. Neuroplasticity, namely the brain's ability to change and adapt to new experiences, including internet use. Potential impact on evolution. Genetic changes: continuous exposure to technology can affect the expression of genes related to attention, memory and decision making. New natural selection: In the future, perhaps individuals who are better able to use technology will have an adaptive advantage. This analysis often explores how internet usage impacts our decision-making, communication patterns, and even physiological responses, drawing from principles of evolutionary psychology and media naturalness theory.

The Internet as a revolutionary innovation in communication, has rapidly evolved since it's inception and plays a central role in human life. Human evolution, which has historically been driven by adaptation to the physical environment, is now also influenced by interaction with technology. The use of the internet affects the way humans communicate, interact, and learn, such as the use of Zoom meetings, Google Classroom, Google Meet, and the use of learning applications for editing like Canva, CapCut, and other applications, as well as the use of online media for publication on YouTube channels, Blogspot, TikTok, and others. Creating new behavioral patterns that did not exist before. In the perspective of biological evolution, these adaptive behaviors reflect responses to the pressures of the digital environment (Ali, et al. 2012).

This research aims to explore how internet usage contributes to the evolution of human behavior, both in biological and social contexts, and its impact on the development of future generations. The internet has become one of the most impactful technologies in modern human life. As a medium that enables global communication, information, and interaction, the internet has reshaped many aspects of life, including human behavior. This phenomenon provides an opportunity to understand how internet usage affects human development not only from a social and cultural perspective but also from a biological standpoint. Biological evolution explains how living beings adapt to changes in their environment over thousands of years. In the context of humans, evolution is now not only determined by biological factors alone but also by interactions with technology, including

the internet. Intensive internet usage influences various human behaviors, such as social interaction patterns, decision-making, and the way humans process information and adapt to the ever-evolving digital environment (Abu, 2015). This research aims to analyze the relationship between internet usage and the biological evolution of human behavior.

A multidisciplinary approach that combines evolutionary theory, behavioral science, and information technology is used to understand how the internet shapes human behavior within the framework of biological and cultural adaptation. This research also explores the long-term impacts of internet usage on human cognitive, emotional, and social development, as well as its relevance in understanding human evolution in the digital era. In addition, there is another term known as geological evolution. Theory of the Origin of Life Abiogenesis Theory, namely living things come from non-living things. Supporting figures: Aristotle, Nedham. Biogenesis Theory, namely living things come from living things. Supporting figures: Francesco Redi, Lazzaro Spallanzani, and Louis Pasteur. The Internet is a part of inanimate objects that can change human behavior. Cosmozoic Theory, namely living things on earth come from spores of life that come from outer space. Creation Theory, namely living things were created by God. Biochemical Evolution Theory, namely the origin of life occurredsimultaneously with the evolution of the formation of the earth and atmosphere. Supporting figures: Alexander Oparin, Harold Urey, Stanley Miller. Theory of Biological Evolution is that living things are composed of organic matter (amino acids) that come from the ocean (Kull, 2010).

The theory of evolution as an explanation of how evolution occurs (mechanism of evolution). In addition to being an explanation of evolution, the theory of evolution can also be intended as a theory that states that there is a kinship between organisms (Panchen, 1992) or that there is change and diversification of living things. In this case, the theory of evolution is an explanation of various phenomena that are then designated as evidence of evolution.in biological studies, evolution means changes in the inherited traits of a population of organisms from one generation to the next. Variation, reproduction, and selection are the three main processes that cause these changes. Genes carry basic evolutionary traits and differ within populations. In the process of reproduction, organisms acquire new features. Mutations or gene transfer betweenpopulations can result in new traits. between species. In sexually reproductive species, new gene combinations are also produced by genetic recombination,which can increase variation between When these inherited differences become more common or rare in a population, it's time for evolution.

Because of colonialism and economic growth between the 1800s and 1900s, English languagespread rapidly across the globe, making it a global language when the Internet appeared. Since the Internet became publicly available, English spelling, pronunciation, vocabularies, and grammar have changed, leading to disagreeable views and debate among users.

According to some language researchers (Ali, et al, 2015), the growth of new English dialects under the influence of the Internet posesa threat to the traditional English dialects. These arguments originate from the early 1900s. Believe Internet English to be a linguistic revolution. To Crystal, these changes in English form and usage have given birth to a new branch of linguistics he calls Internet Linguistics. In academia today, Internet Linguistics is widely discussed within the realm of digital communication, or the term, computer-mediated discourse analysis (CMDA) as coined by This paper intends to provide a bird's-eye view of the evolution of English in the Internet age with a focus on current stances. It analysessome recent linguistic research articles that have been conducted to identify common features of most recent linguistic phenomena in Late Modern English that coincided with the emergence of the Internet. Though it is hard to precisely determine the first existence of the Internet, this study highlights the language changes which became into effect under the influence of the internet invasion. It explores the historical developments in the English language as influenced by digital technology.

Evolution is driven by two main mechanisms, namely natural selection and genetic drift. Natural selection is a process that causes inherited traits that are useful for the survival andreproduction of organisms to become more common in a population and conversely, detrimental traits to become less common. This happens becauseindividuals with favorable traits have a greater chance of reproducing, so thatmore individuals in the next generation inherit these favorable traits. After several generations, adaptation occurs through a combination of small, continuous and random changes in traits with natural selection. Meanwhile, genetic drift is an independent process that produces random changes in the frequency of traits in a population. Genetic drift results from the probability of whether a trait will be inherited when an individual survives and reproduces. Although the changes produced by drift and natural selection are small, these changes will accumulate and cause substantial changes in organisms.

This process reaches its peak by producing a new species. And in fact, the similarities between one organism and another suggest that all the species we know came from the same

ancestor throughthis slow process of divergence. Grammarians during this period used Latin as a model and by the end of the eighteenth century, the attempt to standardize the language took shape. Some authors emphasized rhetoric to achieve stability, grammatical credibility, and refinement (Goring, 2005). Dr. Johnson's dictionary helped standardize meaning, pronunciation, and the parts of speech. While the British Empire was establishing a standard version of British English, The Americans wanted their own linguistic identity. Webster's dictionary, first published in 1828, helped establish another standard variety of the language.

As this overview has shown, in the past English had often undergone major changes due to population shifts, invasion, colonialism, and political upheaval. Arguably, before the eighteenth century, English did not have a standard form, nor did it in the 18 th century; and it still does not. The prescriptivists like Locke, Johnson, andSwift were fighting a losing battle from the beginning because the language changed throughout – it's always changing. The Internet English has opened up new avenues of research. Changes in form and usage have caused some linguiststo think of it as a new language called Internetese. In terms of frequency and scope of use, Internetese is currently the most prevalent medium for intercultural communication (Mesthrie & Bhatt, 2008). For this reason, it has attracted a good deal of attention from all areas of linguistic enquiry (e.g., sociolinguistics, computational linguistics, and psycholinguistics). The ever-evolving English language is always unveiling new words and phrases, something even more evident since the rise of ubiquitous social media networks such as Facebook and Twitter. Social media has been also responsible for giving new uses to some existing words.

RESEARCH METHODS

This research uses a qualitative method with a multidisciplinary approach, involving the analysis of scientific literature and case studies. Data is taken from Literature on Biological Evolution Studies on the mechanisms of human blojogical adaptation to environmental changes Literature on Behavior and Technology. Analysis of the impact of the internet on thought patterns, emotions, and social interactions. Observation Observation of changes in human behavior caused by internet use in dally life. To understand existing studies and theories on internet usage, biological evolution, and human behavior.

RESULTS AND DISCUSSION

Evolution is a process of change in the genetic composition of populations over successive generations, driven by mechanisms such as natural selection,mutation, gene flow, and genetic drift. Over time, this leads to the emergence of new species, adaptations to environmental changes, and the extinction of others. Fossil Records: Fossils provide evidence of transitional forms and the gradual changes in species over millions of years. For instance, the evolution of whales from terrestrial mammals is supported by fossils like Ambulocetus and Pakicetus. Comparative Anatomy: Homologous structures, such as the forelimbs ofvertebrates, indicate a common ancestor. Similarly, vestigial organs, like the human appendix, point to evolutionary remnants of past adaptations. GeneticEvidence: Modern DNA sequencing highlights genetic similarities between species, supporting the theory of common ancestry. For example, humans share about 98% of their DNA with chimpanzees. Observable Evolution: Instances of rapid evolution can be seen in real-time, such as antibiotic resistance in bacteria and changes in finch beak sizes in the Galápagos Islands due to varying food sources. The idea of evolution, that species change over time, has roots in ancient times. It can be seen in the science of Greek, Roman, Chinese, and Islamiccivilizations (Kull, 2010).

However, until the 18th century, the Western biological view was dominated by essentialism, the view that life forms were unchanging. This began to change as the influence of evolutionary cosmology and mechanical philosophy spread from the physical sciences to natural history. Naturalists began to focus on the diversity of species, and the emergence of paleontology with its concept of extinction further challenged the static view of nature. In the early 19th century, Jean-Baptiste Lamarck proposed his theory of the transmutation of species. Research Results This research explores the relationship between internet usage and its impact on the biological evolution of human behavior (Crystal, 2011). Based on the results of the literature review and data collection conducted, several key points were found as follows: Neurological Adaptation to Internet Use Intensive internet use affects the structure and function of the human brain. Studies show changes in brain areas related to decision-making, attention, and short-term memory.

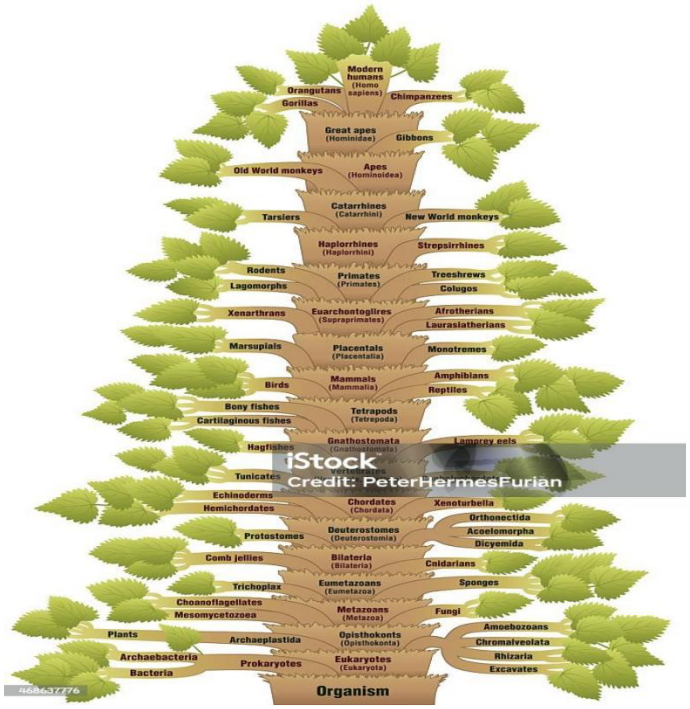
The human brain has become more trained to multitask, although there is a negative impact on the ability to focus deeply. Changes in Social Interaction Patterns. The internet has changed the way humans interact. The evolution of social behavior is now more based

on digital communication, reducing face-to-face interactions. This affects patterns of interpersonal relationships, empathy, and social skills. The evolution of information consumption habits human information consumption patterns have changed drastically, from traditional sources like books to quick access through digital platforms (Carr, 2010). As a result, there has been a shift from deep learning to superficial learning, which is more focused on seeking brief information. Influence on Social and Cultural Reproduction The internet affects the way humans choose partners and build relationships. Online dating platforms create new algorithm-based sexual selection mechanisms, shifting traditional partner selection criteria. Impact on Mental Health and Behavior

Excessive internet use is correlated with an increase in anxiety disorders, depression, and digital addiction. This is an example of modern selection pressure that affects human psychological balance. This research indicates that the internet functions as one of the significant agents of change in the evolution of human behavior. Although these changes cannot yet be termed biological evolution in the classical genetic sense, their impact is very evident at the phenotypic level. The Role of the Internet in Modern Natural Selection The Internet creates new social and cognitive environments that influence survival and reproduction. Individuals who can quickly adapt to technological changes tend to excel in the modern environment (Al-Kadi,, 2017).

The influence of the internet today is more likely to be a flexible phenotypic adaptation rather than a permanent genetic change (Ali, 2012). However, if this selection pressure continues for a long time, there is a possibility that these changes could affect genetic evolution in the future. Challenges to the Ability to Focus and Think Deeply. The digital era provides an unprecedented speed of information. However, this sacrifices the human ability to think critically and reflectively in depth, which is a hallmark of previous human cognitive evolution.

The direction of future social behavior the internet enables humans to build global communities, but it also creates new challenges such as social polarization, the spread of misinformation, and the decline of traditional interpersonal communication skills. The use of the internet has brought significant changes to human behavior, which can be considered a form of adaptation to the modern environment. The impact includes neurological, social, and psychological aspects, indicating a new direction in the evolution of human behavior. Further research is needed to understand whether these changes will be permanent and how they will affect the future of human evolution.



Picture 1: Ilustration of The Tree of Human Philology Evolution In Life

Digital Literacy Education: Enhancing the community's ability to use the internet wisely to maximize benefits without sacrificing mental health and social skills. Long Term Studies: Further research is needed to monitor the long-term impact of internet use on human biological evolution. Technology Regulation: It is important to develop policies that support healthy and sustainable internet use. Positive Impact Acceleration of Access to Information and knowledge. The internet allows humans to obtain information quickly, which enhances learning abilities and adaptation to environmental changes. This can affect brain development, particularly in multitasking and information processing skills. Strengthening Social Connectivity Social media and communication platforms help humans stay globally connected, strengthening relationships between individuals even when geographically distant. This affects social behavior patterns and adaptation to cross-cultural interactions. Ability to Adapt to Technology (Ali, 2012)

The younger generation that grows up with internet technology shows better ability in understanding and using digital tools. This indicates biological and behavioral changes that may involve the development of brain neuroplasticity. Increasing Global Awareness and Solidarity. The internet encourages people to be more sensitive to global issues, such as climate change and social justice, which contributes to collective behavioral changes for

DOI: 10.24952/bioedunis.v3i2.13784

the common good. Negative Impact Changes in Sleep Patterns Internet use, especially before bedtime, can disrupt the circadian rhythm due to exposure to blue light from device screens. This affects human mental and physical health. Decreased Concentration and Focus Ability (Carr, 2010).

Base on opinion (Ali, 2012) the abundance of information on the internet tends to make humans have shorter attention spans. This can alter cognitive behavior patterns and reduce the ability to think deeply. Technology Dependence.The internet can cause dependence that affects human behavior, such as the need to stay constantly connected (fear of missing out/FOMO). This can reduce the ability to socialize in person and impact traditional social interactions. Increase in Antisocial Behavior and Stress Anonymity on the internet can encourage aggressive behavior or bullying. Additionally, excessive exposure to social media can lead to feelings of anxiety, stress, or depression.

Positive Impact of internet such us access to Information and Knowledge The internet facilitates access to various sources of information and knowledge, thereby supporting education, research, and personal development. More Efficient Communication. People can communicate easily through email, social media, or instant messaging apps, without time and distance limitations. Increased Creativity and Innovation the internet provides a platform for individuals to express themselves, share ideas, and create something new. Economic Opportunities the internet opens up new business opportunities, such as e-commerce, remote work, and the development of digital start-ups (Abu, 2015).

Negative Impact of internet such us dependence and Addiction. Excessive internet use can lead to addiction, such as social media or online gaming addiction. The Spread of Fake Information (Hoaxes). The ease of spreading information is often exploited to disseminate fake news, which can trigger panic or conflict. Negative Impact on Mental Health. Social media can trigger feelings of anxiety, low self-esteem, or depression due to social comparison and pressure to appear perfect. Cybercrime. The internet has become a medium for crimes such as hacking, identity theft, and online scams. Influencing Social Interaction. Spending too much time online can reduce face-to-face interactions and deep interpersonal relationships (Abu, 2015).

Internet technology has become an inseparable part of modern human life. In recent decades, global internet use has influenced various aspects of human life, including behavior, thought patterns and social interactions. In the context of biological evolution, human adaptation to the digital environment shows changes in the way humans interact

with technology, the environment and each other. These changes also have the potential to influence biological mechanisms and human behavior in the future.

Impact of internet use on human behavior Change in Mindset. Rapid access to information has changed the way humans process and store information. Google Effect: Decreased ability to remember details due to reliance on search engines. Social Interaction. The internet creates digital interactions that replace face-to-face interactions. Impact: Decreased empathy and ability to read social cues. Mental Health overstimulation from social media can trigger anxiety, depression, and dependence on digital validation. Excessive internet use also affects sleep patterns and stress levels. Economic Behavior and Consumption. The emergence of impulsive behavior, such as shopping online without planning. The influence of algorithms in shaping individual preferences.

CONCLUSION

The idea of evolution, namely that species change over time, has roots since ancient times. Evolution itself comes from the Latin word Evolvo which means to stretch. Evolution is a gradual and slow change. There are varioustypes of evolution, namely geological evolution, astronomical evolution, biological evolution and cultural evolution. Viewed from the part that experiences change, evolution can be divided into cosmic evolution and organic evolution. Besides that, there is another term known as geological evolution. The theory of evolution as an explanation of how evolution occurs (mechanism of evolution).

In addition to being an explanation of evolution, the theory of evolution can also be intended as a theory that states changes and diversification of living things. In this case, the theory of evolution is an explanation of various phenomena that are then designated as evidence of evolution. There are several figures who have put forward ideas regarding the theory of evolution, including Lamarck, Darwin,Darwin-Weismann, and Hugo de Vries. The Positive Impact of the Internet on Human Behavior Access to Information and Knowledge, Communication Facilities, Innovation and Creativity, Entertainment Access Facilities and Increase in Social Awareness. next, the negative impact on human behavior is as follows Addiction or Dependence, Spread of Misinformation,Changes in Social Behavior, Negative Content and Cyberbullying and Privacy.

This article has discussed how English has been changing under several forces. It has also explored how the quite recent and rapid changes under the auspices of the Internet applications has broughtabout news varieties of English which sound closer to

informal oral discourse thanto formal English. In addition, it has provided an overview of the development of English language from bricks to clicks from its origins as a collection of tribal dialects of Anglo-Saxon that over time would gradually form a common language, having its standard forms until it has been reshaped under the influence of the Internet and other information and communication technologies. Throughout its history, English borrowed liberally from Norman French, Latin, and other languages it came into contact with. Standardization occured in the seventieth and nineteenth centuries.

The scientific and technological revolutions of the twentieth century saw many changes in human life, which led to further changes in English. However, this time these changes were more rapid and widespread, leading to the Internet revolution. Evolution is a cornerstone of biological science, offering insights into the origins and adaptations of life on Earth. The interplay of natural selection, mutation, and genetic drift shapes the diversity of life forms we observe today. Ongoing researchin genetics, paleontology, and ecology continues to expand our understanding of this dynamic process. Evolution is a fundamental biological process that explains the diversity and interconnectedness of life on Earth. Through mechanisms suchas natural selection, mutation, gene flow, and genetic drift, species undergo gradual changes in their genetic makeup over generations, leading to adaptations, speciation, and sometimes extinction.

Analysis of internet usage on the evolution of human behavioral biology shows that digital technology, especially the internet, has become an important factor in influencing human behavioral development. The internet has accelerated the process of behavioral adaptation through: Changes in communication patterns. The internet enables humans to communicate globally and instantly, altering social interaction patterns that were previously more geographically limited. This affects the way humans build social relationships, work, and share information. Brain neuroplasticity Continuous exposure to the internet alters the structure and function of the brain, particularly in aspects of attention, decision-making, and multitasking ability. These changes demonstrate how technology influences the cognitive evolution of humans.

Patterns of adaptation to the digital environment. The evolution of human behavior now includes the ability to navigate, filter information, and manage digital identities in the information age. This represents a new form of adaptation to the dynamic technological environment. Impact on biological and social. Although the internet brings many advantages, such as increased access to knowledge, it also has the potential to cause

negative impacts, such as digital addiction disorders, social isolation, and challenges to human biological regulation mechanisms. Overall, the internet has become a significant catalyst in the evolution of human behavior. However, these changes also demand attention to their long-term impacts, both on mental health and social aspects of humanity. Balanced behavioral adaptation will be key for humans to continue evolving biologically and socially amidst technological advancements.

Internet as a Factor of Social and Psychological Evolution: Massive use of the internet has become an integral part of human life, influencing social interaction patterns, ways of thinking, and decision making. This accelerates the evolution of human behavior in the digital era. Biological Adaptations to Technology: In the long term, internet exposure can influence biological adaptations, such as changes in sleep patterns, the way the brain processes information, and increased multitasking. This shows the close connection between technology and cognitive evolution. Potential Negative Impacts: Dependence on the internet can trigger negative effects such as attention deficit, social anxiety, or emotional isolation. apart from that, excessive information (information overload) can affect critical thinking abilities. Opportunities for Positive Evolution: If used wisely, the internet can be a tool to expand knowledge, accelerate innovation, and raise collective consciousness, thereby contributing to a more adaptive and inclusive human evolution.

REFERENCES

Abu, Sa'aleek, A. O. (2015). Internet linguistics: A linguistic analysis of electronic discourse as a new variety of language. International Journal of English Linguistics, 5(1), 135–145.

Ahmed, R. A., & Al-kadi, A. M. T. (2016). Analysis of online texting among bilingual interlocutors. International Journal of English Language Education, 4(2), 131–147.

Algeo, J. (2009). The origins and development of the English language (6 edition). Boston: Wadsworth Publishing.

Ali, J. K. M. (2012). Influence of information and communication technology (ICT) on English language structure (Unpublished Ph.D. Dissertation). Aligarh Muslim University, Uttar Pradesh, India.

Ali, J. K. M., Hasnain, S. I., & Beg, M. S. (2015). The impact of texting on comprehension. International Journal of Applied Linguistics and English Literature, 4(4), 108–117.

Al-Kadi, A. (2017). Some aspects of ICT uses in the teaching of EFL at the tertiary level in Yemen (Unpublished Ph.D. Dissertation). University of Carthage, Tunis, Tunisia.

Baugh, A. C., & Cable, T. (2002). A history of the English language (5 edition). London: Routledge.

Carr, N. (2010). The Shallows: What the Internet Is Doing to Our Brains. W.W. Norton & Company.

Cho, T. (2010). Linguistic features of electronic mail in the workplace: A comparison with memoranda. Language@Internet, 7(3). Retrieved from http://www.languageatinternet.org/articles/201 0/2728 Considine, J. (2014). Academy dictionaries 1600- 1800. Cambridge: Cambridge University Press.

Crystal, D. (2011). Internet linguistics: A student guide. New York: Routledge. Goring, P. (2005). The rhetoric of sensibility in eighteenth-century culture. Cambridge: Cambridge University Press.

Dawkins, R. (2006). The Selfish Gene. Oxford University Press.

Goring, C. (2005). Language and Society: An Introduction to Sociolinguistics.

Hawkley, L. C., & Cacioppo, J. T. (2010). "Loneliness Matters: A Theoretical and Empirical Review of Consequences and Mechanisms." Annals of Behavioral Medicine, 40(2), 218–227.

Herring, S. C. (2001). Computer-mediated discourse. In D. Schiffrin, D. Tannen, & H. E.

Hamilton (Eds.), The Handbook of iscourse analysis (pp. 612–634). Malden: Blackwell.

Huang, L. (2008). Technology: Textese may be the death of English. Newsweek. Retrieved from textese-may-be-death-english-87727.

Jauchar, B., Budiman, B., Idris, A., Nasir, B., & Khaerunnisa, A. (2022). The Impact of IKN on Socio-Economic Development in Penajem Paser Utara (PPU) and Kutai Kartanegara. Journal of Governance and Public Policy, 9(2), 161-170.

Kelly, K. (2016). The Inevitable: Understanding the 12 Technological Forces That Will Shape Our Future. Viking.

Kern, R. (2006). Perspectives on technology in learning and teaching languages. TESOL Quarterly, 40(1), 183–210.

Kross, E., Verduyn, P., Park, J., & Lee, N. (2013). Facebook use predicts declines in life satisfaction. Emotion, 13(3), 320-328. doi:10.1037/a0032.

Kull, K. (2010). "Evolution of Behavior: From Natural Selection to Internet Adaptation." Journal of Biological Systems, 18(3), 211–224.

Lee, L. (2001). Online interaction: Negotiation of meaning and strategies used among learners of Spanish. ReCALL, 13(2), 232–244.

Lyddy, F., Farina, F., Hanney, J., Farrell, L., & Kelly O'Neill, N. (2014). An analysis of language in university students' text messages. Journal of Computer Mediated

Communication, 19(3), 546–561. McArthur, T. (2006). English worldwide in the twentieth century. In L. Mugglestone (Ed.), The Oxford history of English (pp. 360–393). Oxford: Oxford University Press.

McCrindle, M., & Wolfinger, E. (2011). Word up: A lexicon and guide to communication in the 21st century. New South Wales: Halstead Press.

McCrum, R., Macneil, R., & Cran, W. (1992). The story of English. London: BBC Books. Mesthrie, R., & Bhatt, R. M. (2008). World englishes: The study of new linguistic varieties. Cambridge: Cambridge University Press.

Mesthire,R.,& Bhatt,R (2008). World Englishes:The Study of New Linguistic Varieties. Camridge University Press.

Panchen,A.L. (1992). The Role of Language in The Formation of Ethnic Identity. Oxford University Press.

Posteguillo, S. (2002). Netlinguistics and English for internet purposes. Ibérica, 4, 21–38.

Prøysen, S. (2009). The impact of text messaging on standard english (Unpublished Thesis). Universitetet i Bergen, Bergen, Norway.

Rini K. (Diambil pada tanggal 1 Februari 2013). Survei: tak bisa hidup tanpa internet. http://www.tempo.co/read /news/2010/12/23/072301058/Survei- Tak-Bisa-Hidup-Tanpa-Internet.

Sun, H. (2010). A study of the features of internet English from the linguistic perspective. Studies in Literature and Language, 1(7), 98–103.

Tagliamonte, S. A., & Denis, D. (2008). Linguistic ruin? Lol! Instant messaging and teen language. American Speech, 83(1), 3–34.

Thornbury, S. (2006). An A-Z of ELT. Oxford: MacMillan.

Wells, R. A. (1973). Dictionaries and the authoritarian tradition, a study in English usage and lexicography. Berlin: Mouton de Gruyter.

Wilson, E. O. (1998). Consilience: The Unity of Knowledge. Alfred A. Knopf.

Yates, S. J. (1996). Oral and written linguistic aspects of computer conferencing: A corpus based study. In S. C. Herring (Ed.), Computer mediated communication: Linguistic, social, and cross-cultural perspectives (pp. 29–46). Philadelphia: John Benjamins Publishing.

Zamroni. (2008). The socio-cultural aspects of technological diffusion a reader volume IV. Yogyakarta: Pascasarjana Universitas Negeri Yogyakarta.