



The Impact of Electromagnetic Gadgets on the Physical Health of Children Under 14 Years Old in the City of Bandung

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Abstract. The development of information technology has penetrated all ages. The use of gadgets is inseparable in daily life. Gadgets have a greater negative impact on children under the age of 14 years. This study aims to determine the impact of electromagnetic gadgets on children's physical health. The research was conducted in the city of Bandung. The methods used in this study are descriptive methods and literature studies. The questionnaire sheet was distributed to 20 resource persons: Housewives, Employees, Civil Servants, Researchers, Traders and Entrepreneurs. The results of the study show that the existence of *gadgets* can affect the physical health of children under 14 years old in the city of Bandung. The influences are positive and negative. The factors that can trigger these various impacts can be known to come from the facilities and the level of supervision of parents who have children under 14 years old. Apart from the negative impact that can trigger poor physical health in children under 14 years old in Bandung itself, respondents stated that it is very important to have *gadgets* to make it easier for parents and children to carry out their daily activities.

Keywords: technology, impact, electromagnetic, gadgets, children

INTRODUCTION

The more advanced the times, of course, the more developed the technology in Indonesia. If in the past, Indonesian people still used traditional technology, now people are slowly starting to switch to modern technology where doing everything becomes practical. Of course, with the increasing evolution of technology, there are also communication tools. For the previous traditional technology, they still used communication tools such as letters. But unlike now, the communication tool has evolved into a mobile phone, which greatly facilitates the communication process. The more advanced the technology in Indonesia, in the field of communication, also does not want to lose in giving rise to new innovations.

The enthusiasm of mobile phone users is increasing, and innovation is growing. Now there are many advanced mobile phones, and it is also possible that people's lifestyles are starting to change. The impact can also have a positive impact and a negative impact. The thing that needs to be considered is the negative impact so that we can overcome or act wisely in dealing with everything related. For example, in providing facilities for children under 14 years old in the form of mobile phones. Parents must be more careful first, the mobile phone given to the child must have a clear purpose. Children who want to have the cellphone if their parents notice them may experience *addiction*. It is also dangerous for the child's behavior.

In terms of giving a cell phone to the child, if you pay more attention, it shows the negative impact. Children become indifferent to their environment, and they also become temperamental or easily carried away emotionally, closed in everything, increasing every parent's worries. It is very necessary to have supervision from parents; it is also good if the child is always under the supervision of parents so that the child does not easily fall. Parents also need to teach good ethics, not just limited to providing facilities to support the child's life. It is also necessary to be given an affection that material cannot obtain. It is sad to see many people gathering but each one is busy with his own gadgets. What benefits can we reap from the association of these people if they themselves do not have the will to interact?

It also applies to children under 14 years old, and it is also very bad if children continue to be left like this. Regarding development, of course, they have not experienced optimal development. A good parent knows which is the right choice for his child, the parent can't want his child to fall into unwanted things. So, the attitude of parents in educating children also needs to be emphasized; it's good if parents provide limits and limits in educating their children. A good education for children needs to be applied from an early age so that children can learn to understand. If we are educated properly, then many positive impacts can be taken. *Gadgets* also actually cause positive things if consumed for what they should. However, if it is too excessive, then instead of the benefits that we get, it will have a negative impact.

LITERATURE REVIEW

The Essence of Gadget Use on Children's Behavior in the City of Bandung

Definition of Information Technology

Information Technology (IT) refers to any technology that aids individuals in creating, modifying, storing, communicating, and disseminating information. It integrates high-velocity processing and communication for data, audio, and video transmission. Information Technology encompasses not only personal computers but also telephones, televisions, electronic home appliances, and contemporary handheld gadgets (e.g., mobile phones).

Definition of information technology according to several experts: Information Technology encompasses the study and utilization of electronic devices, particularly computers, for the storage, analysis, and dissemination of information, including text, numerical data, and images (Oxford Dictionary, 1995). Information Technology comprises a collection of instruments that facilitate the management of information and the execution of tasks associated with information processing (Haag & Keen, 1996). Information Technology encompasses not just computer technology (software and hardware) utilized for processing or storing information but also communication technology for transmitting information (Martin, 1999). Information Technology encompasses any technology utilized to process and send information electronically (Lucas, 2000). Information Technology integrates computing with high-speed communication networks that transmit data, voice, and video (William & Sawyer, 2003).

Definition of Gadget

The term "gadget" in English refers to a compact electronic device with multiple specialized functions. Osland, 2013. The phrase 'gadget' refers to an object distinguished by distinctive qualities, possessing high performance, and associated with specific size and cost parameters. Rayner, 1956. A defining characteristic that differentiates gadgets from other electronic equipment is the aspect of "novelty." This indicates that daily, new gadgets emerge, showcasing cutting-edge technology that enhances the practicality of human life. The phrase 'gadget' refers to a small electronic device designed for a specific function. In Indonesian, gadgets are termed "acang". A distinguishing characteristic of gadgets, as opposed to other electronic equipment, is the aspect of "novelty." This indicates that everyday devices consistently emerge by showcasing the latest technology that enhances human practicality.

History of Gadgets

The term "gadget" originates from the 19th century. The Oxford English Dictionary indicates that anecdotal evidence exists for the term "gadget" being utilized as a generic designation for a specific technical object whose name is forgotten since the 1850s, with Robert Brown's 1886 works, *Spun yarn and Spindrift*, documenting an early known printed instance in reference to Chinese tea scissors during a sailor's voyage.

The origin of the word is contentious. A widely circulated story states that the word "gadget" was "invented" when Gaget, Gauthier & Cie, the company behind the repousse of the Statue of Liberty (1886), created a small-scale version of the monument and named it after their company. Nonetheless, this contradicts the evidence indicating that the term was previously utilized in maritime contexts and did not gain popularity, particularly in the United States, until after World War I. Alternative sources reference derivations of the French term *gâchette*, which have been utilized for various components of the firing mechanism, or the French *gagée*, referring to minor tools or accessories. The October 1918 edition of *Notes and Questions* features a multi-article discussion about the term "gadget" (12 S. iv. 187). H. Tapley-Soper from the City Library in Exeter authored:

In 1916, a discussion occurred at a Plymouth meeting of the Devonshire Association on the proposal to include the term in the local register of oral provincialisms. Certain members concurred with its inclusion, citing its widespread usage across the nation, while a navy officer remarked that it had historically been a favored term in the service for equipment or implements whose precise names were either unknown or had been forgotten over time. I frequently see it utilized through pals' motorcycles for a compilation of equipment to be displayed on motorcycles. 'Its handlebar-mounted apparatus' pertains to items like as speedometers, mirrors, levers, emblems, mascots, and similar components that are affixed to the steering wheel.

Manage. The 'jigger' or short rest utilized in billiards is frequently referred to as a 'gadget', a term also adopted by local platelayers to denote a 'measure' employed to assess the precision of their job. Indeed, to utilize contemporary Army vernacular, 'gadgets' refer to the 'old thing'. The application of the phrase in military vernacular extends beyond the navy. In the 1918 publication *"Above the Battle"* by Vivian Drake, released by D. Appleton & Co. in New York and London, which serves as the memoirs of a pilot in the British Royal Flying Corps, the following

quote appears: "We feel bored that sometimes relieved with -!. new gadgets." "Gadgets" is a term used in Flying Corps terminology to refer to inventions. Several commendable gadgets, a selection of comics, and some remarkable items.

During the latter half of the twentieth century, the term "gadget" acquired the connotation of compactness and portability. In his 1965 essay "The Great Gizmo," architectural and design critic Reyner Banham characterized the item as a distinctive category of U.S. products—arguably the most representative—consisting of a compact, self-sufficient unit that delivers high performance relative to its size and cost, thereby converting various distinct situations into conditions more aligned with human aspirations. A minimal skill set is necessary for installation and usage, and it operates independently of any external physical or social infrastructure, as it may be ordered from the catalog and delivered directly to the user. The viewpoint. This portable clip-on technology serves human wants and reflects a deeper American ideology and behavior, I suspect. What is commonly comprehended?

Gadget Development

You must already know this gadget, the iPad. At first, I thought the iPad was a new invention that immediately boomed in the market. But it turns out that the iPad has a long history, too. Technology continues to develop from year to year, and scientists continue to strive to create better objects or new things.

Likewise, with the iPad, it turns out that Elisa Gray first proposed it in 1888. At that time, the iPad was still large and heavy. Elisha Gray created an electric stylus device to capture handwriting, and he patented his invention in 1888. At that time, his invention was not called the iPad but the 'Telautograph.' This telautograph is the forerunner of the iPad that we often encounter today.

The telautograph created by Elisha Gray finally experienced various developments carried out by scientists. And in recent years, Telautograph has gradually undergone a transformation into the iPad that we know:

1. 1915: The U.S. Patent for the user interface adds handwriting input via a stylus.
2. 1942: The U.S. Patent employs a touchscreen for handwritten input.

3. In 1945, Vannevar Bush advocated in his article "As We May Think" that the Memex device for data preservation should incorporate handwritten input.
4. In 1950, Tom Dimond showcased the electronic Stylator tablet, utilizing a pen for computer input and employing software for real-time handwriting recognition of text. In the 1960s, the iPad was more commonly referred to as the Stayalator.
5. 1982: Pencept of Waltham, Massachusetts, promotes computer terminals designed primarily for tablet use and handwriting recognition, rather than keypads and mouse. Cadre Systems promotes Inforite point-of-sale terminals that utilize handwriting recognition, compact electronic tablets, and styluses.
6. 1985: Pencept and CIC promote personal computers to consumers utilizing tablets and handwriting recognition instead of keyboards and mouse.
7. 1989: The inaugural commercially available portable computer in tablet format was GRID Systems' GRiDPad, launched in September. The operating system is founded on MS-DOS. The marketing of GRiDPad was met with a poor public response due to its initial weight of 2.26 kg. Jeff Hawkins developed the tablet known as GRiDPad.
8. 1991: The momentum pentop is launched. GO Corporation unveiled a distinctive operating system named PenPoint OS, which allows control using handwritten motions on the desktop interface.
9. 1992: GO Corporation releases PenPoint OS for public availability. IBM unveiled the IBM 2125 pen computer in April. The inaugural IBM model was designated 'ThinkPad'.
10. 1993: Fujitsu also released its first Poqet pen tablet PC that used an integrated wireless LAN. In the end, PCs, tablets, and other gadgets have sprung up as we are experiencing now; many gadgets have sprung up from various local and foreign brands and companies.

Uses of Gadgets

The usefulness of gadgets in daily life is relative because the use of gadgets themselves depends on the person who uses them. The use of gadgets in general and use should be divided into several perspectives, namely:

1. Communication aspect. In the past, humans communicated through the mind or the advantages bestowed by God on the people they wanted. Along with the development of human knowledge, humans choose to communicate through writing sent by mail and in this

millennium era, humans also choose to communicate through mobile phones because this method is considered more practical than previous communication tools. With the existence of Gadgets, communication is getting smoother. We can communicate appropriately without having to take into account the distance and where we live. We can communicate without being bound by a place because if we communicate through gadgets, we are more practical and efficient, both in terms of use and in terms of how we carry these communication tools.

2. **Social Aspect.** We can increase our friends through gadgets quickly and easily. We can share the news with our friends and relatives who are in the country and abroad without having to wait too long. With the existence of Gadgets, we don't need to send for a long time; if something is fast, why do we choose the old way to share? With the existence of Gadgets, we don't need to use postal services, which are considered to be very slow to send news compared to Gadgets.
3. **Regarding education.** Individuals inside the educational sphere need not concern themselves with the acquisition of information. Gadgets enable us to augment our knowledge independently of a supervisor's presence. The procedure is straightforward: we hit specific buttons on our device, and subsequently, the device will effortlessly connect to the designated number.
4. We can talk to lecturers or teachers about educational issues. Political issues. Family problems or various problems that we want. Not only that, but we can also access various sciences through the GPRS feature on the Gadget. We can exchange pictures with our friends through the MMS feature and we can also exchange songs with friends through the Bluetooth feature with the note that the gadget we have provides this feature.

Thus the review of the Benefits of Hape in general which can be seen in several aspects of its use.

Positive Impacts and Negative Impacts of Gadget Use

Positive Impact_:

1. **Enhance communication.** In this instance, gadgets facilitate communication with distant individuals through SMS, phone calls, or various programs available on our devices.

2. Enhance understanding. We may readily access or search for knowledge-related sites through applications on our devices. Illustrations of applications include Seconds, Kompas.com, among others.
3. Establish friendships. Numerous social networks have recently emerged, enabling us to effortlessly connect with pals via our devices.

The advent of novel educational methodologies. This learning strategy facilitates the educational process for both students and teachers. Technological advancements have facilitated the development of new approaches that enable pupils to comprehend complex concepts, as technology allows for the abstraction of these contents.

Negative impact:

1. Ocular damage. If you have experienced fatigue and eye irritation when using your phone, it is understandable. Prolonged fixation on diminutive objects can lead to ocular dryness and, in severe cases, may result in infections.
2. Altering stance. Kirsten Lord, a physiotherapist, disclosed that the body responds to habitual behaviors. Frequent phone usage adversely impacts your neck and shoulders.
3. Drooping face skin. Dr. Sam Bunting, a dermatologist, disclosed that numerous ladies in their 30s encounter facial skin issues, particularly around the jawline, which begins to diminish. As we age, skin elasticity diminishes, exacerbated by the tendency to glance downward while using a mobile phone for extended periods. This will degrade the quality of the skin.
4. Auditory impairment. Nearly all mobile phone or tablet users appear to be utilizing headphones for music consumption. Nevertheless, this is detrimental if performed consistently, particularly when the volume is excessive.
5. Disruptive behavior during breaks. Computers, laptops, tablets, and mobile phones disrupt the hormone melatonin, thereby affecting sleep. A study conducted by the Mayo Clinic in Arizona advises individuals to reduce the brightness of their phones to minimize disturbances during nighttime. During relaxation, it is advisable to silence your phone or place it away from the bed.

Definition of physical health

Physical health is a condition owned by the human body where every organ or part of the human body functions properly. A person is said to be healthy if he does not feel pain or complaints and does not objectively appear to be sick.

Factors affecting physical health

1. Lifestyle factors
2. Internal factors
3. Parenting

METHODS

Research Approaches and Methods

Research is a methodical inquiry aimed at augmenting knowledge and a structured endeavor to examine specific issues that necessitate resolution. A problem necessitates a correct and precise solution. Research methodology comprises a collection of guidelines, activities, and processes employed by practitioners within a discipline. Methodology is a theoretical examination of a method or methods.

The research process is divided into two categories:

1. Research problems, which include problem discovery and problem-solving, the identification stage of problem areas, selection or selection of subject matter, and formulation of theoretical study problems, compile a theoretical framework that becomes the basis for answering research problems or questions.
2. Fact (data) testing includes the selection, collection, and analysis of facts related to the problem being studied. Data is a set of facts obtained through observation or surveys.

The conclusion is the result of research that provides *feedback* on the research problem or question.

In this study, the author conducted research by distributing questionnaires that were questions that resource persons had to fill out to obtain research results.

Location, Time, and Subject of Research

In accordance with the planned research techniques and methods, the resource persons consisted of 20 people, namely Housewives, Employees, Civil Servants, Researchers, Traders, and Entrepreneurs who do not have busy schedules in the city of Bandung.

In completing this research, we use the following methods:

Questionnaire Sheet Distribution

We aim to gather information through questions directed at parents with children under 14 to facilitate the completion of the forms. Sugiyono (2017:142) defines a questionnaire as a form of data collecting that presents respondents with a series of questions or written statements for response.

Previous research

This section presents the findings of a literature review, incorporating material from many pertinent scientific studies regarding the impact of gadget usage on the physical health of children under 14 years old. Sugiyono (2017:231) defines an interview as a dialogue between two individuals aimed at exchanging information and ideas through a series of questions and replies to derive meaning on a certain subject.

Retrieved from various sites (internet)

We utilize modern information technology that can make it easier for us to get the relevant information needed. Using this information technology makes the range of information that can be obtained wider and less focused on just one area, making it easier to collect information.

DISCUSSION

Parents' Goal of Giving *Gadgets* to Children Under 14 Years Old in Bandung City

From the research that the author has conducted on the interviewees, the results of the parents' goal of giving *gadgets* to children under 14 years old are illustrated as follows.

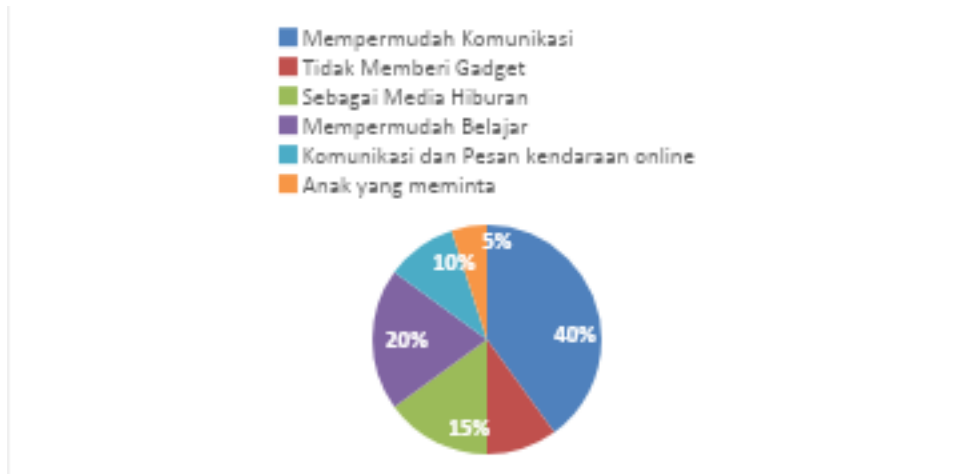


Figure 1. The purpose of parents giving gadgets to children

From the data above, it can be concluded that 40% of parents' purpose in giving *gadgets* to children under 14 years old is to facilitate communication, 20% of respondents stated to facilitate learning, 15% of respondents stated that it is an entertainment medium, 10% of respondents stated that it is a medium to access online vehicles, 5% of respondents stated that their children themselves requested, 10% of respondents stated that they did not give *gadgets* to their children.

Benefits of Parents Giving *Gadgets* to Children Under 14 Years Old in Bandung City

From the results of the research that the author has conducted on the interviewees, the responses to the benefits of parents giving *gadgets* to children under 14 years old are illustrated as follows.

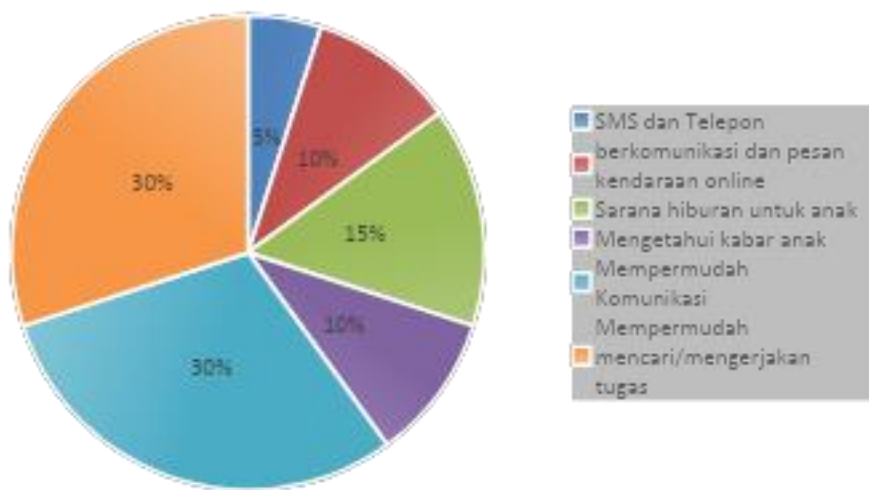


Figure 2. Benefit of Gadget for Children

From the data above, it can be concluded that 30% of respondents stated that the benefits of parents giving *gadgets* to children under 14 years old are to make it easier for parents to communicate with their children, 30% of respondents stated that the benefits of giving *gadgets* make it easier for children to do tasks, 15% of respondents stated the benefits of *gadgets* As an entertainment medium, 10% of respondents stated the benefits of easy knowing how children are doing, 10% of respondents stated the benefits of easy communication and ordering vehicles online, 5% of respondents stated the benefits of *gadgets* only to facilitate SMS and Telephone.

The Need for Time Restrictions for Children to Use Gadgets

From the results of the author's research on the interviewees, the results of the need for parents to limit the time for children to use *gadgets* are illustrated in the following graphic diagram.



Figure 3. Restrictions on gadget playing time

The Existence of People Who Always Supervise Children When Using Gadgets

From the results of the research that the author has conducted on the sources, the results of the existence of people who always supervise children when using *gadgets* are illustrated in the following diagram or graph.

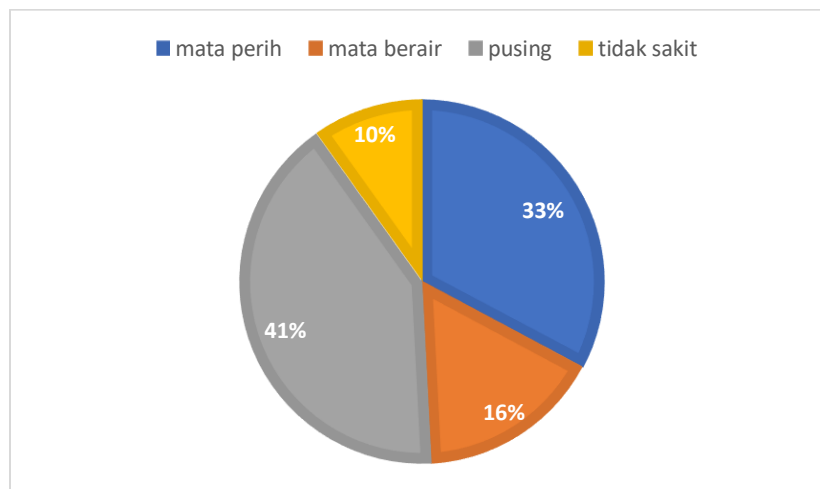


Figure 4. Decline in children's achievement after being given gadgets

From the research results with the method of distributing questionnaires in the form of this questionnaire, the author can conclude that there is a relationship *between gadgets* and the behavior of children under 14 years old in the city of Bandung itself. This relationship is what causes a positive and negative impact of the relationship between the two. From the results of this questionnaire method survey, the author can conclude that giving gadgets to children under 14 years old in the city of Bandung can be very beneficial for children if the child is always supervised and limited in use.

Children often complain of eye pain when playing gadgets

From the results of the research that the author has conducted on the interviewees, the results of the pain complained of by children when using *gadgets* are illustrated in the following diagram or graph



Gambar 5. Complaints Pain After Playing Gadgets

From the data above, it can be concluded that 33% of respondents stated that the pain that children often complain about is sore eyes, 16% of respondents stated that the pain that children often complain about is watery eyes, 41% of respondents stated that the pain that children often complain about is dizziness, 10% of respondents stated that there is no pain that children often complain about.

CONCLUSION

Conclusion

The results of the research conducted by the author can be concluded that Gadgets can affect the physical health of children under 14 years old in the city of Bandung. The influences are positive and negative. The factors that can trigger these various impacts can be known to come from the facilities and the level of supervision of parents who have children under 14 years old.

Apart from the negative impact that can trigger poor physical health in children under 14 years old in Bandung itself, respondents stated that it is very important to have *Gadgets* to make it easier for parents and children to carry out their daily activities.

Suggestion

Based on the results of the research conducted by the author, it is recommended that parents of children under 14 years old in the city of Bandung continue to take care of and supervise their children in terms of using Gadgets to stay on top of the original goal. Gadgets are given and still maintain themselves so that they are not affected by the negative impacts caused by the existence of *Gadgets*.

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