**SCIENTIAE EDUCATIA: JURNAL PENDIDIKAN SAINS**

journal homepage: www.syekhnurjati.ac.id/jurnal/index.php/sceducatia

http://www.syekhnurjati.ac.id/jurnal/index.php/sceducatia/article/view/3661

# The Use of Gadget for Science Students of Semarang State University in the Millenial Era

Litasari Aldila Aribowo[a*], Sigit Saptono[b], Bambang Subali[c], Putut Marwoto[c]

[a.]Department of Science Education, Postgraduate, Universitas Negeri Semarang, Central Java, 50237, Indonesia
[b] Department of Biology, Faculty of Mathematics and Science, Universitas Negeri Semarang, Central Java, 50237, Indonesia
[c] Department of Physics, Faculty of Mathematics and Science, Universitas Negeri Semarang, Central Java, 50237, Indonesia

[*]Corresponding author: Kelud Utara III Street, Petompon, Gajahmungkur, Semarang City, Central Java, 50237, Indonesia. E-mail addresses: litasarialdila@gmail.com

**a r t i c l e   i n f o**

**a b s t r a c t**

This study aims to determine whether there is a relationship between the intensity of using gadgets from the Integrated Science Department of Semarang State University with the e-learning platform during lectures. This study uses a descriptive method and tries to analyze how the use of gadgets in the classroom. The steps to obtain data in the field were carried out by interviewing and distributing questionnaires to 80 students. The intensity of gadget utilization by students in the Millennial Era is classified as frequently used with evidence of 92.5% of respondents stating that they often use gadgets in their daily lives. They use gadgets for social media and look for information related to lecturing materials. The use of gadget-based learning models can be used as a learning strategy to attract the attention of students. The e-learning platform that has been known by Integrated Science students of Semarang State University as the most prospective millennial generation educator is Edmodo.

## 1. Introduction

The field of technology and information in the 21st Century has experienced rapid development. The existence of the internet makes it easier for people to obtain information makes people dependent on using technology in most their time. The millennial generation is a term for generations who was born in the 1980s to 2000 and familiar with digital technology. Both of these are interrelated, given the digital technology that continues to grow rapidly and closely related to our daily lives (Wahono, 2018). A millennial generation has been (and continues to be) greatly shaped by the technological advances present during their childhood, college career, and into the workplace (Gibson & Sodeman, 2014). The information available on the internet can be easily accessed by the public by using electronic gadgets such as smartphones, computers, laptops, tablets, and others (Izzati, 2015). The use of gadgets or tools that can easily be connected to the internet has increased from time to time. People today enjoy new freedoms in space and time that allow them to carry out activities and interact with other people using ICT devices and cellphone use throughout the world

continues to show significant growth (Christin et al., 2014). According to Townsend (2000) Cell phone use significantly affects human life and social relations, and provides the possibility of conducting activities and interactions in new ways, which results in spatial improvements.

Currently, around 45 million people or users or gadgets the internet, of which nine million use cellphones to access the internet. Whereas in 2001, there were only half a million internet users in Indonesia. This number is increasing because of the more easily available and affordable prices of smartphones (Sanjaya & Wibhowo, 2011). In a survey conducted by the Central Statistics Agency (BPS) in collaboration with the Indonesian Internet Service Providers Association (APJJII), noted that internet users in Indonesia until the end of 2016 reached 143.26 million people out of the total population of 262 million people. This survey was conducted in 6 major regions in Indonesia which include Java, Sumatra, Kalimantan, Sulawesi, Bali-Nusa, and Maluku-Papua. This number has increased compared to the results of the 2016 survey of 132.7 million people. Based on the survey results, it was also stated that 75.50% of the population aged 13-18 years and 74.43% of the total population aged 19-34 years used the internet.

The use of gadgets makes people have new freedom in space and time that allows them to obtain information, carry out activities and interact with others in practical ways without wasting energy and material. The convenience offered by gadgets with all superior applications such as social media that can cut the distance and disseminate information, make gadgets an inseparable part of daily human activities (Izzati, 2015). The existence of gadgets often makes humans difficult to control the time such as forgetting that he had wasted his time operating the gadget. Users of this gadget use their gadgets whenever and wherever they pleased. In developing countries, Smartphone can easily compensate for the limited access of internet and data access, which in turn help their infrastructure and education development (Sarwar, 2013). Four main factors were found to have a significant impact on ICT and electronic gadget among student; these are motivation, acceptance, usability, and motivation (Saruji et al., 2017). The university student population has been regarded as one of the most susceptible to developing Internet addiction among all demographic groups of Internet users (Yeap et al., 2015).

Many students use most of their time to use their gadgets, both for communication with friends, business activities, watching movies, and looking for various references. Herein lies

the importance of instilling a self-regulated attitude so that wise students use gadgets not only gadgets are not just to display self-existence, prestige, or join in with fashion modes but can be a supporting tool in the learning process (Yulanda, 2017). In general, technology (gadget) has become an inseparable part of one's life; efforts are needed to increase awareness, knowledge, and skills to keep using the internet smartly through its gadgets (Lestari et al., 2016). The usage intensity of gadgets for students needs to be integrated with the application of education in learning activities. So, they do not fall into negative things in cyberspace. The use of technology enhanced gadgets can aid in the creation of attractive and cooperative lessons that promote meaningful learning (Gonzalez-acevedo, 2016).

Technology is useful and easy to be applied in teaching and learning, but there are negative impacts. The negative impacts caused by the technology include: (a) students tend to be engrossed in gadgets or the internet so that the absorption of knowledge delivered is very low; (b) students easily access articles or sites that related to SARA (Ethnicity, religion, race and inter-group relations), pornography, and violence; (c) the easiness of plagiarism so that students do not seriously improve competence; and (d) ease in transacting prohibited goods. The negative impact causes social changes for students toward the school environment. The rise of brawls, SARA, and crime could be due to the ease of getting information from the internet (Abdulmajid & Setiadi, 2015). These problems are a big challenge in the world of education to include technology in learning activities. More and more students are using Android smartphones, but not necessarily in the use of the media, it is also used to access educational information (Juraman, 2014).

Students of Integrated of Science Education Department at Semarang State University are mostly familiar with gadgets. This research was carried out in the Integrated of Science Education Students at Semarang State University because the researcher thought that they need an e-learning platform to support lecturing activities in the Integrated of Science Education Department. It happened because the material of the Integrated of Science Education Students discussed a lot of abstract things. So, it needs some facilities to support the material such as video displays that could be accessed by utilizing their gadgets.

Based on the explanation above, the formulation of the problem in this study are: (1) What is the intensity of the use of gadgets by Integrated Science students of Semarang State University in the millennial era?; (2) How is the use of gadgets by Integrated of Science Education students Semarang State University as millennial generation?; (3) How is the

influence of gadgets on Integrated of Science Education students of Semarang State University in the millennial Era? (4) What e-learning platforms are known by Semarang State University Integrated Science students as prospective millennial generation educators? This study aims to determine whether there is a relationship between the intensity of the use of gadgets from the Integrated Science Department of Semarang State University with the e-learning platform during lectures.

## 2. Research Methods

The approach of this research is qualitative. The aim qualitative research is to find a deep understanding of a phenomenon, facts, and reality, problems, and events that can be understood if the researcher if the researcher conducted in depth analysis and it is not only limited to the surface view, these are the characteristic of qualitative research. This study uses a descriptive method with the aim of describing current events and tries to analyze how the use of gadgets among Semarang State University students who will become prospective educators. The implementation of qualitative research does not use samples as a representative part of the population so that a large number of informants does not become a benchmark. The selection of informants by using purposive sampling where the selected informants can represent information deeply and ability to provide complete data. The steps to obtain data in the field are carried out by 1) in-depth interviews with several informants taken randomly from Semarang State University students who are active in communicating on social media such as Whatsapp through smartphones; 2) Distribution of questionnaires to 80 Semarang State University Science Education Students to find out the use of gadgets by students.

## 3. Result and Discussion

In this study, there are five indicators of gadgets related to gadgets that were used which included: 1) Ownership of gadgets and connections, 2) Utilization of gadgets, 3) Dependence of gadgets, 4) E-learning platform 5) Gadget Influence.

Table 1.  Ownership of Gadget and Connection Aspects

| Indicators | Several Students (%) |
|---|---|
| Get to know the gadget | 100 |
| Using gadgets since Junior High School. | 43,75 |
| Smartphones Gadget user | 65 |
| Access the internet by using Wi-fi and data connection. | 65 |

According to Bhatkal and Kale (2014), Now in the world, the internet is the most important thing and up to 99% of people have mobile gadgets. Based on the table above, as many as 100% of respondents know gadgets and as many as 43.75% use gadgets since junior high school. This is by the opinion of Rozalia (2017), which states that gadget users in Indonesia are not only adults, but even elementary school students are already good at using gadgets. Based on a survey conducted by the Central Statistics Agency (BPS) in collaboration with the Indonesian Internet Service Providers Association (APJJII), noted that the percentage of smartphone ownership is 50.08%, this reinforces the results of the study of 65% of respondents using mobile gadgets and accessing the internet via Wifi and data plan. According to Wahono (2018)  as users of communication devices, we are required to be literate towards the digital world. Literacy in the sense of understanding, evaluating and making things (can become producers, not just consumers).

Table 2. Utilization of Gadget Aspect

| Indicators | Several Students (%) |
|---|---|
| The Level of frequency in using the gadget in doing tasks. | 92,5 |
| Communication through social media. | 73,25 |
| The presumption of the gadget is very helpful. | 96,25 |

In this study, the subjects of the study were prospective student educators. Based on the results of the questionnaire in the table above, 73.75% of the use of gadgets among students is only to access social media. Every human activity in the whole world can be reached through social media, such as Instagram, Facebook, Twitter, and so on. The use of social media is without the boundaries of space, cost, time, age, ethnicity, culture, and religion (Maryulis, 2014; Panjaitan & Prasetya, 2017). Social media is having a major impact on the personality development of millennials (Kavitha & Bhuvaneswari, 2016). As many as 92.5% of respondents stated that they often use gadgets when they did their assignments. With this habit, as many as 96.25% of respondents felt that gadgets were very helpful for respondents in completing lecture assignments and lecture material.

The development of information technology also influenced the change of life style of adolescent (Rahmawati et al., 2018). Based on interviews with several respondents, respondents used gadgets to search for lecture material that was not understood, sought

journal references and read several articles related to the development of the world of education. Based on the result of Juraman's research (2014), Android smartphone is not only as a communication tool, but also as a media for students to improve their learning while lecturing is occur happening. Internet technology not only makes it easy for us to get the latest information but also provides an opportunity for us to be able to work (Wahono, 2018). According to Dasharatham & Prasad (2018) doing things quickly and perfectly is the most implementing psychic nature of students and teachers in learning and teaching using gadgets.

Table 3. Dependence of gadgets Aspects

| Indicators | Several Students (%) |
|---|---|
| Using Gadget all day. | 67,5 |
| Using gadget more than 3 hours per day. | 95 |
| Always bring the gadget to the campus. | 92,5 |
| Presumption of 75% of students thinks that gadget is very helpful in life. | 5,5 |

kata

Millennials are a unique generation, and different from other generations. This is much influenced by the emergence of smartphones, the spread of the internet, and the emergence of social media networks (Sutijono & Farid, 2018). These three things affect the mindset, values, and behavior that are obeyed (Nahriyah, 2017). According to Kilber et al., (2014) the characteristics formed in the millennial generation are internet addiction; confidence and high self-esteem; more open and tolerant of change; showing salary and giving recognition to individuals; flexible work schedule; and career advancement as an important factor for the millennial generation. Dependence on gadgets can be seen from the results of research that show that as many as 67.5% of respondents use gadgets at any time and 95% of respondents use gadgets more than 3 hours each day. This is supported reinforced by the results of a questionnaire calculation which shows that as many as 57.5% of respondents feel that 75% of gadgets are very important in their lives. Gadgets as the most desirable technology certainly have very positive impacts such as easiness of communication, ease of access to information and more of the many benefits of using gadgets, if it is not wise to use it, gadgets can cause harm especially for children who are still in school-age such as disruption of physical and psychological development and changes in children's behavior (Yulanda, 2017). The research finding of Mamatha et al., (2016) shows that more gadget users have the high emotional maturity and slightly higher thinking skills.

Table 4. Aspect of E-learning Platform

| Indicators | Several students (%) |
|---|---|
| Students who have been using an education platform in the learning process. | 100 |
| The assumption of using an education platform makes the learning process easier and efficient. | 85 |
| Students who have used Edmodo. | 93,75 |
| Students who have used *Moodle.* | 18,75 |
| Students who have used *Schoology* | 7,5 |

Website-based media is a part of the life of modern society, including students (Sutijono & Farid, 2018). The students are no stranger to internet media. They often use internet media to communicate, find sources of learning, play, watch videos, listen to music, shop online, etc. (Kraus et al., 2010). Based on table 4, 92.5% of respondents always carry their gadgets while they on campus. According to Yulanda (2017), education is one way to control the use of gadgets by students to be useful and have positive goals in the teaching and learning process. The use of gadget-based learning models can be used as a learning strategy to better attract the attention of students. An electronic media can make students active in learning, for example, they are more active using the internet to search the materials. According to Azizah et al., (2017), the use of e-learning technology and designs can be used effectively to improve the results of student's learning.

According to Suana et al., (2017) one form of integrating the internet in the learning process is e-learning. Implementing e-learning in science learning using problem learning models can improve students' ICT literature (Eliana et al., 2016). The e-learning platform is an application that can connect to teachers and students in the online study room. E-learning was created to overcome the limitations between teachers and students, especially regarding space and time (Tigowati et al., 2017). E-learning as the media of information, besides it is free in design, it can also display an interactive information than using a conventional paper (Nurhayati, 2013).

Based on the results of the study as many as 100% of respondents stated that there are courses that have involved gadgets in lectures through e-learning. 85% of respondents agreed that lectures felt easier, more efficient and practical with the existence of learning that utilizes

gadgets in lectures. E-Learning focuses on the efficiency of the teaching and learning process. The use of the E-learning learning model will make it easier for students to access teaching materials, discuss with friends, and ask the instructors whenever and wherever. Not only that, but the instructor can also add a reference to teaching materials that can be uploaded on the internet so that students can also add their insight, and will greatly facilitate the instructor to carry out supervision in mastering student material. Students who are prospective educators who are subjects in this study are familiar with several e-learning platforms. The percentage of e-learning platforms that are already known to prospective educators from the most widely known is Edmodo at 93.75%, moodle applications at 18.75% and only 7.5% of students who are familiar with the Schoology application.

Table 5. The aspect of Gadget Influences

| Indicators | Several Students (%) |
|---|---|
| Gadget reduces learning hours. | 57,5 |
| Gadget helps to learn process off campus. | 91,25 |
| The presence of gadgets does not affect the value of lectures on campus | 61,25 |
| Family relations remain harmonious despite using gadgets | 86,25 |

Gadgets are very influential in the lives of respondents. 57.5% of respondents felt that the gadget slightly reduced their study hours. Gadgets also have a positive impact on respondents. As many as 91.25% of respondents felt that the gadget helped the learning process off campus. According to the results of Juraman's research (2014), Android smartphones are now not only mere communication tools but have become learning tools that are now present in the lives of students. As many as 61.25% of respondents stated that the presence of gadgets did not affect the value of lectures on campus. According to 86.25% of respondents felt the relationship with the family remained harmonious even though each family member used a gadget. Smartphones can be smart if the society, technologists, people involved with higher education like faculty, students and education providers to understand their responsibility towards the usage of these devices smartly to get more benefits in education health, and social life (Subramanian & Rajesh, 2015).

Students also described that, it is good when the application of learning models collaborating face-to-face learning and online learning by using gadgets. It is to support the abstract material. The e-learning platform called Edmodo has already known by Integrated Science Education students at Semarang State University as the teacher candidates of millennial generation, but in lecturing activities, there are no subjects at the time that collaborating e-learning platforms with face-to-face learning.

## 4. Conclusion

The intensity of gadget utilization by Semarang State University integrated science students in the millennial era is classified as frequently used with evidence that 92.5% of respondents stated that they often use gadgets in their daily lives. Semarang State University integrated of integrted science education students as millennials use gadgets for social media and look for information related to lecture material. Students of the Semarang State University integrated of science education department as prospective educators already have an attitude of self-management in the use of gadgets not only to use gadgets for social media but also in reference to lecture material references. Students also elaborate that, it is students were excited when the application of learning models collaborating face-to-face learning and online learning by using gadgets, it is to support the abstract material.

## 5. Acknowledgment

## References

Abdulmajid, N. W., & Setiadi, B. R. (2015). Pemanfaatan social web environment dalam menciptakan student-centered learning dan peningkatan keterampilan siswa pada pembelajaran. *Seminar Nasional Universitas PGRI Yogyakarta*: 1-6. Available online: http://repository.upy.ac.id/355/1/FK1_Nuur%20Wachid%20FIX%201-6.pdf

Azizah, S., Khuzaemah, E., & Lesmanawati, I. (2017). Penggunaan media internet eXe-Learning berbasis masalah pada materi perubahan lingkungan untuk meningkatkan hasil belajar siswa. *Scientiae Educatia: Jurnal Pendidikan Sains*, *6*(2), 197-213. doi:10.24235/sc.educatia.v6i2.1957

Bhatkal, A. P., & Kale, B. (2014). A survey on improved framework for smart phone using internet of things. *International Journal of Science and Research*, *3*(12), 2102–2104.

Christin, G. N., Tamin, O. Z., Santoso, I., & Miharja, M. (2014). Adjustment of daily activities : the influence of smartphone adoption on the travel pattern of mobile

professionals in the greater Jakarta area. *Journal of Engineering and Technological Sciences*, *46*(4): 394–409. doi: 10.5614/j.eng.technol.sci.2014.46.4.4

Dasharatham, P., & Prasad, S. (2018). The use of smart phone in teaching speaking skills : a pragmatic approach. *International Journal of Science and Research*, *7*(4), 791-794. doi: 10.21275/ART20181668

Eliana, E. D. S., Senam, S., Wilujeng, I., & Jumadi, J. (2016). The effectiveness of project-based elearning to improve ict literacy. *Jurnal Pendidikan IPA Indonesia*, 5(1), 51-55. Available online: https://journal.unnes.ac.id/nju/index.php/jpii/article/view/5789/4705

Gibson, L. A., & Sodeman, W. A. (2014). Millennials and technology: Addressing the communication gap in education and practice. *Organization Development Journal*, *32*(4), 63-75.

Gonzalez-acevedo, N. (2016). Technology-Enhanced-Gadgets in the Teaching of English as a Foreign Language to Very Young Learners . Ideas on Implementation. Procedia - Social and Behavioral Sciences: *232*(1), 507-513. doi: 10.1016/j.sbspro.2016.10.070

Izzati, N. (2015). Motif penggunaan gadget sebagai sarana promosi bisnis online di kalangan mahasiswa UIN Sunan Kalijaga. *Jurnal Komunikasi ASPIKOM*, *2*(1), 374–380. Available online: http://jurnalaspikom.org/index.php/aspikom/article/view/88/84

Juraman, S. R. (2014). Pemanfaatan Smartphone Android Oleh Mahasiswa Ilmu Komunikasi Dalam Mengakses Informasi Edukatif. *Jurnal Acta Diurna*, *3*(1), 1–16. https://ejournal.unsrat.ac.id/index.php/actadiurna/article/view/4493/4022

Kavitha, S., & Bhuvaneswari, R. (2016). Impact of social media on millennials–a conceptual study. *Journal of Management Sciences and Technology*, *4*(1), 80-86. Available online: https://www.apeejay.edu/aitsm/journal/docs/issue-oct-2016/ajmst040108.pdf

Kilber, J., A. Barclay & D. Ohmer. (2014). Seven tips for managing generation y. *Journal of Management Policy and Practice*, *15*(4), 80-90. Available online: http://t.www.na-businesspress.com/JMPP/BarclayA_Web15_4_.pdf

Kraus, R., Stricker, G., & Speyer, C. (Eds.). (2010). Online counseling: A handbook for mental health professionals. India: Academic Press.

Lestari, I., Riana, A. W., & Taftarzani, B. M. (2016). Pengaruh gadget pada interaksi sosial dalam keluarga. *Prosiding KS*, *2*(2), 204–209. Available online: http://fisip.unpad.ac.id/jurnal/index.php/prosiding/article/view/110/93

Mamatha, S. L., Hanakeri, P. A., & Aminabhavi, V. A. (2016). Impact of gadgets on emotional maturity, reasoning ability of college students. Int J Applied Res, *2*(3), 749-755. Available online: http://www.allresearchjournal.com/archives/2016/vol2issue3/PartM/2-3-182.pdf

Maryulis. (2014). Pengaruh aktivitas di media sosial terhadap rutinitas blogger Sumatera Barat. *Jurnal Pekommas*, *17*(2), 119–128.

Nahriyah, S. (2017). Tumbuh kembang anak di era digital dalam risalah. *Jurnal Pendidikan dan Studi Islam*, 4(1).

Nurhayati. (2013). Pemberdayaan e-learning sebagai media pembelajaran ramah lingkungan. *Jurnal Saintech*, *5*(1), 50–57

Panjaitan, P., & Prasetya, A. (2017). Pengaruh social media terhadap produktivitas kerja generasi millenial (studi pada Karyawan PT. Angkasa Pura I Cabang Bandara Internasional Juanda). *Jurnal Administrasi Bisnis*, *48*(1), 173-180.vAvailable online: http://administrasibisnis.studentjournal.ub.ac.id/index.php/jab/article/view/1884/2267

Rahmawati, A., Soesilowati, E., & Sanjoto, T. B. (2018). Adolescent Lifestyle of Gadget Users in Kudus City. *Journal of Educational Social Studies*, *7*(1), 52-60. https://journal.unnes.ac.id/sju/index.php/jess/article/view/22502

Rozalia, M. F. (2017). Hubungan intensitas pemanfaatan gadget dengan prestasi belajar siswa kelas V sekolah dasar. *Jurnal Pemikiran dan Pengembangan Sekolah Dasar (JP2SD), 5*(2): 722-731. doi: 10.22219/jp2sd.v5i2.4821

Sanjaya, R., & Wibhowo, C. (2011). Menyiasati tren digitas pada anak menggunakan teknilogi informatika. Jakarta : PT Elex Media Komputindo.

Sarwar, M. (2013). Impact of smartphone's on society. *European Journal Of Scientific Research*, *98*(2), 216–226.

Saruji, M. A. M., Hassan, N. H., & Drus, S. M. (2017). Impact of ICT and electronic gadget among young children in education: a conceptual model. In Proceedings of the 6th International Conference on Computing & Informatics: 480-486.

Suana, W., Maharta, N., Nyeneng, I. D., & Wahyuni, S. (2017). Design and implementation of schoology-based blended learning media for basic physics I course. *Jurnal Pendidikan IPA Indonesia*, *6*(1), 70-78. Available online: https://journal.unnes.ac.id/nju/index.php/jpii/article/view/8648/6318

Subramanian, S. S., & Rajesh, M. S. (2017). Impact of smart phone usage among college students–an analytical study. *International Journal of Science and Research (IJSR)*, *6*(9), 588-590. Available online: https://www.ijsr.net/archive/v6i9/ART20176642.pdf

Sutijono, S., & Farid, D. A. M. (2018). Cyber counseling di era generasi milenial. S*OSIOHUMANIKA*, *11*(1), 19-32. Available online: http://www.journals.mindamas.com/index.php/sosiohumanika/article/view/1000/897

Tigowati, T., Efendi, A., & Budiyanto, C. W. (2017). The influence of e-learning use to student cognitive performance and motivation in digital simulation course. *IJIE (Indonesian Journal of Informatics Education)*, *1*(2), 41-48. Available online: https://jurnal.uns.ac.id/ijie/article/view/12812/pdf

Townsend, A. M. (2000). Life in the real-time city: mobile telephones and urban metabolism. Journal of Urban Technology Publication, *7*(2), 85–104. doi: 10.1080/713684114

Wahono, H. T. T. (2018). Literasi digital di era millenial. *Journal Proceeding*, *4*(1), 185–193. http://ejournal.stkipjb.ac.id/index.php/prosiding/article/view/548/381

Yeap, J. A., Ramayah, T., Kurnia, S., Halim, H. A., & Ahmad, N. H. (2015). The assessment of Internet addiction among university students: some findings from a focus group. *Tehnički vjesnik*, *22*(1), 105-111. doi: 10.17559/TV-20131009152752

Yulanda, N. (2017). Pentingnya self regulated learning bagi peserta didik dalam penggunaan gadget. *Reasearch and Development Journal of Education*, *3*(2), 164–171. Available online: https://journal.lppmunindra.ac.id/index.php/RDJE/article/view/2013/1526