


# Character Education: The Scientific Attitudes in the Digital Technology Era 5.0: Constructivism Theoretical Approach

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**Keywords:** Character Education, Scientific Attitude, Digital Technology Age.

**Abstract:** This article attempted to examine and interpret the scientific attitudes (SA) in using digital based on technology for the benefit of everyday life. This article used a constructivist theoretical approach. This theory revealed that a person's attitude, behavior, and potential could be influenced by a certain interaction environment. The descriptive-quantitative was used to be taken references from articles, books, and opinions of experts in their fields with the desk evaluation. The field discussion was about scientific attitudes in this technology age. The scientific attitude was regarded as a person's readiness to accept other people's opinions, views ideas well. Someone's expertise in receiving the information will solve a systemic solution to problem-solving to achieve information disclosure. The analysis's result showed that a scientific attitude is urgently needed by society in technology-based integration: a scientific attitude in giving opinions, a scientific attitude in providing information, a scientific attitude in being curious about other information, a scientific attitude in limited digital capabilities, and scientific attitude in using digital media. So, the minor public attention to the scientific attitude of digital utilization will be a distortion of character education in Indonesia.

## 1 INTRODUCTION

Technology is not just a tool. Technology is a way to express yourself from reality, for example, the truth” Martin Heidegger (1949). The use of social media in society has brought many visible changes in society(Venkataraman, 2021.).According to the Ministry of Communication and Informatics cited [mediaindonesia.com](http://mediaindonesia.com), Indonesia has a relatively high rate of internet usage. This is caused by low internet costs and the significant proportion of smartphone users—167 million, or 89% of Indonesia's total population—already use smartphones.The impact of this change could be seen in the high curiosity of the public for information from someone's involvement in other people's conversations, expanding information that it is propaganda, and it is getting involved in cases of people who are considered famous such as celebrities and political figures. Its Impact will affect the harmony of a society,ifthe communityuses socialmedia improperly to interact andcommunicate with one another (Pariutari et al., 2022; Hayati, Suyatno, & Susatya, 2020).

The impact of this change certainly comes from a person's attitude toward understanding and using digital-based social media. Digital-based social media requires understanding and self-assessment of scientific attitudes. Attitude is a person's perspective in thinking, feeling, understanding and interacting with the environment, while scientific implies acceptance of someone in positive thinking with the process of teaching and learning. Wulandari (2022)a scientific attitude is a very important output in the teaching and learning process. Artaga (2021) scientific attitude can be said to be the pioneer of a person's development of activities that develop the ability to think logically. Another opinion about scientific attitude,Latipah, Kistoro, & Khairunnisa (2020)states that scientific attitude is a person's belief or confidence in knowing his ability to realize and implement it in life, by getting support from the community. Nurohman & Suharyanto (2009)states that the meaning of the word scientific attitude does not only have an effective meaning because there is the word attitude, but the word scientific attitude has a broad meaning, including cognitive and psychomotor. (Nurohman & Suharyanto, 2009) cites in Deshpande (2008) dividing several points such as conveying information or data until the data is

sufficient, the ability to process information, the ability to think logically, being aware of one's shortcomings, and the ability to develop oneself and be interested in new things.

Appropriately, digital-based social media makes the positively contribution to society to in favorable way to preserve social peace and personal integrity (Triyanto, 2020). The actual situation differs from this, In Southeast Asia, Indonesia currently qualifies as the nation with the lowest degree of online civility (Ekklesia, 2022; Microsoft, 2020; UNICEF, 2021). Based on the view. Triyanto (2020) people can utilize digital-based social media for a variety of purposes, such as provide to teaching about values and morals that prioritize ethics and respect for the opinions of others. (Pariutari et al., 2022.) gives the opinion that increasing digital human resource education. Beside of that, (Suryawati & Osman, 2018) gives the two-perspective presented above support the idea that humans are required to respect values or morals in the form of respecting the acceptance of other people's opinions, without declaring that the opinion is mistake. (Tari, Hasiholan Hutapea, Tinggi, Kristen, & Kupang, 2020) Ethics, by employing digitally based social media to the community should be taught ethic, value, and morality.

There is stated that the advantages of this digital presence offer a unique presence provide a different view of the learning process on the class (Masrukhin, 2013). Teachers are more flexible to communicate without boundaries and space (Tari et al., 2020). It provides a view that digital has brought people to change their character by prioritizing intellectual intelligence (Amrillah, Rahmanningtyas, Hartati, & Agustin, 2020; Gungum, Justito, & Nunik, 2017). According to Marini (2017); Novianti & Riyanto (2018) that digital and technology have brought significant changes to aspects of thinking, innovation, creative, critical, and communication skills, as well as collaboration skills. In these three views, it can be conveyed that digital either-or technology that is present in society has several visible properties from the use of digital or technology, such as, technology in education has significantly improved several areas of learning and raised the bar academic achievement (Sutarto, 2017; Silvana & Darmawan, 2018).

Furthermore, on the societal level, digital technology age 5.0 has brought about a condition in which societies have experienced a paradigm shift or perspective in integrating, such as face-to-face meetings, which are no longer important (Pariutari et al., 2022). This can be replaced online or offline, its need can be done at home without leaving the house by using applications such as Grab, online-based restaurants and so on. Therefore, technology

interaction between communities can be done digitally, without having to meet in person. On the personal side, digital technology is transforming the human minds creating great technology-based works in design, architecture, fashion, food, and transportation and more.

Technology pointed of view had brought two components such as information and knowledge. Information component is a component for human needs with the surrounding environment, and the knowledge component is a component for creating to discover the novel things.

Based on the view of Mukhopadhyay (2014) that digital technology and characters education includes three components, namely personal, social and moral, there are three main components to its implementations. The development of character education in this digitalization era requires an important point (Maimunah, 2016; Ratnasari, 2019). It is for the sustainability of the development of character education: 1) personal is a form and form of digital running in society, 2) society is a combination of digital technology and society to achieve goals together, and 3) moral is the involvement of values, deeper than digital, individual, and social. It can be said (Arianto, 2021; Pendidikan Tambusai, Siti, Agnia, Furnamasari, & Dewi, 2021.) That reiterated that the development of character education requires 4 (four) principles, namely: sustainability is all subjects are oriented towards the development of character-building development. Values are developed rather than taught, prioritizing the formation national character, namely: religious, honest, tolerance, discipline, hard work, creative, independent, democratic, curiosity, national spirit, love of the motherland, respect for achievement, friendly/communicative, love for peace, love to read, for the environment, care for the social, and responsibility. Therefore, Zahri Harun (2013) (cited in Likona, 2019) describes the character consists three aspects moral knowing, feeling, and action. Based on this statement, (Aspirasi Konstitusi & Sugeng Bayu Wahyono Atien Nur Chamidah Badan Pengkajian Majelis Permusyawaratan Rakyat Republik Indonesia, Herwin Wuri Wuryandani Vinta Tiarani, 2011) gives the clear point of character (cited Megawangi) love of God and truth, responsibility discipline, and independence, trust, respect and courtesy, compassion, caring, and cooperation, confidants, creative, and never give up, fair, and spirit leadership, kind, humble, tolerant and peace-loving. Based on the above explanation, personality plays an important role in all forms of human activity (Şener, Türk, & Taş, 2015). Based on the figures above, the writer might take the view that the character for a

scientific attitude. It is a character that is based on the competences to think, act, and feel on things that have logical that can be accepted by anyone. It is pointing include making a meaning, strong feelings, or attention in the execution of thoughts, actions and feelings.

## 2 METHODS

The method used a qualitative descriptive approach which was the main source of research for the researcher themselves (Silvana & Darmawan, 2018). This article was the usage theory a constructive approach which emphasized that a person's behaviour could be influenced by the interaction environment. The data sources for this article were books, journals, and expert opinions on public scientific attitudes in using digital-based social media served as data sources for this article. The authors used a desk-assessment approach for the data collection process. We need to delve deeper into information and knowledge to understand theories, problem backgrounds, theoretical studies, and insights into social issues via social media.

## 3 RESULT AND DISCUSSION

Character education shows how someone takes initiative, makes decisions, and solves problems (Ratnasari, 2019). Character education and scientific attitudes are inseparable parts of the current digital technology age (Şener et al., 2015). In current digital age, constructivistics theory is the fundamental element that cannot be separated from character education and scientific attitudes in this digital technology age phenomenon. According to this view, this theory believes that all human activities are impacted by environmental interactions. The environment is a person's main source of learning (H. Dadang Supardan, 2016). Some views say that constructivism can change a person's character, and make that character dominant to their characters (P. Pannen, Dina Mustafa, & Mustika Sekarwinahyu, 2001). This point tells to us that constructivistics theories and scientific attitudes require us to be able to distinguish between environmental influences and scientific attitudes that arise from digital technology.

In the past, a few of people would be happy if they met privately in certain situations and conditions. Since people have problems that person will be asked to meet directly with that person. In our digital age, these things rarely find. This will become a problem

for society in maintaining integrity and harmony of society, if these matters are not addressed with a scientific attitude. Based on the discussion above, it was observed that Indonesians' use of digital media is depend on their civility in the digital space, as measured by the Microsoft Digital Civility Index (DCI), Indonesia may be told a country which it ranks 29<sup>th</sup> out of 32 countries for its poor utilization of digital technology as media (UNICEF, 2021); Microsoft, 2020; Ekklesia, 2022).

The scientific attitude in the digital era is no longer a global issue or phenomenon, but it has become a societal problem, so it is no one has been able to provide a solution to this phenomenon. The finding of this study clearly showed that scientific attitudes towards the digital age 5.0 are:

### 3.1 Scientific Attitude in Giving Opinions

One of the foundations of democracy is freedom of expression. Giving an opinion is the right of every human being. As a component of a democracy-based political system, freedom of speech has been protected by the law. However, in reality, we still see the general public using the term freedom of expression which is far from expectations (Triyanto, 2020). This is based on the symptoms that are easily expressed to other people in contemporary culture through digital or technological tools, without taking into account the symptoms themselves (Turnip & Siahaan, 2021). It is possible to develop critical thinking abilities by adopting the following four principles: a) store truth rather than argument; b) give priority to thinking insight; and c) use several sources of information.

### 3.2 Scientific Attitude in Providing Information as Digital Technology Age

There is a view in society that it is possible to provide any information to other people. Paisal, M, et al (2021) said that technology information had led of the people to live easily with the different goal. Scientific attitude given others may be quite good (Amrillah et al., 2020). However, the problem that occurs is providing information without seeing the truth of the information, so they tend to believe that the information is correct. This trend occurs in society in the current digital age (Baltaci, 2022). Not a few of our people provide information without look into the truth, authentic and legitimacy of the information. Based on the points above, a scientific attitude should

a) prioritize the truth of information rather than information needs, b) prioritize data and facts, c) seek the validity of news from experts, d) increase the values of communication literacy, e) to seek information from reliable sources.

### 3.3 Scientific Attitude in Curiosity for Other Information

Curiosity is one of the qualities shared by human (Buckingham & Buckingham, 2020). The curiosity of humans then gave birth to thinkers or philosophers of scientific study (Babiker, 2015). However, this reality is beyond what was expected. The scientific attitude that should be born in this case is human curiosity in scientific or knowledge. The fact that we see proves that human curiosity is more about other people's problems and other people's ugliness (Turnip & Siahaan, 2021). The scientific attitude that a person should have, namely: a) viewing knowledge as part of the experience, education and teaching, b) knowledge is a medium for discovering other knowledge with the argument of scientific, c) believing that everyone has secrets that should not be shared.

### 3.4 Scientific Attitude Within the Limits of Digital Technology Capabilities

In our digital age, awareness and self-control of things in this digital era are highly demanded. Digital may be said it is a media. It means that it expects to help all forms of material needs and financial needs. Digital media is a means of media for its users to communicate without being limited by space and time (Ergado, 2019). However, these digital capabilities have weaknesses and short comings that everyone should be aware of. This deficiency can be seen from the lack of honesty and understanding of a matter. Based on this level, the scientific nature of a person is: a) digital gives space and time to anyone who uses it without meeting face to face, b) digital bridges one's needs with more practical, c) reveals that social peace is not always possible in the digital world, d) digital provides a narrow space for honesty, e) destroys a feeling of family; and digital f) creates opportunity for criminal activity.

### 3.5 Scientific Attitude in Using Digital Technology as Media

Digital technology as media during the age of digitalism, its use was paid more attention to the accuracy of conditions and situations (Maharani, 2022); Turnip & Siahaan, 2021). This phenomenon is

a rare thing for some people to understand. The habit of people utilizing digital technology as media is more to its practical use. Everything can be done using a digital-based application. This of course will lead to low patient nature, more want to be achieved quickly. The idea that learning is a process is at odds with phenomena. The process will lead someone to master a certain field, and with the process experience and mastery of knowledge will be better. Based on this point, we can adopt a scientific attitude, namely: a) digital technology as media is a communication tool that is conditioned in certain situations, b) digital technology as media provides an opportunity to know something, but learning through the process will be better, c) digital technology offers conveniences for its users, but social harmony will be improve by always meeting offline, d) there is a sense of dependence on the use of digital technology media to create fulfilment of information needs.

One explanation for this phenomenon in our society in Indonesia is a scientific attitude in actualizing the functions, benefits, and goals of digital social media requires a deep understanding of the value of humanity and the value of respecting a person. It is meant that putting one self in the position of another person.

## 4 CONCLUSION

This research was limited by the fact that character forms part of the attitude that describes a person's activities in routines. Digital technology age provides opportunities for human activities to more practical things, and put aside process matters. A scientific attitude should be built since humans are familiar with digital technology as the media to connecting by the other activity and people around them. It is an effort to prioritize human values. Digital technology age is built with the power of humanity that is assimilated by culture, custom, religion, norms, politics, society and education. Thought this, a scientific attitude is developed, it is called digital consciousness. And with this phenomenon, parties who feel they have the authority and power to restore the digital field in aspects, namely: a) a scientific attitude in giving opinions, b) a scientific attitude in providing information, c) a scientific attitude in being curious about information others, d) scientific attitude within limited digital capabilities, and e) scientific attitude in using digital media.

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## REFERENCES

- Amrillah, H. M. T., Rahmaningtyas, A., Hartati, M., & Agustin, G. (2020). Peran Orang Tua di Era Digital. *Zuriah: Jurnal Pendidikan Anak Usia Dini*, 1(1), 23. <https://doi.org/10.29240/zuriah.v1i1.1884>
- Arianto, B. (2021). Pandemi Covid-19 dan Transformasi Budaya Digital di Indonesia. *Titian: Jurnal Ilmu Humaniora*, 5(2), 233–250.
- Artaga, R. C. (2021). Mastery of Science Concepts Improves Scientific Attitude in Elementary School Students. *Jurnal Ilmiah Sekolah Dasar*, 5(4), 606. <https://doi.org/10.23887/jisd.v5i4.37897>
- Aspirasi Konstitusi, M., & Sugeng Bayu Wahyono Atien Nur Chamidah Badan Pengkajian Majelis Permusyawaratan Rakyat Republik Indonesia Herwin Wuri Wuryandani Vinta Tiarani, aningrum A. (n.d.). *JURNAL MAJELIS*.
- Babiker, M. E. A. (2015). For effective use of multimedia in education, teachers must develop their own educational multimedia applications. *Turkish Online Journal of Educational Technology*, 14(4), 62–68.
- Baltaci, Ş. (2022). The Effect of Using Personal Response System on 6th Grade Students' Achievement and Attitudes towards Science and Technology. *Journal of Educational Technology and Online Learning*. <https://doi.org/10.31681/jetol.1095715>
- Buckingham, D., & Buckingham, D. (n.d.). *Epilogue: Rethinking digital literacy: Media education in the age of digital capitalism*. Diambil dari <http://greav.ub.edu/der/>
- Ekklesia, D. G. (2022). Digital Civility Index Dan Karakter Bangsa Dalam Wacana Pembangunan. *Kritis*, 31(1), 1–16. <https://doi.org/10.24246/kritis.v31i1p1-16>
- Ergado, A. A. (2019). Exploring the Role of Information and Communication Technology for Pedagogical Practices in Higher Education: Case of Ethiopia. *International Journal of Education and Development using Information and Communication Technology*, 15(2), 171–181.
- Gungum, G., Justito, A., & Nunik, M. (2017). Literasi Media: Cerdas Menggunakan Media Sosial Dalam Menanggulangi Berita Palsu (Hoax) Oleh Siswa Sma. *Pengabdian Kepada Masyarakat*, 1(1), 35–40. <https://doi.org/1410 - 5675>
- H. Dadang Supardan. (2016). Teori dan Praktik Pendekatan Konstruktivisme dalam Pembelajaran. *Eduonomic*, 4(1), 1–12.
- Hayati, F. N., Suyatno, S., & Susatya, E. (2020). Strengthening of Religious Character Education Based on School Culture in the Indonesian Secondary School. *The European Educational Researcher*, 3(3), 87–100. <https://doi.org/10.31757/euer.331>
- Latipah, E., Kistoro, H. C. A., & Khairunnisa, I. (2020). Scientific Attitudes in Islamic Education Learning: Relationship and the Role of Self-Efficacy and Social Support. *Edukasia: Jurnal Penelitian Pendidikan Islam*, 15(1), 37. <https://doi.org/10.21043/edukasia.v15i1.7364>
- Maharani, M. D. (2022). The Urgency of Pluralism in The Digital World: A Study of Religious Reception on Instagram Urgensi Ayat-Ayat Pluralisme di Dunia Digital: Studi Resepsi Keberagamaan di Instagram melakukan online bullying atau kritik pedas terhadap kehidupan seseorang at.
- Marini, A. (2017). Character Building Through Teaching Learning Process: Lesson in Indonesia. *PONTE International Scientific Researchs Journal*, 73(5). <https://doi.org/10.21506/j.ponte.2017.5.43>
- Masrukhin, A. (2013). Model Pembelajaran Character Building dan Implikasinya Terhadap Perilaku Mahasiswa. *Humaniora*, 4(2), 1229. <https://doi.org/10.21512/humaniora.v4i2.3566>
- Microsoft. (2020). Civility, Safety & Interaction Online February 2020, (February), 1–50. Diambil dari [papers3://publication/uuid/1FB82F99-9A26-408E-8C85-54A116D28672](https://papers3://publication/uuid/1FB82F99-9A26-408E-8C85-54A116D28672)
- Mukhopadhyay, R. (2014). *Scientific attitude-some psychometric considerations ranganath a Related papers Scientific attitude-some psychometric considerations. IOSR Journal Of Humanities And Social Science (IOSR-JHSS)* (Vol. 19). Diambil dari [www.iosrjournals.org](http://www.iosrjournals.org)
- Novianti, R., & Riyanto, S. (2018). Tingkat Literasi Media Remaja Desa dalam Pemanfaatan Internet Media Literacy ' s Level of Young Villager in Internet Utilization, 16(2), 158–171.
- Nurohman, S., & Suharyanto. (2009). Internalisasi Scientific Attitude Mahasiswa Pada Praktikum Fisika Dasar I Melalui Implemetasi Inductive Teaching. *Jurnal Pendidikan Matematika dan Sains*, 14(2), 73–80.
- P. Pannen, Dina Mustafa, & Mustika Sekarwinahyu. (2001). Konstruktivisme Dalam Pembelajaran. *Konstruktivisme Dalam Pembelajaran*.
- Pariutari, M., Komang, I., Ardyastika, G., Gede, P., Putra, P. D., Muliana, N., & Hum, M. (n.d.). *The Influence of Digitalization pada Pendidikan Karakter di Era Generasi Z dalam Society 5.0 I Dewa Ayu*.
- Pendidikan Tambusai, J., Siti, A., Agnia, G. N., Furnamasari, Y. F., & Dewi, D. A. (n.d.). Pengaruh Kemajuan Teknologi terhadap Pembentukan Karakter Siswa.
- Ratnasari, W. (2019). Character Building in Education: A Proposed Theory for STAI's Economic Syari'ah

- Program. *AL-MUQAYYAD: Jurnal Ekonomi Syariah*, 1(1), 25–39. <https://doi.org/10.46963/jam.v1i1.48>
- Şener, N., Türk, C., & Taş, E. (2015). Improving Science Attitude and Creative Thinking through Science Education Project: A Design, Implementation and Assessment. *Journal of Education and Training Studies*, 3(4). <https://doi.org/10.11114/jets.v3i4.771>
- Silvana, H., & Darmawan, C. (2018). Pendidikan Literasi Digital Di Kalangan Usia Muda Di Kota Bandung. *Pedagogia*, 16(2), 146. <https://doi.org/10.17509/pdgia.v16i2.11327>
- Suryawati, E., & Osman, K. (2018). Contextual learning: Innovative approach towards the development of students' scientific attitude and natural science performance. *Eurasia Journal of Mathematics, Science and Technology Education*, 14(1), 61–76. <https://doi.org/10.12973/ejmste/79329>
- Sutarto, S. (2017). Teori Kognitif dan Implikasinya Dalam Pembelajaran. *Islamic Counseling: Jurnal Bimbingan Konseling Islam*, 1(2), 1. <https://doi.org/10.29240/jbk.v1i2.331>
- Tari, E., Hasiholan Hutapea, R., Tinggi, S., Kristen, A., & Kupang, N. (2020). *KHARISMA: JURNAL ILMIAH TEOLOGI Peran Guru Dalam Pengembangan Peserta Didik Di Era Digital* (Vol. 1). Diambil dari <http://jurnalsttkharisma.ac.id/index.php/Kharis/>
- Triyanto, T. (2020). Peluang dan tantangan pendidikan karakter di era digital. *Jurnal Civics: Media Kajian Kewarganegaraan*, 17(2). <https://doi.org/10.21831/jc.v17i2.35476>
- Turnip, E. Y., & Siahaan, C. (2021). Ezra Yora Turnip, Chontina Siahaan 38 Etika Berkomunikasi Dalam Era Media Digital. *Jurnal Intelektiva*, 3(4), 38–45.
- UNICEF. (2021). Final Report: Situational Analysis on Digital Learning Landscape in Indonesia, 1–112. Diambil dari [https://www.unicef.org/indonesia/media/8766/file/Digital Learning Landscape in Indonesia.pdf](https://www.unicef.org/indonesia/media/8766/file/Digital%20Learning%20Landscape%20in%20Indonesia.pdf)
- Venkataraman, S. (2021). *A review on Scientific Attitude among Higher Secondary Students*.
- Wulandari, A. S. (2022). Jurnal Pendidikan MIPA. *Jurnal Pendidikan Mipa*, 12(September), 682–689.
- Zahri Harun, C. (2013). *Manajemen Pendidikan Karakter*. Jurnal Pendidikan Karakter, Tahun III, Nomor 3, Oktober 2013.