How Technology Aids Practical Learning Skills of Students Taking Master of Engineering Management of NEUST-Graduate School

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Abstract: The study sought to know how technology aids practical learning skills of students taking Master of Engineering Management of NEUST-Graduate School. Specifically, it answered how technologies aided the practical learning skills of the students in terms of Adaptability/ Flexibility, Motivation/ Self-Direction, Teamwork, and Problem-Solving. This study used the descriptive method of research. The researchers designed a questionnaire to satisfy the objectives of the study. The data was tabulated and analyzed in terms of their statistical meanings and significance. It was found out that Adaptability/ Flexibility, Motivation/ Self-Direction and Problem-Solving were rated excellently while Teamwork was rated outstandingly. Powerful, dependable, and usable technology has improved, especially for engineering. Because it will serve as a bridge between industry and the skills that students will acquire through new technologies, the capacity to integrate new computing tools into engineering processes is essential.
Keywords: ***Technology, Practical Skills, Engineering Management, Education, Master's Degree.***

I. INTRODUCTION

Almost every aspect of human existence has been impacted by modern technology. In the last few decades, new technologies such as high-end computers, 5G cellular networks and services, touch screen mobile phones, solar energy, virtual reality, and artificial intelligence have all been produced. With the help of technology, jobs can be completed more quickly and with less effort. Technology helps you operate more effectively. Because more jobs were being created, employment was improving. Information was easier to access and better arranged. For instance, Zoom, Skype, and Messenger can be used for employee meetings. There is no requirement for employees to show up in person. These are some straightforward advantages that technology offers [1].

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Adopting cutting-edge engineering technology has always been a crucial part of a successful business strategy. Over the past ten years, a growing body of research, most of it anchored in socio-technical systems theory, has argued that the acceptance of employees using new technology is essential to the successful adoption and usage of new technology. Surprisingly little empirical research, however, has been done on how employees feel about new technology [2].

The Chief of Offices who want to incorporate advanced technologies into the workplace frequently believe that the staff will initially respond negatively to the change. This is believed to be true, particularly if the offices are situated in a rural location. It is thought that people in rural areas are hesitant to use new technology and have narrow perspectives when pushed to do so.

These elements are not linked or experimentally tested in the research literature, despite their being a substantial body of work on the management of technological change that offers suggestions for successful technology adoption. By methodically identifying which organizational and technological characteristics associated

with the process of implementing technological change are most effective at predicting favorable views toward recently adopted engineering technology, this study goes beyond the current literature [3]. This study adds to our knowledge of how to manage technology adoption efficiently by capturing the dynamics of change in progress and by giving the many perspectives of engineers.

In fact, modern technology has produced positive consequences. We could not dispute the reality that technology use, particularly in offices and businesses, has increased significantly in the Philippines. Even students pursuing master's degrees in their fields of study have access to these new technologies. These technological advancements included the use of laptops, drones, wireless communication, office automation systems, management information systems, teleconferencing, and message systems. These innovations gave rise to new ways of handling office tasks and made it easier to manage time, data, and messages, giving rise to the "paperless office" trend. Even though the primary motivation for implementing new technology in the educational system was to make labor simpler and more efficient, engineers still have varying opinions and attitudes. Therefore, the main goal of this research should be to comprehend how these attitudes evolve [4].

Technological developments have the potential to change how people go about their daily lives. This applies to the way they carry out tasks at work and at home. In this modern era of quick technical evolutions, technological advancements will continue to accelerate the future. In this regard, technology will have an impact on businesses, their policies, and their strategy in addition to having an impact on the entire world. The fast-paced corporate world has an impact on organizations and how they function. The underlying workforce dynamics of an aging Baby Boomer cohort, ongoing technological advancements, and the effects of global competitiveness have, in fact, changed how practitioners train and develop their personnel to get them ready to be high-end performers. Successful and failed businesses can be distinguished by their capacity for taking a proactive stance. Technology is a major force behind change in the twenty-first century; it is clear that the workplace and how we work and learn have changed due to the rapid advancement of technology. In order to ensure their continued growth and success, businesses must contend not only with difficulties related to competition but also with the requirement to stay current with cutting-edge technology.

Modern technology requires the integration and acknowledgment of new knowledge, which calls for the internal development of human capacities and knowledge. Any technological advance is seen to positively affect how firms operate, and by extension, how well their employees perform and are productive. The effective and efficient use of the necessary resources, however, is the only way to attain higher performance and production. The effective use of technology in the workplace can help people do their tasks more productively, which boosts the performance of the business as a whole. However, it is crucial to understand that current successes are the result of previously improved performance. In order to sustain long-term organizational success, organizations must continue to invest in their workforce by providing them with the necessary training and education to best meet the needs and demands of the business in the future. Technology change can be effectively managed using a "combined human resource approach", which promotes collaboration, teamwork, and open-mindedness. "Technological change and innovation are intrinsically related to worker performance." The resource-based paradigm holds that organizational resources, particularly human capital, are essential to a company's success [6]. Effective human resource management and the talent and enthusiasm of this resource's staff are both essential.

The trajectory of these developments suggests that technology is rapidly advancing, even if they are the result of intelligent and talented human inventions. In fact, this pattern demonstrates that technology may be far ahead of people in terms of skills and knowledge for even the most proactive workers. This is why companies and employees need to continually update their knowledge and abilities in order to be appreciated and successful. In this regard, a wide range of competencies and skills are needed from the workforce; however, there are no "right" competencies and skills to learn in order to keep up with the evolving demands of modern technology; rather, this is entirely reliant on the nature of the job and industry [7].

The researcher argues that it is necessary to do research on how engineers adopt to the technologies that are necessary for them to employ as part of their commitment to

their profession in order to make it quick and reliable. It is evident that these technologies serve as platforms for simplifying tasks and improving productivity. The attitudes of the engineers toward employing these technologies, however, determine how adaptable they are. Additionally, the researcher thinks there is a chance that the attitudes are only influenced by the engineers' individual traits, which might take the form of their personal histories. Hence the study on the opinions of engineers towards the usability of technology in aiding the practical skills in master's degree.

II. LITERATURE REVIEW

This section provides the review of related literature and studies on both foreign and local setting which are presented thematically:

2.1 Demographic Profile of the Engineers

By demographics, civil engineers in the United States. The average age of employed male civil engineers is 43.2, compared to 36.6 for employed female civil engineers. White people make up the majority of the race/ethnicity of civil engineers. Male employees are 6.57 years older than female employees, with a median age of 42.1 for civil engineers. The low proportion of younger workers may be a sign that there aren't many entry-level jobs available, indicating a stronger demand for workers with experience or extensive training. Given the age of the occupation and the retirement arrangement, the retirement rate will likely be ordinary [8].

There is a lot of interest in the similarities and differences between female and male leaders as a result of the emergence of female leaders in the workplace. Men and women were seen as displaying more task and social leadership, respectively. Women used a more democratic or participatory style than men, and men used a more autocratic and directive style than women. Men and women were equally assertive. Women executives appeared higher than their male counterparts in a variety of metrics [9].

2.2 Modern Technology

The building industry is thought by many academics and industry professionals to be underdeveloped and ineffective in adopting new technologies. When you stop to think about it, many of the concepts used in modern construction as well as many methods, tools, and skills have been there since the Roman era. However, the industry has embraced a tremendous deal of innovation and technology recently. When we discuss cutting-edge construction technologies, we're referring to a broad range of innovative practices. These methods and approaches are applied in a variety of fields, including facility management, design and planning processes, and materials physics. The use of technology in civil engineering, which entails the planning, creation, and maintenance of urban environments and infrastructure projects, has fundamentally altered the way things are done [10].

2.3 Attitudes towards Technology in Practical Skills

Technology is influencing the knowledge requirements for other civil engineers. Thanks to computer-aided design, they can now create and present three-dimensional designs more successfully and effectively (CAD). There are few new civil engineers hired every year. The bulk of them are consultants, and this is likely to continue for the next three to five years, though there may be more opportunities for part-time contract work. Despite the fact that men still outnumber women in the profession of civil engineering, this is likely to change as more women graduate [11].

III. THEORETICAL FRAMEWORK

Many studies have been conducted to determine how and why consumers adopt innovations. The United Theory of Acceptance and Use of Technology, the Concerns-Based Adoption Model, the Technology Acceptance Model, and Rogers' Innovation Diffusion Theory are all utilized to assess how people accept computing in this article. This essay, which takes into account all three models, asserts that adopting technology is a challenging, inherently social developmental process in which people build distinctive yet changeable perceptions of technology that influence their adoption choices. Therefore, addressing issues related to cognition, emotion, and context is essential to promoting technology adoption. This article focuses on the applications of adoption theory in non-formal situations and on adoption theory outside of formal organizations [12].

The skills that are described are just a few of the essential ones that the future workforce will need. A range of jobs and occupations have different skill requirements to better meet technological advances and organizational objectives [13]. Rapid technological improvements will continue to change the workplace, requiring continuous learning and development. Workers who possess the aforementioned fundamental abilities and skills are more inclined to continue learning in order to satisfy the ever-increasing performance requirements. In the face of difficult economies and limited resources, organizations are constantly looking for ways to manage their performance demands effectively and efficiently. Technology now offers a variety of solutions in this area to support the workforce's learning and development activities [14].

- *Adaptability/ Flexibility*: The corporate environment is obviously unpredictable and dynamic. Businesses are anticipated to develop and grow as a result of this ongoing shift. Employees who represent their employer should be able to learn new skills and adjust to changes in their working environment. The most basic of all abilities, according to the argument that adaptation is, personnel should be flexible, open to learning, and able to adapt to different work settings; otherwise, the firm would stay in the past with non-adaptable people who are trapped in their old methods. The workforce also needs to be ready to learn quickly both on and off the job as prior performance approaches become outmoded.
- *Motivation/ Self-Direction*: A strong instrument for enhancing performance and turning on the capacity for persistence is motivation. In other words, motivation is the internal drive to meet an unmet need and accomplish a certain objective. It's also a system that uses a psychological or physiological need as fuel for a performance that is focused on achieving a goal. According to a study on the effects of technology on the workforce, businesses need motivated, self-directed employees in order to compete in a market that is already crowded. He continues by saying that motivated workers are more likely to persevere in their efforts to complete their assigned tasks at work.
- *Teamwork*: There is no doubt that teamwork is becoming more and more significant in the rapidly changing world of technology, where learning is essential for ongoing success. Learning is a social, interpersonal activity, thus knowledge gained in a group has a higher chance of being applied in the workplace. Through teamwork and group projects, members of an organization are better prepared to master complex conceptual information and skills than they are when they are taught independently. Working connections are defined and managed by the quality of these three components, which include effective interpersonal skills, focused bargaining, and a feeling of group purpose while individuals are working together.
- *Problem-Solving*: The prevalence of issues that could block performance is one of the challenges presented by the nature of business and modern technologies. To come up with the best workable answer to a problem, issue solving is a logical process that demands a lot of creativity and critical thought. Effective problem-solvers should be able to recognize issues and their underlying causes, evaluate how much these issues are hurting their own performance and that of the organization, and select the best course of action for addressing the issue quickly and effectively. The future workforce will need to be critical thinkers and problem solvers who can troubleshoot problems and make operational decisions as well as understand how this process can improve their performance and workplace efficiency. This is because current technology is becoming more sophisticated.

IV. METHODOLOGY

The study sought to know how technology aids in developing practical skills of students taking Master of Engineering Management of NEUST-Graduate School. Specifically, it will answer the following questions:

- How the students of Master of Engineering Management of NEUST-Graduate School were aided with technology to obtain practical skills along:

- Adaptability/ Flexibility
- Motivation/ Self-Direction
- Teamwork
- Problem-Solving

This study used the descriptive method of research, a purposive gathering, analyzing, classifying, and tabulating of data about prevailing conditions, practices, beliefs, processes, trends, cause-effect relationship and then making adequate and accurate interpretation about such data with or without the aid of statistical methods.

Descriptive method gives a better and deeper understanding of a phenomenon on the basis of an in-depth study of the phenomenon. This method is very tenable on the present study since it stressed on present conditions, specifically among the students taking their master's degree. The researchers designed a questionnaire to satisfy the objectives of the study. Fully accomplished questionnaires were immediately retrieved and checked to ensure that all items were answered. The data was tabulated and analyzed in terms of their statistical meanings and significance.

The ratings for the assessment could be determined with the following range scales:

Table.1. Range Interval

Description	Range Scale
Excellent	4.21-5.00
Outstanding	3.41-4.20
Satisfactory	2.61-3.40
Fair	1.81-2.60
Poor	1.00-1.80

V. RESULTS AND DISCUSSION

RQ: How may the Master of Engineering Students of NEUST-Graduate School was aided with technology to obtain practical learning skills?

5.1 Adaptability/Flexibility

The adaptability/ flexibility of the technology can be manifested by: (a) Having been open-minded with the introduction of potential innovation to the current technologies; (b) Seeking for professional help who has expertise in the new technologies; (c) Willing to be trained under much younger ages who are experts in introducing the technologies; (d) Allotting a convenient time to self-study the technologies; (e) Practicing repetitively to master the functions of the new technologies; (f) Regulating time to collaborate with trainers; (g) Considering video tutorials on how to use the technologies; (h) Using PERT and CPM in learning the mechanics of new technologies; and (i) Learning the technologies by attending seminars, symposia and even formal schooling.

The golden era of engineering has arrived because of quick technological breakthroughs. Today, engineers are at the forefront of innovations in practically every field, driving progress to raise the global average and level of life. It should come as no surprise that engineering is the most sought-after profession worldwide. But because there is such a high need for qualified engineers, there is fierce rivalry in almost every industry, thus it is crucial for engineers to stand out from the crowd.

Employers look for adaptability as a soft talent when selecting individuals since it refers to the ability to alter and be flexible in the workplace. Employees in leadership positions frequently have to handle unique situations without clear instructions. They must develop the confidence to make difficult judgments and learn to rely on their own judgment. People with adaptation abilities don't let failure get them down since they are open to both good and bad change. They see failure as a necessary component of learning. As long as it allows them to advance both personally and professionally, these leaders are open to learning new things and are not afraid to take chances. Rarely do those who adapt successfully experience pressure to give up. Every task is thrilling and being committed to their work involves persevering even when times are challenging. They may also maintain their composure and help their team members maintain their focus when things get tough.

The end result is frequently obvious, but the way to get there is not. Because there may not be enough funding or staffing, the "conventional" way of doing business may not be feasible or productive. Adaptability can be useful in this situation. A flexible person will be able to find fresh tools and methods that their less-flexible coworkers haven't thought about.

5.2 Motivation/Self-Direction

The motivation/self-direction of the technology can be manifested by: (a) Seeking attention of the office heads to regulate the use of new technologies; (b) Requisites of the office for uniform utilization of the new technologies; (c) Self-efficacy of trials at home in the most convenient time; (d) Keep practicing with rough drafts in the office; (e) Being inspired by younger engineers using innovative technologies in the office; (f) Being competent with the co-age engineers who knows how to use the technologies; (g) Keeping updates with the trends of engineering tools and applications in the market; (h) Inviting expert Information Technologist in periodic consultation in the office; and (i) Delegating IT to introduce the technologies to new comers in the office.

The construction of public projects requires the expertise of civil engineers. Whether for governmental agencies or the commercial sector, they oversee the construction projects they develop. Highways, bridges, dams, airports, roadways, tunnels, and other infrastructure projects are managed by civil engineers. They work in offices and on construction sites.

A project's overarching purpose and vision are established by civil engineers, and they also conduct cost and labor surveys. In addition to making long-term strategies for projects, they also examine the daily specifics of how those initiatives are developing.

Written reports and correspondence need civil engineers at all levels to be able to communicate in a clear and succinct manner. Communication between civil engineers and other experts from a variety of fields, including architects, urban planners, regional planners, and other technicians and tradesmen, is common. Communication with residents, elected officials, and others who do not have technical credentials in engineering or science may be required for other areas of the job. Because of the variety of audiences, they write for, civil engineers must write in a simple, basic style. Oral communication is a crucial civil engineering competency. To effectively understand the needs and desires of customers, officials, team members, and other professional workers, this calls for the ability to listen. Speaking clearly and concisely to coworkers and other project stakeholders, civil engineers must also possess strong communication skills.

Monitoring and assessing the state of construction at a job site is one of a professional civil engineer's primary responsibilities. Making certain that staff members adhere to design papers, project plans, and other laws and regulations is a part of this. Additionally, the only people who can sign design documents for infrastructure projects are licensed civil engineers. Civil engineers must have highly developed organizational abilities due to their responsibility for official project papers, multitasking, organizing project information, managing teams, and allocating resources.

Table.2. Usability of the Technology

Item Statement	**Rate**	**Descriptive Interpretation**
Adaptability/ Flexibility	4.71	Excellent
Motivation/ Self-Direction	4.22	Excellent
Teamwork	4.12	Outstanding
Problem-Solving	4.47	Excellent
Overall Mean	4.38	Excellent

5.3 Teamwork

The teamwork of the technology can be manifested by: (a) Efficient communication with fellow engineers in the office; (b) Efficient communication with engineers from other office; (c) Efficient communication with external stakeholders of the office; (d) Efficient communication with attached agencies; (e) Collaborating with educational entities for technical assistance on the new technologies; (f) Sponsorship from the producers or the applications and tools; (g) Designating resource persons using the project management tools; (h) Augmenting trainings across engineering offices within the province; and (i) Inter-office delegations on learning the new trends of technologies in the market.

Numerous engineering tasks can be completed by oneself. Coding is a prime example. However, one person cannot do a significant engineering job alone. Instead, they call for collaboration and thus, teamwork. Teamwork is therefore typically a non-negotiable soft skill in the engineering field. In other words, companies expect engineers to be equally dedicated to attaining team and

organizational goals as they are to accomplishing personal ones.

A civil engineer who leads and manages a project must make decisions while taking into account the information at hand, competing constituent goals, professional ethics, financial obligations, and safety considerations. For them to make judgments that are effective and clear, they must have faith in themselves, their teams, and the facts available. Effective civil engineers also accept ownership of errors, learn from them, and steer the project in a different direction.

Members of a successful team provide support for one another. By showing support, teammates will be inspired to set and achieve goals and complete assigned duties. A sense of loyalty will develop, and issue solving will be quicker, easier, and better.

The secret to success is committing as a team to a single objective. The foundation of a successful teamwork is a clear direction and agreement on what the members are aiming to accomplish from the outset. Even while a positive team environment promotes innovation and taking calculated chances, these risks should still be in line with the ultimate objective.

5.4 Problem Solving

The problem-solving /self-direction of the technology can be manifested by: (a) Modern technologies are changing the way office communicate with clients; (b) The office has been kept fully organized the information, reports and plans; (c) It makes engineering operations more productive; (d) It is helping in cost management; (e) It is keeping the office information more secure and reduce risk of breachers; (f) It is giving the office customizing options; (g) The modern technologies are increasing collaboration among the employees; (h) It is improving efficiency of employees and engineers; and (i) The modern technologies are enabling remote working.

Another essential trait for civil engineers is problem-solving. Engineers come into a variety of variables during the various phases of a project, such as planning and construction, that will affect the progress and result of a project. When problems like these develop, engineers must use their knowledge, training, and experience to identify safe, economical solutions while keeping a project on schedule.

In order to solve a problem effectively, one must weigh the advantages and disadvantages of each potential solution and choose the one that carries the fewest risks. Problem-solving abilities are frequently taken into account by interviewers during the hiring process since they demonstrate how applicants handle difficulties. After all, team members who don't bring every minor issue to their attention are more appreciated by project managers and other leaders.

In addition to making projects operate more smoothly, problem-solving abilities can enhance business performance as a whole. As a soft skill, taking ownership of both yourself and the people you work with is a solid description of leadership. Keep in mind that being a leader doesn't need that you hold a managerial role. Another aspect of leadership is maintaining the proper distance from a task in order to view the wider picture, setting the proper example, and inspiring others when times are rough.

Develop this skill, and do not forget to acknowledge and reward the leadership accomplishments. Additionally, keep in mind as best practice illustrations so one may utilize them as a springboard for promotions. Engineers can improve leadership abilities in the areas that have previously been mentioned, such as organization and communication. Additionally crucial are skills for team development, personal growth, and strategic thinking.

VI. CONCLUSION

Thanks to computers, students' ability to perform math operations and process massive amounts of data has significantly increased. To maximize the use of the computer in the teaching-learning process, it may be necessary to update or improve the types and nature of issues taught in schools as well as mathematical techniques [15]. This is especially true in the field of civil engineering education, where the computer is now recognized as a valuable tool for analysis and design in the field. ICT, or information and communication technology, is increasingly an instrument for international development. We're getting close to an electronic environment.

Powerful, dependable, and usable technology has improved, especially for engineering. Therefore, inclusion

of technology use in the curriculum will help students who aspire to become civil engineers or higher degrees. However, the professor must first determine whether five requirements for utilizing technology in the classroom have been met before employing one. The findings of this study were summed up as follows: 1) Students and faculty must be able to access technology; 2) technology must be dependable, robust, and simple to use; 3) Faculty must be interested in the technology; 4) There must be an advantage to using the technology; and 5) Students must be given some background on the Use of technology.

VII. PRACTICAL IMPLICATION

Computers may be a highly useful tool in the teaching and learning of concepts and applications in civil engineering. The lecturer can set up the course so that the computer is used to help students obtain a deeper understanding of engineering issues and develop sound judgment depending on the software employed. Civil engineering colleges should increase student awareness of the crucial role computers play in industry and education since faster, more cheaper computers are predicted to be the trend.

Because it will serve as a bridge between industry and the skills that students will acquire through new technologies, the capacity to integrate new computing tools into engineering processes is essential. Industries are relying more and more on contemporary computing software to increase productivity, accuracy, and efficiency so they may use less time, money, and effort overall. Devices that use information technology should be positively considered as an essential tool for integrating one system with other systems throughout the globe. Schools should spend money on information technology to satisfy this requirement. New, top-notch engineering multimedia products are available on the market, including video courses, CDs, DVDs, and manuals that cover almost all engineering topics. Some of these curriculum-based multimedia technologies can help colleges get ready for global accreditation and excellence in the next millennium.

A major problem is access to computer technology. There are several strategies that can be used to give pupils access to computers. Offering computer labs to students on campus is one possibility. Strategies to increase students' access to computers and networks include the creation of government-funded educational networks, contract leasing or bulk purchases of telecommunications services, tax breaks for students purchasing computers, and the creation of local community learning centers outfitted with cutting-edge technologies.

REFERENCES

[1]. Abdel Hakeem, S., Hussein, H., and Kim, H. (2022). Journal of King Saud University - Computer and Information Sciences, 34(6), 2419-2442.
[2]. Cascio, Wayne & Montealegre, R. (2016). How Technology Is Changing Work and Organizations. Annual Review of Organizational Psychology and Organizational Behavior. 3. 349-375. 10.1146/annurev-orgpsych-041015-062352.
[3]. Beer, P., Mulder, R. (2020). The Effects of Technological Developments on Work and Their Implications for Continuous Vocational Education and Training: A Systematic Review. Frontiers in Psychology, 11.
[4]. He, W., Zhang, Z., and Li, W. (2020). Information technology solutions, challenges, and suggestions for tackling the COVID-19 pandemic. PubMed Central, 57:102287.
[5]. Bill Pasmore PhD, S. V. P., & CMC, T. O. S. (2010). Leadership agility: A business imperative for a VUCA world. People and Strategy, 33(4), 32.
[6]. Wright, P. M., Dunford, B. B., & Snell, S. A. (2001). Human resources and the resource-based view of the firm. Journal of Management, 27(6), 701–721.
[7]. Awate, S., Larsen, M. & Mudambi, R. (2015). Accessing vs sourcing knowledge: A comparative study of R&D internationalization between emerging and advanced economy firms. J Int Bus Stud. 46, 63–86.
[8]. Sepasgozar, Samad, Davis, Steven, Li, Heng and Luo, Xianrui. (2018). Modeling the Implementation Process for New Construction Technologies: Thematic Analysis Based on Australian and U.S. Practices. Journal of Management in Engineering, 34(3).
[9]. Kaushal, V., Najafi, M., & Serajiantehrani, R. (2020). Environmental Impacts of Conventional Open-Cut Pipeline Installation and Trenchless Technology Methods: State-of-the-Art Review. Journal of Pipeline Systems Engineering and Practice, 11(2), 03120001.
[10]. Georgiannou, V. N., Konstadinou, M., & Triantafyllos, P. (2018). Sand behavior under stress states involving principal stress rotation. Journal of Geotechnical and Geo environmental Engineering, 144(6), 04018028.
[11]. Zou, Zhengxia, Shi, Zhenwei, Guo, Yuhong, and Ye, Jieping. (2019). Object Detection in 20 Years: A Survey.

[12]. Pishdad-Bozorgi, Pardis. (2017) Future smart facilities: State-of-the-art BIM-enabled facility management. Journal of Construction Engineering and Management, 143(9). 02517006.
[13]. Das, S., Chakraborty, I., Rajesh, P. P., & Ghangrekar, M. M. (2020). Performance evaluation of microbial fuel cell operated with Pd or MnO2 as cathode catalyst and Chaetoceros pretreated anodic inoculum. Journal of Hazardous, Toxic, and Radioactive Waste, 24(3), 04020009.
[14]. Cheng, J. C., Chen, K., & Chen, W. (2020). State-of-the-art review on mixed reality applications in the AECO industry. Journal of Construction Engineering and Management, 146(2), 03119009.
[15]. Noor-Ul-Amin, S. (2013). An effective use of ICT for education and learning by drawing on worldwide knowledge, research, and experience. ICT as a Change Agent for Education. India: Department of Education, University of Kashmir, 1, 13.