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# TerasDigital: Community-based digital education innovation as a strategy to improve generation z's competence to reduce unemployment in the digital economy era

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Received Date: December 3, 2025

Revised Date: February 19, 2026

Accepted Date: February 25, 2026

## ABSTRACT

**Background:** The rapid development of the digital economy has created new challenges, including the rising unemployment rate among Generation Z due to a lack of competencies aligned with industry needs. The gap between young graduates' skills and the demands of the job market has become a key factor contributing to this issue. This study aims to provide a solution through *TerasDigital*, a community-based platform promoting digital education. Previous studies highlight that community learning and digital literacy play essential roles in enhancing employability among young generations. **Methods:** This study employs a literature review and digital labor trend analysis to identify the competency gap among Generation Z. Secondary data from national and global employment reports were analyzed to design programs aligned with the needs of the digital industry, focusing on critical thinking, public speaking, collaboration, creativity, project management, and technological proficiency. **Findings:** Analysis shows that addressing the competency gap among Generation Z requires an integrated ecosystem that goes beyond technical training by incorporating adaptive soft skills, professional guidance, and project-based collaboration. *TerasDigital* functions conceptually as a strategic bridge to narrow this gap, transforming non-formal education into a center for skills development and professional networking that is aligned with the needs of the digital industry. This model emphasizes that reducing digital unemployment depends on creating an accessible, community-driven environment that facilitates peer interaction and real-world project experience. **Conclusion:** *TerasDigital* is expected to serve as an effective and sustainable strategy to address competency disparities, enhance Generation Z's competitiveness, and reduce unemployment amid the massive digital transformation. **Novelty/Originality of this article:** This study introduces *TerasDigital* as an innovative community-based digital education model that combines digital literacy, professional mentoring, and project-based learning to directly align Generation Z's skills with the evolving needs of the digital economy.

**KEYWORDS:** generation z; work competence; digital community; unemployment.

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## 1. Introduction

The development of digital technology has transformed the global economic structure, including in Indonesia. Digital sectors such as e-commerce, fintech, and data science have

### Cite This Article:

Amelia, I. E., Rinayanti, L. M., & Yulisetiani, S. (2026). TerasDigital: Community-based digital education innovation as a strategy to improve generation z's competence to reduce unemployment in the digital economy era. *Journal of Entrepreneurial Economics*, 3(1), 15-32. <https://doi.org/10.61511/jane.v3i1.2026.2486>

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created numerous new jobs, but have also changed the types of skills required. Despite the increasing number of job opportunities, the unemployment rate in Indonesia remains high. In early 2025, the Central Statistics Agency/*Badan Pusat Statistik (BPS)* recorded that the number of unemployed in Indonesia reached 7.28 million people as of February 2025, an increase of approximately 1.11% compared to February 2024 (Kompas, 2025). However, the Open Unemployment Rate/*Tingkat Pengangguran Terbuka (TPT)* decreased to 4.76%, indicating a mismatch between graduate skills and industry needs (BPS, 2025). This gap indicates that unemployment is not only caused by a lack of jobs, but also because graduates are not equipped with the skills required by the industrial world.

Recent labor market data further illustrate this paradox. In the third quarter of 2025, Indonesia's open unemployment rate declined to approximately 4.85 percent compared to the same period in the previous year. However, the total number of unemployed individuals remained high at around 7.46 million, while employment growth was largely concentrated in sectors such as agriculture, accommodation, and manufacturing. At the same time, the labor force participation rate showed a slight decline. These trends suggest that employment growth does not necessarily translate into improved job quality or skill utilization, reinforcing concerns about structural skill mismatches in the labor market.

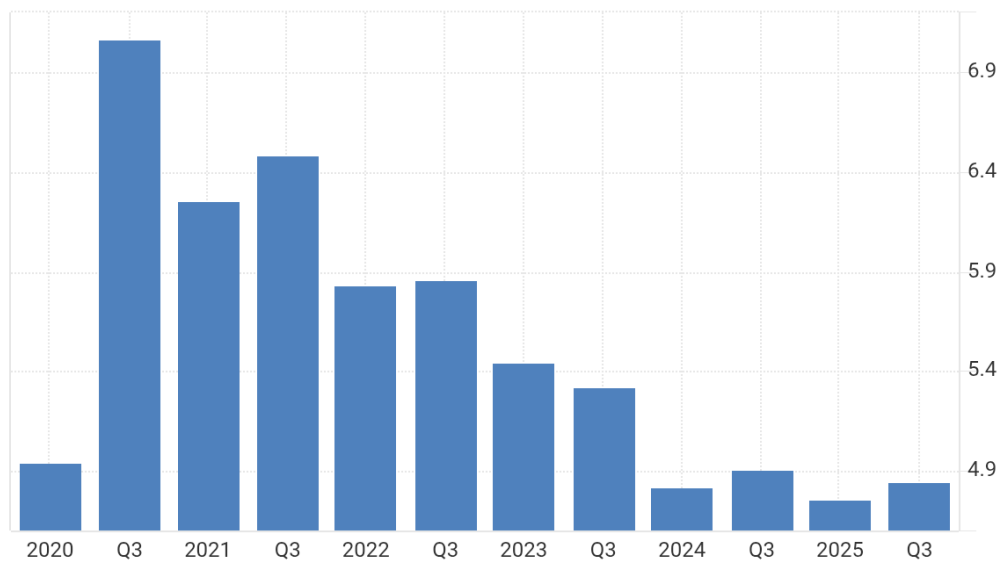


Fig. 1. Unemployment rate in Indonesia

From the perspective of entrepreneurial economics, unemployment in the digital era is closely related to the quality of human capital and the adaptability of the workforce to structural economic changes. Human capital theory emphasizes that education and skill development are key investments that determine labor productivity and income potential. When educational outcomes fail to align with labor market needs, particularly in high-growth digital sectors, the economy experiences inefficiencies in labor absorption. In this context, unemployment among young people reflects not only individual limitations but also systemic gaps in skill formation and labor market institutions.

Several studies have highlighted that countries with strong digital human capital development tend to experience smoother labor market transitions during periods of technological disruption. Conversely, economies that lag in reskilling and upskilling initiatives face higher youth unemployment and underemployment rates. This condition reinforces the argument that unemployment in the digital economy era should be addressed through strategic human capital development rather than relying solely on job creation policies.

Generation Z is one of the groups most impacted by this dynamic. Although they are known as the digital generation, many of them lack applicable digital skills. Generation Z's use of technology tends to be consumptive, such as for social media or entertainment, rather

than for productivity or self-development. Skills such as programming, design, digital marketing, and data science are not yet widely mastered by Generation Z. However, if their potential is properly channeled, Generation Z could become a driving force in the digital economy in the future.

Although Generation Z is often perceived as technologically proficient, empirical studies suggest that digital familiarity does not automatically translate into employable digital competencies. The distinction between digital consumption skills and productive digital skills has become increasingly relevant in the digital labor market. Many young individuals are adept at using digital platforms for communication and entertainment, yet lack competencies related to content creation, data processing, problem-solving, and digital entrepreneurship.

This condition contributes to what labor economists describe as a skills polarization phenomenon, where demand increases for highly skilled digital workers while low- and medium-skilled workers face shrinking employment opportunities. Without targeted interventions, Generation Z risks being trapped in informal or precarious employment despite living in a rapidly digitalizing economy. Therefore, bridging the gap between digital exposure and productive digital competencies is essential to improving labor market outcomes for young people.

On the other hand, unequal access to quality digital education remains. Regions with limited infrastructure often struggle to access technology-based training. Facilities such as computers, internet networks, and teaching staff are not evenly distributed across all regions. This has widened the digital skills gap between urban and rural communities (Fauziah & Al Amrie, 2023). As a result, job opportunities in the digital sector are unequal across regions.

Regional disparities in digital skill development also pose significant challenges to inclusive economic growth. Rural and semi-urban areas often experience limited access to training facilities, digital infrastructure, and professional networks, which are critical components of modern employability. This spatial inequality reinforces the concentration of digital job opportunities in urban centers, while peripheral regions continue to experience higher unemployment rates.

From an entrepreneurial ecosystem perspective, local communities play a crucial role in fostering skill development, innovation, and employment creation. Community-based initiatives can function as localized ecosystems that connect learners, mentors, and industry actors. By embedding digital education within community structures, such initiatives can reduce barriers to participation and promote more equitable access to economic opportunities across regions.

For instance, remote areas in Central Java such as Banjarnegara and Batang still face challenges in providing adequate digital education facilities. Poor internet connectivity and a lack of qualified trainers make it difficult for residents to develop relevant digital skills. As a result, unemployment rates in these areas tend to be higher than in urban regions such as Semarang or Surakarta.

Even in urban centers like Surakarta (Solo), unemployment remains a key issue. According to a 2025 report by the Central Java Regional House of Representatives/*Dewan Perwakilan Rakyat Daerah Jawa Tengah (DPRD Jateng)*, the city recorded 13,204 open unemployed individuals. Although the poverty rate in Surakarta is relatively low, the data indicates that many residents are still engaged in informal work and have not yet been absorbed into the formal industrial sector (RRI Indonesia, 2025).

Current formal education is also not sufficiently responsive to the evolving needs of the digital industry. The curriculum still tends to be theoretical and lacks the practical experience required by the world of work. Furthermore, learning approaches have not been adapted to the characteristics of the younger generation, who prefer interactive and project-based methods (Meiriza et al., 2024). This reinforces the importance of alternative, more adaptive and relevant learning models. Education must be able to bridge industry needs with the competencies possessed by graduates.

Formal education institutions often face structural constraints that limit their responsiveness to rapid technological change. Curriculum revision processes tend to be slow, while industry demands evolve rapidly. As a result, graduates frequently enter the labor market with outdated or insufficient competencies. This condition highlights the importance of non-formal and informal learning systems as complementary mechanisms for skill development.

Comparative studies of digital education initiatives in various countries demonstrate that community-based and platform-driven learning models can effectively complement formal education. Programs such as digital bootcamps, peer-learning communities, and mentorship-based platforms have shown potential in accelerating skill acquisition and improving employability outcomes, particularly for young people transitioning into the workforce. These findings support the relevance of alternative education models in addressing structural unemployment in the digital economy.

From the perspective of entrepreneurial economics, the challenges of youth unemployment in the digital economy can be explained through several theoretical frameworks. Human Capital Theory emphasizes that investments in education, training, and skill development directly influence labor productivity and employability. When the competencies produced by education systems are misaligned with industry needs, particularly in fast-growing digital sectors, the result is structural unemployment and underemployment among young people.

In addition, platform economy theory highlights the role of digital platforms as intermediaries that reduce transaction costs and information asymmetry by connecting multiple stakeholders within an ecosystem. In the context of education and employment, platform-based learning environments can facilitate access to skills training, mentoring, and professional networks more efficiently than traditional institutional channels. Furthermore, labor market transition models stress the importance of continuous learning and transitional support mechanisms that help individuals move from education to employment in dynamic labor markets. Together, these theoretical perspectives provide a strong analytical foundation for understanding the role of community-based digital education platforms in addressing youth unemployment.

In this context, digital communities play a strategic role as a complement to formal education. Digital-based learning communities can provide flexible and contextual learning experiences. Activities such as workshops, bootcamps, and collaborative projects allow participants to learn directly from real-world experiences. This approach is particularly suited to Generation Z, who value challenges, flexibility, and social interaction (Latifa & Pribadi, 2022). Communities can also reach participants from diverse social and geographic backgrounds.

The ever-expanding opportunities of the digital economy should be a momentum to build a more inclusive digital education ecosystem. Indonesia is predicted to become the largest digital economy in Southeast Asia by 2025 (Kementerian Perdagangan Republik Indonesia, 2023). However, if the quality of human resources is not improved, this opportunity could be taken over by more prepared foreign workers (Ardianti et al., 2025). Efforts to improve the digital capacity of the younger generation must be a priority. Innovation in education must reach all levels of society, especially those most impacted by digital transformation.

Within the framework of the platform economy, digital platforms function as intermediaries that reduce transaction costs, facilitate information exchange, and enable scalable interactions among users. In the context of education and labor markets, platforms can connect learners with mentors, employers, and project opportunities more efficiently than traditional institutional channels. This mechanism is particularly relevant for Generation Z, who are accustomed to digital interaction and decentralized learning environments.

Moreover, labor market transition theory emphasizes the importance of continuous learning pathways that support individuals as they move between education, training, and employment. Digital community platforms can serve as transitional spaces where young

people acquire skills, build professional identities, and gain practical experience before entering or re-entering the labor market. Such platforms contribute not only to employability but also to entrepreneurial capability development.

Therefore, the TerasDigital concept emerged as a community-based educational innovation aimed at addressing the unemployment challenge among Generation Z. TerasDigital combines a participatory, project-based learning approach, and is adaptive to industry needs. Through this platform, participants can learn, network, and develop digital skills in a practical and relevant way. TerasDigital also opens up learning access to communities in various regions, including those with limited infrastructure. Thus, TerasDigital is expected to be an alternative solution in preparing a competent young generation ready to compete in the digital era.

In this context, the TerasDigital concept emerges as a strategic response to the challenges of youth unemployment and digital skill mismatches. Rather than positioning itself as a substitute for formal education, TerasDigital is designed as a complementary learning ecosystem that emphasizes accessibility, community engagement, and practical skill development. By integrating project-based learning, professional mentoring, and collaborative activities, the platform aims to strengthen both technical and non-technical competencies required in the digital economy.

Importantly, TerasDigital is conceptualized as an inclusive and adaptive model that can be implemented across diverse regional contexts. Its community-based structure allows learning programs to be tailored to local needs while maintaining alignment with broader digital industry trends. As such, TerasDigital represents a potential mechanism for enhancing human capital, supporting labor market transitions, and fostering entrepreneurial readiness among Generation Z in Indonesia.

Context of the problems: first, is the unemployment situation among Generation Z and how is it related to the digital competency gap; second, how does the TerasDigital program concept and implementation address the challenge of digital unemployment. Then, objectives of the study: to understand the unemployment situation among Generation Z and its relationship to the digital competency gap; to understand the concept and implementation of the TerasDigital program in addressing the challenge of digital unemployment. Unemployment is a condition where someone in the labor force is unemployed and actively seeking work (Grainca, 2022). Conceptually, unemployment can be divided into several types, such as open unemployment, underemployment, and disguised unemployment (Írfan & Çokgüngör, 2024). In Indonesia, the unemployment phenomenon is influenced not only by economic factors such as economic growth and investment, but also by structural dynamics in the education and industrial sectors.

One of the main problems facing Indonesia is the high unemployment rate among young people (Padillah & Rikas, 2024). According to data from the Central Statistics Agency/*Badan Pusat Statistik (BPS)* cited by CNBC Indonesia, approximately 50% of the total unemployed in Indonesia are young people aged 15-24, with the number reaching approximately 3.7 million people as of February 2025 (CNBC Indonesia, 2025). This situation reflects a mismatch between the competencies of educational graduates and the needs of the workforce. Furthermore, many university graduates have not yet entered the workforce, indicating a high level of educated unemployment.

Based on data on the phenomenon of educated unemployment, it was found that more than one million graduates in Indonesia are unemployed (CNN Indonesia, 2025). This indicates a mismatch between higher education and industry needs. This mismatch arises because the educational curriculum is less adaptive to technological developments and industry needs, lacks practical skills, and lack of access to industry-related training (Alsfour & Zhao, 2024).

According to Frisnoiry et al. (2024), the factors causing unemployment in Indonesia can be categorized into structural, conjunctural, and cultural factors. Structural unemployment occurs due to changes in the economic structure, such as digitalization, which reduces demand for certain types of jobs (Nikulina et al., 2022). Conjunctural unemployment is related to economic fluctuations, while cultural unemployment is related

to a low work ethic or a preference for certain jobs (Lucio & Palomeque, 2023). All three influence each other and contribute to high unemployment rates if not addressed comprehensively.

Meanwhile, Mufida & Nasir (2023) explained in their research that the unemployment rate in Indonesia exhibits a fluctuating trend, influenced by variables such as the labor force participation rate, inflation, and GDP growth. Their analysis emphasizes the importance of stable macroeconomic policies and the development of the informal sector and MSMEs as short-term solutions to absorb labor (Mufida & Nasir, 2023).

Given these challenges, Indonesia faces an urgent need to improve the quality of its young workforce to compete in the digital age. Without appropriate intervention, this unemployment problem could become a social burden. Therefore, policies that encourage digital skills development, entrepreneurship, and connections between education and industry are crucial to reducing unemployment and creating a workforce that is adaptable to changing times (Ebom-jebose, 2025).

Generation Z is the group born between 1996 and the early 2010s, who grew up amidst the rapid development of digital technology (Răduț, 2021). They are often referred to as digital natives because they have been accustomed to using technological devices such as smartphones, computers, and the internet in their daily lives since an early age. These characteristics give Generation Z an advantage in accessing information, adapting to new technologies, and utilizing digital media for various activities, including learning and work (Wajdi et al., 2024). However, technological mastery alone is not enough; they still need relevant work competencies to compete in the era of the Industrial Revolution 4.0 and Society 5.0 (Ismail & Nugroho, 2022).

Generation Z's work competencies encompass both technical (hard skills) and non-technical (soft skills). Hard skills include abilities in information technology, programming, data analysis, graphic design, and digital marketing. Meanwhile, soft skills encompass communication, teamwork, time management, and problem-solving. Research by Frisnoiry et al. (2024) shows that Generation Z in the Tolitoli Regency government workplace excels in technology, but still needs improvement in discipline, work ethic, and critical thinking skills. This highlights the challenge of developing a balance between hard and soft skills.

In the context of professionalism, communication skills are a key factor for Generation Z in building effective working relationships. Research by Susilawati et al. (2024) shows that good communication skills can influence the relationship between professionalism and job satisfaction, especially among Generation Z workers. Although this generation is adept at using digital communication, they still face challenges in face-to-face communication, listening skills, and the ability to convey ideas persuasively (Susilawati et al., 2024). This is important because effective communication forms the foundation of intergenerational collaboration in the workplace.

The Industrial Revolution 4.0 and Society 5.0 require Generation Z to not only master technology but also possess adaptation and innovation skills (Ismail et al., 2023). According to Ismail & Nugroho (2022), Generation Z with good digital literacy will more easily adapt to automation, artificial intelligence, and data-driven work systems. However, without strengthening problem-solving, creativity, and leadership competencies, their potential will not be maximized. A balance between technological and social skills is key to facing future challenges (Ismail & Nugroho, 2022).

With their immense potential, Generation Z can become a driving force behind Indonesia's digital economy. However, to achieve this, educational and training interventions are needed that focus on developing a balance of technical and non-technical competencies. Learning approaches that utilize technology will help them hone the skills needed to face global competition. Therefore, improving Generation Z's competencies must be a priority in human resource development strategies in the digital era.

The concept of the digital economy was first introduced by Don Tapscott in his book *The Digital Economy: Promise and Peril in the Age of Networked Intelligence*. Tapscott describes the digital economy as a new form of economy characterized by the exclusive use of digital information. However, the digital economy is not limited to the information

technology market; it encompasses various sectors that utilize digital networks and technologies (Permana & Puspitaningsih, 2021).

The digital economy reflects human behavior in choosing how to fulfill unlimited needs simply by using their fingertips (Gani & Ardiansyah, 2025). It can also be interpreted as human activities related to production, consumption, and distribution that are carried out through digital means. As a result, economic activities, whether production, consumption, or distribution, can now be conducted digitally by simply tapping or typing on a screen, without requiring physical presence.

According to Databoks on Katadata.co.id, a series of studies by Google, Temasek, and Bain & Company show that the value of Indonesia's digital economy, measured through Gross Merchandise Value (GMV), reached US\$ 70 billion. This figure is projected to increase to US\$ 146 billion by 2025. With these numbers, Indonesia ranks as the largest digital economy in Southeast Asia, both in the current year and in the 2025 projection. The digital economy is a relatively new phenomenon and plays an important role in driving significant economic growth, potentially reaching double digits (Jiao & Sun, 2021). One of the main factors behind this growth is technological innovation (Abdillah, 2024). Since the 1990s, changes in economic systems have been increasingly associated with the emergence of the internet, which serves as the foundation for the expansion of the digital economy. The development of technology has also improved accessibility, thereby accelerating broader economic transformation.

The growth of the digital economy in Indonesia has shown a significant upward trend and has contributed to national economic growth (Meidyasari, 2024). The digital economy is believed to be a solution to development challenges, particularly in addressing economic instability. The Indonesian government has expressed its commitment to promoting people-centered economic development, positioning citizens as economic actors (Suprayitno et al., 2023). With this approach, the number of entrepreneurs is expected to increase, strengthening the national economy and creating new job opportunities. Therefore, the utilization of digital technology is anticipated to enhance Indonesia's economic competitiveness.

The digital economy has become one of the fastest-growing sectors in Indonesia. This growth is evident from the increasing number of internet users, the widespread adoption of digital devices, and the rising intensity of digital transactions. The impact of the digital economy on national economic development can be observed through several aspects: Increasing productivity, digital technologies support operational efficiency for businesses, such as through automation in production, distribution, and marketing. Additionally, innovations generated from digital technologies, whether in the form of products, services, or business systems, can enhance productivity by creating more effective and efficient solutions.

Creating new employment opportunities, the expansion of the digital economy has opened job opportunities across various sectors, including information technology, e-commerce, app-based transportation, and logistics. Enhancing competitiveness, with digital technology, businesses can expand their market reach globally in a more efficient and accessible manner, thereby improving competitiveness in the international arena. Promoting economic equity, digital technology also contributes to economic equity because it can be accessed by anyone, regardless of geographic location or social background.

TerasDigital is a community-based digital education innovation designed to address unemployment challenges among Generation Z in the era of the digital economy. Inspired by the meaning of "teras" (porch) as an open and welcoming space, TerasDigital serves as an inclusive virtual learning environment where Generation Z can develop competencies, entrepreneurial skills, and twenty-first-century abilities. This initiative is community-driven, meaning learning activities and training programs are organized by and for local communities, ensuring relevance to local needs and potentials. Through online training, mentoring, project showcases, and access to digital career information, TerasDigital acts as a bridge between the education sector and the world of work. The program also strengthens the role of communities as key drivers in shaping productive, adaptive, and competitive

Generation Z individuals in the era of digital transformation. With a collaborative approach and easily accessible technology, TerasDigital is expected to serve as an effective strategy for enhancing Generation Z competencies while contributing to long-term reductions in unemployment rates.

## 2. Methods

The method used in compiling this scientific paper is a systematic literature review combined with secondary data trend analysis. This method involves collecting, understanding, and synthesizing theories and empirical findings from various literature sources relevant to digital education, youth competencies, and unemployment in the digital economy (Putri et al., 2025). This approach was selected to comprehensively map existing knowledge and identify conceptual gaps that can be addressed through the proposed TerasDigital platform.

Data collection was conducted through a structured process of searching and selecting literature from national and international scientific journals, policy reports, and reputable educational and labor market websites. The literature search utilized academic databases and search engines including Google Scholar, Scopus, ERIC, Garuda, and ScienceDirect. Keywords used in the search process included “digital education,” “Generation Z competencies,” “youth unemployment,” “digital economy,” “community-based learning,” and “platform-based education.”

To enhance methodological rigor, explicit inclusion and exclusion criteria were applied. Inclusion criteria consisted of: literature that directly discusses digital education, employability skills, Generation Z, unemployment, or the digital economy; sources published in peer-reviewed journals, official institutional reports, or well-established academic publishers; and studies published primarily within the last five years to ensure relevance to current labor market conditions. Exclusion criteria included opinion-based articles without analytical grounding, non-academic blog content, and studies that were not clearly linked to education, employment, or youth skill development. Classic or foundational literature was retained when deemed essential for theoretical framing.

In addition to literature selection, secondary data related to employment statistics and youth labor market trends were reviewed and interpreted descriptively. This included national and global reports on unemployment, workforce participation, and digital skill demand. Although no primary data collection was conducted, these secondary sources were used to contextualize the competency gap faced by Generation Z and to inform the design logic of the proposed platform.

After the literature was collected, data analysis techniques included thematic synthesis and critical analysis. Synthesis was conducted by grouping findings into key thematic areas such as youth unemployment dynamics, digital competency requirements, community-based learning models, and platform-mediated education. Critical analysis was then applied to evaluate the strengths, limitations, and applicability of different approaches identified in the literature, as well as to identify recurring patterns and divergent perspectives among researchers.

Although this study does not involve empirical fieldwork, elements of needs assessment and stakeholder perspectives were incorporated indirectly through the analysis of prior studies, policy documents, and program evaluations that report user needs, participation barriers, and success factors in digital education initiatives. These insights were used to inform the conceptual design of TerasDigital, particularly in relation to accessibility, engagement, and relevance to labor market demands.

By employing a systematic and structured literature review approach, this study aims to produce a comprehensive conceptual overview of the TerasDigital community-based platform, which integrates online training, professional mentoring, community discussions, and project-based learning. Furthermore, the analysis considers user experience and learner needs as critical design factors. Understanding the strengths and weaknesses of

existing models enables the proposed platform to offer more responsive, interactive, and flexible features, supporting Generation Z in developing digital literacy, employability skills, and professional networks relevant to the evolving digital economy.

### 3. Results and Discussion

#### 3.1 Generation Z unemployment and the digital competency gap

Unemployment remains a serious challenge in Indonesia, especially among Generation Z, who are now beginning to dominate the workforce. Generation Z, who grew up amidst the development of digital technology, do not yet possess skills that meet industry needs. This situation creates a mismatch between the skills possessed by job seekers and the skills required by employers. Data from the Central Statistics Agency/*Badan Pusat Statistik (BPS)* shows that although the national open unemployment rate/*tingkat pengangguran terbuka (TPT)* has decreased over the past five years, the number of unemployed youth remains at a concerning level.

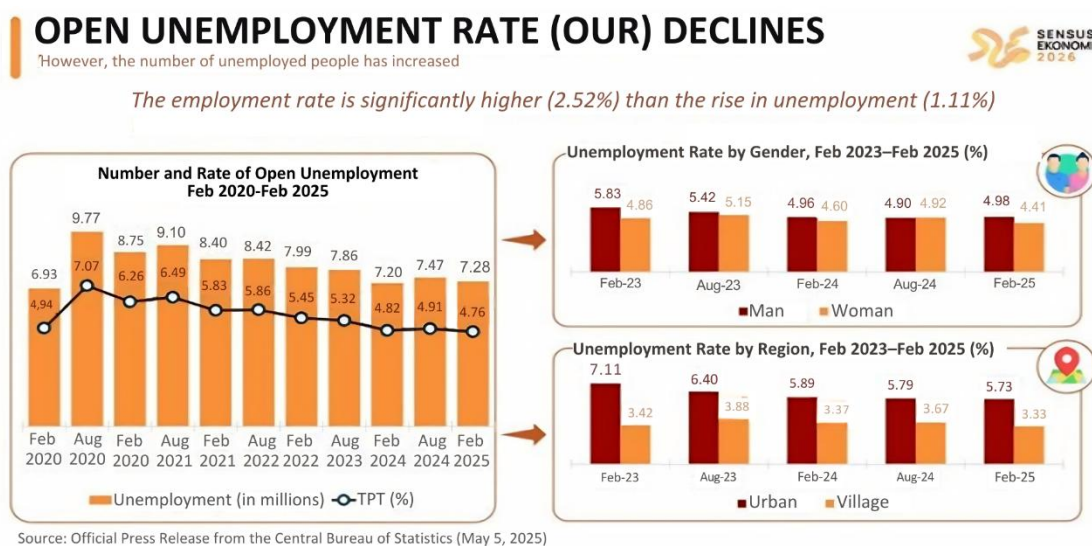


Fig. 2. Open unemployment rate (BPS, 2025)

Based on the Central Statistics Agency/*Badan Pusat Statistik (BPS)* graph above, it can be seen that the unemployment rate in Indonesia has fluctuated significantly since 2020. In February 2020, the number of unemployed was recorded at 6.93 million people, with a open unemployment rate of 4.94%, then jumped drastically to 9.77 million people, with a open unemployment rate of 7.07% in August 2020, due to the impact of the COVID-19 pandemic. Subsequently, the open unemployment rate gradually declined as the economy recovered, although the decline was not consistent each semester. In February 2025, the open unemployment rate fell to 4.76%, with 7.28 million unemployed people, indicating improvement, but also indicating that the absolute number of unemployed remains high. This situation emphasizes that the unemployment problem in Indonesia is not only quantitative, but also qualitative, with many job seekers lacking the skills to meet the needs of the labor market.

Unemployment trends also show differences based on gender. Central Statistics Agency/*Badan Pusat Statistik (BPS)* data from February 2023 to February 2025 shows that the unemployment rate for men tends to be higher than for women. For example, in February 2023, the unemployment rate for men was 5.83%, while for women it was 4.86%. In February 2025, the unemployment rate for men remained at 4.98%, while for women it fell to 4.41%. This difference is closely related to the characteristics of the employment

sector, with men working more in sectors prone to fluctuations, such as manufacturing and construction, while women are more likely to work in the service sector, which has adapted relatively quickly to digitalization. For Generation Z, this pattern results in unequal job opportunities, especially for those without digital skills in the service or creative sectors.

When viewed by residential location, a clear difference is visible between urban and rural areas. The urban unemployment rate in February 2023 reached 7.11%, almost double the rural rate of 3.42%. As of February 2025, this difference persisted, with the urban unemployment rate at 5.73% and the rural unemployment rate at 3.33%. High urban unemployment does not necessarily mean fewer jobs, but rather fiercer competition, especially with the annual influx of new graduates. Generation Z, who migrate from rural areas to cities, often face adaptation challenges, both in terms of cost of living and skills requirements. Conversely, in rural areas, much of the workforce is absorbed in the informal sector or agriculture, resulting in a lower unemployment rate, although the quality of the work is not always better.

The unemployment profile of Generation Z in Indonesia shows that they dominate the youth unemployment group aged 15–24. According to a report by CNBC Indonesia (2025), half of the total unemployed in Indonesia are young people, mostly Generation Z. CNN Indonesia (2025) also noted that more than one million graduates remain unemployed, indicating that a higher education diploma is no longer a guarantee of employment. Many college and vocational high school graduates are trapped in the "first job problem," where they struggle to find their first job due to a lack of work experience and practical skills. This confirms that the main problem is not simply the number of jobs, but also the mismatch between graduate competencies and industry needs. The digital competency gap among Generation Z is influenced by several factors, including lack of relevant technical skills, soft skill limitations, education and training access gap, lack of real work experience, rapidly changing industry needs.

Although Gen Z is often associated with the digital generation, not all of them possess the technical skills needed by industry. Many only use technology for entertainment or social interaction, while mastery of hard skills such as data analysis, coding, UI/UX design, or digital marketing remains limited. Ismail & Nugroho (2022) state that the difference between the use of technology for consumption and the mastery of technology for production is the main cause of the skills mismatch in the workforce.

Adequate digital competency must be accompanied by soft skills such as communication, leadership, time management, critical thinking, and cross-team collaboration. Susilawati et al. (2024) emphasized that, although Gen Z is quick to learn new technologies, some experience difficulties in building professional relationships, managing conflict, or effectively conveying ideas in the workplace. Gen Zers living in urban areas generally have better access to online training, bootcamps, or digital certification programs

Conversely, those in rural or underdeveloped areas face infrastructure barriers such as slow internet connections and a lack of training facilities. This gap is exacerbated by the high cost of training, leaving only a small minority able to access quality education. Many companies require a minimum of one to two years of work experience, even for entry-level positions. This creates a paradox: experience is necessary to get a job, but to gain experience, you must first work. As a result, Gen Z is often trapped in informal or freelance work that isn't always recognized as formal experience. Digital transformation and automation are shifting workforce needs from manual work to technology- and creativity-based professions. Job roles such as data analyst, software engineer, or digital marketer require rapid skill updates. Those who are unable to adapt will be left behind, even if they previously possessed relevant skills.

This skills gap directly impacts the job competitiveness of Generation Z. Those who lack adequate digital competency tend to lose out in the recruitment process, even for entry-level jobs. Companies today prefer candidates who not only possess strong academic grades but also a portfolio of relevant skills. On the other hand, Generation Z who master digital skills are able to take advantage of new opportunities in the digital economy, such as

freelancing, start-ups, and e-commerce. However, without targeted training support, most Generation Z are still lagging behind in exploiting these opportunities. Therefore, strategic interventions are needed, such as programs to address this skills gap through practical training, mentoring, and project-based learning.

### 3.2 Concept and implementation of the TerasDigital program

TerasDigital is a community-based learning platform designed to equip Generation Z with essential skills for the digital age. This program is delivered online via the Zoom Meeting platform, allowing participants to interact, discuss, and receive direct guidance from professional mentors. Through online training, mentoring, community discussions, and project-based learning, participants gain comprehensive knowledge. Participants gain not only technical knowledge but also skills relevant to the world of work and entrepreneurship.

This training emphasizes critical thinking skills for analyzing information and solving problems, as well as public speaking skills, so participants can confidently convey their ideas. Furthermore, team collaboration is practiced in real-life projects, supported by creativity in generating meaningful digital innovations. Participants will also be equipped with project management skills to effectively manage resources and time, while also enhancing their technological expertise through focused practice in the areas of the Internet of Things, coding, graphic design, and digital marketing. Through these approaches, TerasDigital presents itself as a skills training space that is adaptive, inclusive, and relevant to the needs of Generation Z in the digital economy era.

Furthermore, this program also provides challenges and digital competencies designed to hone creativity while providing real-world experience in facing the challenges of the increasingly competitive digital economy. High-achieving participants have the opportunity to earn a digital competency certificate as official recognition of their skills, strengthening their profile in the workforce and entrepreneurship. To support sustainability, TerasDigital has established partnerships with various parties, from schools and universities to creative communities and industry players. This allows participants not only to learn but also to gain direct access to job opportunities, internships, and digital business incubation. This makes TerasDigital a strategic platform for Generation Z to build capacity, develop professional networks, and create impactful innovations for society, especially Generation Z. The TerasDigital logo can be seen as follows.



Fig. 3. TerasDigital logo

The TerasDigital logo not only serves as a visual identity, but also contains a deep meaning that represents the company's vision, mission, and core values. The philosophy embodied in the TerasDigital logo is as follows: first, home (main icon in the center). Philosophy, the home symbolizes a shared space, a gathering place, and a community hub. In the context of Teras Digital, the home symbolizes that digital technology can be accessed, learned, and utilized by everyone, starting from the immediate environment, namely the

home and the community. The design of the home icon placed at the center also illustrates the idea that every digital initiative begins from the closest circle. By positioning the home as the core, Teras Digital emphasizes inclusivity, where technological understanding grows from familiar spaces before expanding outward. This symbol reinforces the message that digital empowerment is not exclusive to experts or formal institutions, but can emerge from daily interactions, family support, and community collaboration.

Second, lamp (top left). Philosophy, lamps are a symbol of innovation, ideas, and enlightenment. This means that Teras Digital is here to provide inspiration and smart solutions through the use of digital technology. The lamp also reflects a continuous process of learning and discovery. Its light symbolizes guidance, showing that Teras Digital aims to illuminate the path for communities to adapt to technological changes with confidence. By presenting the lamp as a key icon, Teras Digital reinforces its commitment to fostering creativity, encouraging new ideas, and empowering individuals to solve problems through practical and innovative digital approaches.

Third, electrical outlet (bottom left). The electrical outlet symbolizes a source of energy and connectivity. This represents the Digital Terrace providing impetus and connecting individuals with technology to increase productivity. The placement of the electrical outlet icon also highlights the idea that Teras Digital acts as an enabler, providing the initial spark that empowers individuals to start their digital journey. Just as an outlet supplies energy to devices, Teras Digital supplies knowledge, tools, and access needed for meaningful technological engagement. This symbol reinforces the message that productivity and innovation can grow when individuals are properly connected to reliable digital resources, allowing them to learn, create, and collaborate more effectively.

Fourth, thermometer/sensor (blue icon above). Philosophy, symbolizes control, monitoring, and technological intelligence. This means that digital technology is not only used but also utilized to efficiently monitor and control everyday life. The thermometer or sensor icon also illustrates how real-time data plays a crucial role in supporting informed decisions. This symbol reinforces the idea that modern life can be managed more intelligently through continuous monitoring, automation, and smart systems. In the context of Teras Digital, it emphasizes the platform's role in promoting digital literacy that empowers individuals to understand, interpret, and leverage data for greater efficiency and everyday problem-solving.

Fifth, Wi-Fi (top right). Wi-Fi symbolizes internet access and global connectivity. Teras Digital aims to expand the reach of learning and the use of technology without the limitations of space and time. The Wi-Fi icon also reflects the idea that knowledge should be accessible to everyone, regardless of their location or background. By emphasizing global connectivity, Teras Digital highlights its commitment to creating an open learning environment where users can interact, collaborate, and gain new insights anytime and anywhere. This symbol reinforces the platform's mission to break down barriers to digital education, ensuring that opportunities for growth, innovation, and skill development are not confined to physical spaces but can flourish through seamless online access.

Sixth, Key/Smart Lock (bottom right). The key is a symbol of security and trust. In Teras Digital, this means technology must provide a sense of security, transparency, and support trust within the community. The presence of the key icon also underscores the importance of protecting user data and maintaining ethical digital practices. It signifies that every interaction within Teras Digital is built on a foundation of integrity, where privacy is respected and information is handled responsibly. By promoting a secure digital environment, the platform encourages users to engage confidently, collaborate openly, and build meaningful connections. This symbol reinforces the idea that trust is essential in any digital ecosystem, and Teras Digital is committed to upholding that trust through transparency and robust security measures.

Seventh, color Gradient (Pink to Purple). Pink symbolizes passion, creativity, and openness. The color gradation reflects the journey from initial enthusiasm to mature digital transformation. After understanding the visual identity through the logo that represents

TerasDigital's core values, a website prototype will be displayed. Through the prototype design, users can see how this website functions not only as a learning medium, but also as a platform for collaboration, networking, and career development. In this case, the prototype serves as a conceptual model that illustrates user interaction with the systematically arranged features. This allows for an initial evaluation of the extent to which the website design addresses the previously formulated problems. The following is a preview of the TerasDigital prototype.

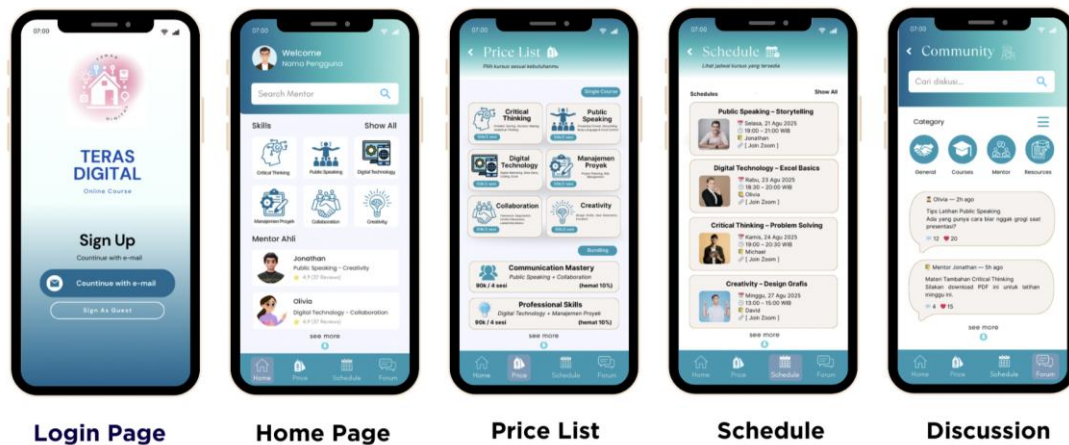


Fig. 4. TerasDigital prototype

TerasDigital was designed with user-centered design principles in mind, prioritizing user comfort and needs, particularly for Generation Z, who are accustomed to simple interfaces, engaging visuals, and intuitive navigation. Furthermore, the features provided are tailored to the learning styles of the younger generation, who prefer interactive, project-based, and collaborative methods. Each page in the prototype has a complementary strategic function, creating an inclusive digital learning ecosystem. Each major section of the application can be explained as follows.

**Login page,** the initial page displayed is the login page. This page serves as the primary gateway for users to access all website services. User data security is maintained through an email and password-based authentication system, as well as a quick login option via email account. Conceptually, the login page serves more than just an administrative function, but also reflects the application's commitment to personalized learning. By logging in with a personal account, each user can save their training history, schedule, and desired skill preferences. This is important considering that Generation Z requires a learning experience that is individualized, flexible, and tailored to their needs. The security and ease of login also boost users' confidence and encourage active engagement on the platform.

**Home page,** after successfully logging in, users are directed to the home page. This page displays three main components: user profile, skill selection, and access to mentors. **Price list and training options page,** the third page displays the price list and training options. The goal is to provide transparency regarding costs and flexibility in choosing learning methods. The next page is the course schedule. This page is designed to resemble a digital calendar, displaying detailed information regarding available classes. Each schedule includes the instructor's name, day, date, time, and the Zoom link to be used.

The advantage of this page is the notification system that reminds users of upcoming classes, reducing the risk of being late or forgetting. Furthermore, users can choose a schedule that suits their free time, as each skill is usually offered in multiple time options. This aligns with the characteristics of Generation Z, who prefer flexibility and the ability to manage their own learning time. The advantage of this page is the notification system that reminds users of upcoming classes, reducing the risk of being late or forgetting. Furthermore, users can choose a schedule that suits their free time, as each skill is usually

offered in multiple time options. This aligns with the characteristics of Generation Z, who prefer flexibility and the ability to manage their own learning time.

From an academic perspective, the schedule page serves as a form of structured learning management. Users don't just learn randomly, but follow a systematic flow under the supervision of a mentor. This ensures better learning quality. Discussion forum page, the final page, one of TerasDigital's distinctive features, is the discussion forum. This forum serves as a collaborative space, where users can exchange information, ask questions, or share experiences. Not only users but also mentors actively participate in the forum by sharing additional materials, career tips, or relevant job opportunities.

This discussion forum takes the form of a timeline or feed, similar to social media, making it feel familiar to Generation Z. Each post can be commented on, liked, or shared, fostering social interaction and strengthening the learning community. From a learning theory perspective, this forum applies the principles of social learning theory, which states that learning occurs through social interaction and observation. Thus, the discussion forum not only supports formal learning but also creates a sustainable non-formal learning ecosystem. Overall, the TerasDigital prototype successfully addresses the main problems identified in this research. The login page supports user data personalization and security. The homepage allows users to design a personalized learning path, with guidance from credible mentors. The pricing page reflects transparency and financial flexibility. The schedule page reinforces discipline and consistency in learning. Meanwhile, the discussion forum emphasizes the community's role as a platform for collaboration and social support.

The integration of all these features aligns with the demands of the digital era, which prioritizes both technical and soft skills. With this prototype, TerasDigital becomes not only a learning platform, but also an ecosystem that prepares Generation Z to face the challenges of digital unemployment. Ultimately, this design is expected to be the first step towards real implementation that will have a broad social and economic impact. To assess strategic feasibility, a SWOT analysis was conducted for TerasDigital. The platform's strengths lie in its holistic integration of technical skills (IoT, coding, graphic design, and digital marketing) and essential soft skills such as critical thinking, collaboration, public speaking, and project management. Its community-based mentoring model and synchronous delivery via Zoom enhance interactive learning and accessibility. Structured features, including personalized login, flexible learning pathways, transparent pricing, scheduling tools, and discussion forums, further support engagement and learning consistency.

TerasDigital faces several weaknesses, including its dependence on stable internet connectivity, the potential for technical glitches such as system errors or server downtime, variations in participants' digital literacy levels, and the need for sustainable financial resources to maintain operations and mentor quality. Despite these limitations, the platform holds significant opportunities due to the increasing demand for digital skills in the workforce, the rapid expansion of the digital economy, and its alignment with national digital transformation initiatives under Kementerian Pendidikan, Kebudayaan, Riset, dan Teknologi. However, external threats remain, including intense competition within the online learning sector, rapid technological changes requiring continuous curriculum updates, cybersecurity and data privacy risks, and the persistent digital divide that may limit equitable access among Generation Z participants.

With this prototype, TerasDigital will become not only a learning platform, but also an ecosystem that prepares Generation Z to face the challenges of digital unemployment. To optimally realize this goal, it is important to identify potential strengths and weaknesses. Potential technical glitches: Bugs or errors on the website can temporarily disrupt the user experience. Overall, the analysis of the potential strengths and weaknesses of the TerasDigital website provides an initial overview of its strengths and areas for improvement. This evaluation serves as the basis for further development so that the website can function optimally, support learning activities, enhance user interaction, and provide positive social and economic impacts. With an understanding of this potential, the next step can be focused on improving features and design, enabling TerasDigital to achieve

its strategic goal of serving as a learning and competency development platform for Generation Z.

#### **4. Conclusions**

The high unemployment rate among Generation Z is largely influenced by the digital competency gap, where the skills they possess do not always match the demands of the modern workplace. This phenomenon highlights the urgency of strategic initiatives aimed at strengthening both technical and soft skills to better prepare young people for an increasingly competitive and technology-driven labor market. In response to this challenge, TerasDigital was designed as an interactive platform for learning, competency development, and professional communication. The program has the potential to function as an ecosystem that equips Generation Z to address digital unemployment while narrowing the competency gap. However, several limitations must be acknowledged. The current prototype has not yet undergone large-scale empirical testing, and therefore its effectiveness, scalability, and long-term sustainability require validation through a structured pilot project involving participants from diverse socio-economic backgrounds.

In addition, socio-economic barriers remain significant concerns. Unequal access to digital devices, unstable internet connectivity, and financial constraints may limit inclusive participation, potentially reinforcing the existing digital divide. Operational sustainability, including platform maintenance, mentor recruitment, and system upgrades, also requires careful financial planning. These constraints underline the importance of phased implementation supported by risk mitigation strategies.

To ensure successful real-world application, future steps should include the development of a comprehensive implementation roadmap outlining timelines, stakeholder responsibilities, budgeting schemes, and partnership strategies. Furthermore, a robust monitoring and evaluation framework should be established, incorporating measurable indicators such as competency improvement, participant retention, employment or entrepreneurship outcomes, and user satisfaction levels. Continuous curriculum updates, system refinement, and strengthened cybersecurity protocols are also essential to maintain relevance in the rapidly evolving digital economy. With these considerations, TerasDigital can move beyond conceptual design toward sustainable implementation with meaningful social and economic impact.

#### **Acknowledgement**

The authors would like to acknowledge and express their sincerest gratitude to the 19th Annual Conference of Economics Forum LKTI of Universitas Sebelas Maret, for their support and invaluable opportunities for academic development and collaboration.

#### **Author Contribution**

I.E.M., contributed to the conceptualization, methodology, investigation, and writing—original draft preparation. L.M.R., & S.Y., were involved in the supervision, validation, and writing—review & editing of the manuscript. All authors have read and agreed to the published version of the manuscript

#### **Funding**

This research received no external funding.

#### **Ethical Review Board Statement**

Not available.

#### **Informed Consent Statement**

Not available.

## Data Availability Statement

Not available.

## Conflicts of Interest

The authors declare no conflict of interest.

## Declaration of Generative AI Use

During the preparation of this article, the author used Chat GPT to assist in the grammatical conformity. After using this tool, the author reviewed and re-edited the manuscript and takes full responsibility for the content of this manuscript.

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