

Public Employment Services Empowered Through Digital Skills Training: A Case Study of Shenzhen

Luona Gan^{1,a,*}

¹*Chinese Academy of Personnel Science, Beijing, 100101, China*

^a*9venustear@sina.com*

^{*}*Corresponding author*

Keywords: Digital Skills Training; Public Employment Services; Shenzhen

Abstract: In response to the transformation of digital industries and the structural employment challenges, the Shenzhen Digital Skills Classroom was launched with the support of the Human Resources and Social Security Bureau of Shenzhen Municipality. The core innovation of this model lies in building a closed loop for public employment services that integrates industry-responsive demand, scenario-based training, credit empowerment, and person-job matching. Those training programs result in enhanced individual skills, market-recognized certifications, and higher salaries. By synthesizing the experience of the Shenzhen Digital Skills Classroom and comparing relevant practices, this paper explains how digital skills training can promote public employment services. Case studies demonstrate that the Shenzhen model achieves three public service functions, namely mitigating the structural employment mismatches, reducing market cost, and reconstructing service mode.

1. Introduction

In the traditional public employment services, three prominent drawbacks can be identified. First, traditional labour markets are characterized by information asymmetry between labour supply and demand. Employment services often rely on a job-seeker-driven approach, where individuals actively search for job opportunities and employment services, resulting in inefficient job matching. Second, employment services and vocational training are poorly integrated, leading to a mismatch between training content and labour market demand, resulting in unsatisfactory employment outcomes among trainees. Third, traditional employment service models remain relatively homogeneous and cannot keep up with industrial development, making it difficult to establish a sustainable supply of skilled labour and ultimately lowering the quality of employment. In fact, in the context of reshaping the labour market in the digital economy, job requirements are changing rapidly and skill boundaries are constantly being broken. It is difficult to match the required skills to a job simply based on past education and work experience. To break the bottlenecks and advance digital governance, the Human Resources and Social Security Bureau of Shenzhen Municipality leveraged municipal high-skilled public practical training base to establish the Shenzhen Digital Skills Classroom [1]. By creating lifelong electronic archives for trainees, Shenzhen developed a public training model that transforms public employment services from static job matching to dynamic skills improvement and targeted job placement, reflecting both industrial and systemic service upgrades.

2. The Shenzhen Model: An Integrated Approach to Training, Evaluation, and Employment

To respond to the dual trends of industrial digitalization and the digitalization of industries, the Human Resources and Social Security Bureau of Shenzhen Municipality launched the Shenzhen Digital Skills Classroom, a public welfare training mechanism designed to build an interdisciplinary digitally skilled workforce. Table 1 shows the main institutions involved in the construction of Shenzhen Digital Skills Classroom. This government-led model with social participation provides low-threshold public training services for the city's registered residents, social security contributors, registered unemployed persons, and recent university graduates. Moreover, it deploys policy support for cutting-edge digital skills training, establishes a free learning and skill-upgrading course system, and integrates skills training with job placement recommendations, creating an integrated public service loop that combines training, assessment, and employment.

Table 1: Participating entities in the co-construction of Shenzhen Digital Skills Classroom.

Type of Institution	Institution Name	The Role of Institution
Leading Authority	Human Resources and Social Security Bureau of Shenzhen Municipality	Being responsible for top-level design and strategic guidance
Organizing Institution	Shenzhen Vocational Skills Training Guidance Center	Aiming to boost the effective supply of digitally skilled talent by establishing the Shenzhen Digital Skills Classroom and leveraging municipal public practical training base alongside the human resources ecosystem service platform
Implementing Institution I: Industry Association, Social Organization	Shenzhen Artificial Intelligence Industry Association, Shenzhen Low-Altitude Economy Industry Association, Shenzhen Quality City Promotion Association, etc.	Leading the implementation of specific curricula to provide comprehensive support for digital skills training
Implementing Institution II: Vocational College	Shenzhen Polytechnic University, Shenzhen University of Information Technology	
Implementing Institution III: Technical School	Shenzhen Pengcheng Technician College	
Implementing Institution IV: Vocational Training Provider	Shenzhen Nanshan Tech Vocational Training Institute, Shenzhen Nanshan Huabida Training Institute, etc.	

2.1. Promoting Public Skills Training Supply Through the Shenzhen Digital Skills Classroom

The Shenzhen Digital Skills Classroom places an emphasis on developing training frameworks, designing curricula, and advancing the standardization and visualization of instructional competencies. First, regarding the construction of the training framework, Shenzhen Digital Skills Classroom fosters a tripartite training ecosystem through government steering, market orientation, and civic engagement, optimizing the transfer of learning. Second, in terms of curriculum development, it integrates course design with the urgent demands for digital human capital in Shenzhen's strategic industrial clusters, ensuring tight alignment between workforce supply and

demand. Furthermore, training quality is guaranteed through the standardization of outputs and the visualization of digital competencies.

2.1.1. Alignment Between Training Frameworks and Industrial Evolution

Guided by the core principle of putting knowledge into practice, the Shenzhen Digital Skills Classroom engages industry experts and university deans as chief mentors to build a dual-qualified faculty team [2]. By translating real-world scenarios into practical training tasks, this framework establishes a comprehensive training system that spans case analysis, training transfer, and skill enhancement. By aligning training with industrial evolution, this collaborative ecosystem transcends traditional unidirectional learning, fostering a resilient multi-stakeholder dynamic where skills development and industry advancement directly reinforce each other.

2.1.2. Curriculum Design Pioneering Cutting-Edge Fields

To accelerate the training of high-demand digital talent for Shenzhen's "20+8" strategic industrial clusters, advanced manufacturing industry and modern service sectors, the Shenzhen Digital Skills Classroom initiates a comprehensive curriculum spanning ten major categories. For example, it provides specialized training in pivotal areas such as the HarmonyOS ecosystem, artificial intelligence, next-generation electronic information technology, semiconductors and integrated circuits, industrial automation, industrial Internet, information and communication technology, virtual reality technology, industrial design, smart construction, and modern engineering services [3].

2.1.3. The Standardization and Visualization of Vocational Training

Since 2025, Shenzhen Digital Skills Classroom has trained 12,000 trainees and made ten training resource packages openly accessible to the public [4]. This initiative delivers a standardized three-pillar framework comprising a talent competency standard, a practical training curriculum, and a high-quality mentoring team. By utilizing government-led skill development and resource sharing as a strategic lever, this model successfully promotes broader societal investment in training high-demand talent. In terms of training-data visualization, the Shenzhen Human Resources Ecosystem Service Platform empowers trainees by granting access to personalized digital skills profiles immediately upon login. This data-driven approach facilitates targeted skill self-enhancement for trainees, which improves their employability and job quality in the long term.

2.2. Leveraging Human Resources Ecosystem Service Platform to Integrate Training Data

In the practice of Shenzhen Digital Skills Classroom, the digital skills profiles of trainees will be further updated on the Shenzhen Human Resources Ecosystem Service Platform after the completion of their training. These profiles encompass five core dimensions, covering skills training, skill competitions, honorary recognitions, vocational certifications, and academic credentials. These profiles present the learning results in a structured way and dynamically showcase the digital resume of skilled personnel. The Shenzhen Digital Skills Classroom effectively addresses the bottleneck of skills development, while the Shenzhen Human Resources Ecosystem Service Platform resolves the challenge of credential verification and skills visibility, thereby translating capacity building into precise labour market matching. With verified digital resumes as its foundation, this public employment service no longer judges the ability of workers based on a single credential or past experience. It marks a paradigm shift from reactive job placement to proactive cultivation, using digital profiles to identify and develop skilled talent for enterprises.

2.3. Innovative Logic of Shenzhen Digital Skills Classroom

The innovative logic of the Shenzhen Digital Skills Classroom essentially represents a concrete practice of making public services more agile, making industry-education integration more authentic, and making talent evaluation more digital, as illustrated in Table 2. First, the public service logic is shifting from universal digital literacy instruction towards industry demand-led skills development. Then, the organizational logic of training is transitioning from traditional knowledge-transmission instruction to scenario-based immersive practice within actual industry settings. Finally, the evaluation logic of talent is evolving from traditional certification to continuous longitudinal accumulation across the training lifecycle, which is codified into a digital skills profile.

Table 2: The innovative logic of the Shenzhen Digital Skills Classroom.

Dimension	Innovative Logic	Example
Public Service	Industry demand-driven	The training curriculum is closely aligned with Shenzhen's "20+8" strategic emerging industry cluster initiative [5].
Pedagogical Organization	Authentic industry-education integration	The Shenzhen Digital Skills Classroom established the Four Entries and Four Establishments model, thereby converting authentic industrial scenarios into actionable instructional cases [6].
Talent Evaluation	Digitized talent evaluation	Trainees' learning outcomes and core skill competencies are converted into credits based on standardized criteria, which generates a comprehensive digital skills profile [3].

3. Comparing Experiences and Practices

With rapid technological advancements, the focus of digital public governance has shifted from a mere technologic race toward systemic services centred on capacity-building and service efficacy. Within this context, public employment service models are undergoing a profound transformation, increasingly serving as an amplifier to harness the human capital potential. In terms of service supply, the approach is shifting from a reactive model of Citizen-Seeking-Services to a proactive model of Services-Targeting-Citizen. Concurrently, the governance model is evolving from passively responding to labour market fluctuations to actively empowering the employment market. As public employment service models undergo transformation, service models across different regions globally demonstrate distinct characteristics. The following sections present a comparative analysis of empirical practices from Singapore and Sunderland.

3.1. The Singapore Model: Skills Training for Digital Workplace

Through its MySkillsFuture platform, Singapore has established a comprehensive lifelong learning and vocational training ecosystem [7]. Expanding upon this platform, Singapore innovatively developed the Careers & Skills Passport, which enables the centralized digital documenting of individual skill matrices, employment histories, professional qualifications, and certifications. Furthermore, to navigate the wave of digital transformation, the Singapore government launched the SkillsFuture for Digital Workplace 2.0 initiative. This initiative focuses on key areas aligned with digital trends, including automation, cybersecurity risk, data analytics, artificial intelligence, and in-demand digital tools [8]. At the same time, this initiative establishes partnerships with multiple organizations, including Ascendo Academy Pte Ltd, Nanyang Polytechnic, and Singapore Chinese Chamber Institute of Business, among others, to enhance training effectiveness. Through these

targeted training programs, it facilitates smooth transition for traditional workers into digitized work environments, serving as a paradigm for leveraging digital competencies to unlock the talent dividend.

3.2. The Sunderland Model: Training for Digital Inclusion

Guided by the Sunderland Digital Inclusion Strategy 2026–2035, Sunderland has designated the development of digital skills as a strategic priority, establishing a multi-tiered and comprehensive skill enhancement framework for all residents. To advance digital inclusion initiative, Sunderland has deployed a robust infrastructure, including 37 Digital Health Hubs, 49 databank sites, and 641 public digital devices distributed across local communities [9]. Concurrently, the Tech Mates initiative engages digital volunteers to deliver over 500 hours of peer-to-peer tutoring monthly, targeting digital literacy and employment confidence. Furthermore, the city has reinforced specialized programs for marginalized groups. These training programs include fundamental digital training for low-income families and unemployed individuals, as well as employability initiatives aligned with the Essential Digital Skills Framework 2025 to enhance job seekers' competitiveness. By integrating community-based support networks and multi-tiered curricula, this strategic initiative ensures that all citizens can access tailored learning pathways to progressively advance their digital competencies. Since the implementation of the Sunderland Digital Inclusion Strategy, the governance framework has been established and initial progress has already been made. The strategy has engaged 25 stakeholder organizations to help ensure that local residents can benefit from digital opportunities [10].

3.3. Comparison of Experiences

Table 3 shows the Shenzhen, Singapore, and Sunderland models represent three distinct pathways for digital skills enhancement. The Shenzhen model follows an industry-driven pathway. Through free, practical, and action-oriented training, it precisely addresses skill gaps within the city's strategic emerging industries, functioning as an immediate-response talent replenishment mechanism. The Singapore model embodies a lifelong learning pathway. By offering short-term, highly subsidized courses, it incentivizes employed adults to engage in continuous upskilling, serving as a proactive skills-updating mechanism. The Sunderland model serves as a digital inclusion pathway. Through community-based, foundational support, it ensures that marginalized populations can keep pace with digital advancement, representing a social safety-net intervention. In addition, the training pathways of the three models exhibit significant differences. The Shenzhen model is a practical, industry-oriented, and integrated training pathway that integrates practical training content with real-world application scenarios to enhance trainees' employability. The Singapore model is a short-term intensive training pathway, with each session typically lasting one to two days. The Sunderland model is a community-based informal learning pathway, relying primarily on one-on-one tutoring from Tech Mates and Tech Tea Parties to enhance digital inclusion at the individual level.

Table 3: Comparison of three digital skills training models.

Dimension	The Shenzhen Model	The Singapore Model	The Sunderland Model
Functional Orientation	Industry-Driven	Lifelong Learning	Digital Inclusion
Target Group	All registered local residents, social security contributors, registered unemployed persons, and recent university graduates	Working Singaporeans with varying digital competencies, also suitable for those planning to return to the workforce	All residents at risk of digital exclusion, including low-income households, the unemployed, and other vulnerable groups

Training Content	HarmonyOS ecosystem, AI, New Generation Electronic Information Technology, Semiconductors and Integrated Circuits, Industrial Automation, Industrial Internet, Information and Communication Technology, Virtual Reality Technology, Industrial Design, Smart Construction and Modern Engineering Services	Automation, Cybersecurity Risk, Data Analytics, AI (including Gen AI), In-Demand Digital Tools	Foundational Digital Literacy Training, Targeted Training for Specific Groups, Employability Training Program for Job Seekers (aligned with the Essential Digital Skills Framework 2025)
Training pathway	A practical industry-education integrated training pathway that translates real-world corporate production scenarios into training content, featuring a relatively long training cycle	A short-term intensive training pathway, typically featuring short-term courses lasting 1–2 days	A community-based, informal learning pathway that delivers training through one-on-one tutoring by Tech Mates and relaxed social activities such as Tech Tea Parties
Support Mechanism	A government-led, public-welfare digital skills training service mechanism	A tripartite cost-sharing mechanism involving individuals, enterprises, and the government, supported by high government subsidies for courses and incentives for employer-sponsored training	Leveraging the city-wide network of Digital Health Hubs and the Digital Inclusion Action Committee to coordinate multi-stakeholder resources

4. Conclusion: Transforming Digital Skills Training into Quality Public Employment Services

By transitioning from an information-constrained blind search of job to proactive skills-first public employment services, this Shenzhen approach effectively alleviates structural frictions in the labour market. Traditional public employment services frequently exhibit systemic inefficiencies, characterized by the paradox of concurrent labour surplus and job vacancies due to skill mismatches. Through the forecast of industrial labour demand, the launch of the Shenzhen Digital Skills Classroom has expanded the training of skilled talent in both cutting-edge and locally in-demand fields, thereby alleviating skills mismatch at the source.

By shifting the paradigm of public employment governance from passive intermediation to active trust provision, this Shenzhen initiative fundamentally redefines the role of the local government in mitigating the skills mismatch. Conventionally, public recruitment platforms are primarily dedicated to delivering recruitment information to job seekers, which is difficult to verify the authenticity of resumes and the reliability of skills. The Shenzhen Digital Skills Classroom mitigates this vulnerability through an integrated, data-driven approach. After completing the course study, trainees can obtain certificates issued by local government authorities and establish a Digital Skill Report, which together endorse the proficiency of skilled talents. Additionally, through the official platform, job seekers can bookmark and submit their resumes seamlessly, significantly reducing the time and expenses required for corporate screening. This mechanism demonstrates how local governments can achieve the maximum optimization of resources while structurally upgrading the workforce through digitized trust and precision matching.

By restructuring the public governance framework from conventional administrative management to ecosystem-based synergy, this initiative fundamentally reconfigures how employment services are

designed and delivered. Anchored in the Shenzhen Human Resources Ecosystem Service Platform, the Shenzhen Digital Skills Classroom functions as a nodal governance mechanism that aligns resources across public agencies, vocational schools, industry associations and alliances, vocational training providers and colleges. Within this ecosystem, a co-production logic becomes institutionalized, where the local government provides and regulates the enabling platform, the market signals real-time skill demands, and social partners share their expertise, infrastructure, and experiential knowledge. Finally, by embedding practical scenarios and job requirements into training curricula, the intervention establishes a resilient feedback loop, consequently advancing public service delivery that is both responsive and highly efficient.

References

- [1] *Shenzhen Special Zone Daily* (2024) 'City Rolls Out 10 Major Free Digital Skill Classrooms for Public', *Shenzhen Social Sciences*, 6 August. Available at: http://www.szass.com/skx/skxj/content/post_1184473.html (Accessed: 30 December 2025).
- [2] *Shenzhen Special Zone Daily* (2025) '2025 Shenzhen Digital Skills Classroom Kicks Off', *Shenzhen Government Online*, 19 August. Available at: https://www.sz.gov.cn/cn/xxgk/zfxxgj/zwdt/content/post_12336088.html (Accessed: 30 December 2025).
- [3] *Shenzhen Vocational Skills Training Guidance Center* (2024) 'Shenzhen Launches Digital Skills Classroom to Empower New Quality Productive Forces', *Technical Schools Committee of China Association of Staff and Workers Education and Vocational Training*, 21 August. Available at: <https://mp.weixin.qq.com/s?biz=Mzg5NDI0NzYwOA==&mid=2247620525&idx=2&sn=6c29a6c5fe9d16bd53b12dbc9e448c16&chksm=c021207af756a96c84d4cfe2dd06c50d60798749fcd417ad5490346292b5c0facc15c3ed8cf5&scene=27> (Accessed: 30 December 2025).
- [4] *Human Resources and Social Security Bureau of Shenzhen Municipality* (2025) 'Annual Skills Training Reaches 250,000 Trainees', *Shenzhen China*, 19 December. Available at: http://www.sz.gov.cn/ztfw/jylyfwzt/wyk_184808/content/mpost_12558512.html (Accessed: 30 December 2025).
- [5] *Human Resources and Social Security Bureau of Shenzhen Municipality* (2025) 'Shenzhen Launches 53 Free Courses to Train 10,000 Digital Talents This Year', 25 August. Available at: https://hrss.sz.gov.cn/xxgk/qtxx/gzdt/content/post_12345266.html (Accessed: 30 December 2025).
- [6] *Shenzhen Evening News* (2026) 'Shenzhen Digital Skills Classroom Launches Free Training: Offering 60 Courses to Train 10,000 Digital Talents in 2026', *Shenzhen News*, 27 May. Available at: https://www.sznews.com/news/content/2026-05/27/content_32067288.htm (Accessed: 29 July 2026).
- [7] Gog S J, Tan E, Tan K. (2024) 'Future-skilling the Workforce: Skills Future Movement in Singapore', in Ehlers, U.-D. and Eigbrecht, L. (eds) *Creating the University of the Future: A Global View on Future Skills and Future Higher Education*. Springer VS, Wiesbaden, 515-528. https://doi.org/10.1007/978-3-658-42948-5_26.
- [8] *MySkillsFuture* (2026) *SkillsFuture for Digital Workplace*, 28 July. Available at: https://www.myskillsfuture.gov.sg/content/portal/en/career-resources/career-resources/education-career-personal-development/SkillsFuture_Digital_Workplace.html (Accessed: 29 July 2026).
- [9] *Sunderland City Council* (2026) *Digital Inclusion Strategy 2026-2035*, Available at: https://www.sunderland.gov.uk/media/45947/Digital-Inclusion-Strategy-2026-2035/pdf/oce23746Digital-Inclusion-Strategy_FINAL.pdf (Accessed: 6 July 2026).
- [10] *Sunderland City Council* (2026) *Summer Update 2026*, Available at: <https://www.sunderland.gov.uk/Digital-Inclusion-Strategy-SummerUpdate2026> (Accessed: 18 August 2026).