

Expanding Access to Digital Skills Development: Insights from a Short-Term Training Programme

Swati Mujumdar

Symbiosis Skills and Professional University

Email: phd@sspu.ac.in

***Corresponding Author**

Swati Mujumdar,

Symbiosis Skills and Professional University

Email: phd@sspu.ac.in

ABSTRACT

Science and engineering graduate programmes in India's smaller towns often emerge with degrees that certify completion of a technical syllabus but without having translated that knowledge into tangible practice, and the forms of training that could bridge this gap remain concentrated in metropolitan centres that are not easily accessible to them. This study investigates a short term training initiative — seven courses of roughly three months each — that deliberately inverted this pattern by offering fee free, practice intensive technical instruction at thirty one sites across Maharashtra between 2021 and 2028, the majority located in tier 2 and tier 3 towns. Short cycle training is frequently criticised for attempting to compress excessive content into limited timeframes, yet such critiques typically assume learners beginning from a baseline of no prior exposure. In contrast, this programme recruited graduates who had already completed the syllabus, rendering three months a plausible rather than implausible duration. Employing a qualitative single case design, the paper analyses programme documentation alongside three learner narratives, interpreted through Tomlinson's graduate capital model and the capability approach to vocational education. Four distinctive benefits emerge from the learner accounts. First, the proximity of delivery removed a barrier that operates even before pedagogy begins. Second, a pedagogy weighted seventy per cent towards practice transformed syllabus knowledge already possessed into functional capability. Third, exposure to an integrated technology stack and practitioner mentors supplied the professional fluency that classroom instruction had not provided. Fourth, the training generated substantial gains in confidence and interview readiness, in one case repairing an educational self narrative damaged by earlier setbacks. Local delivery also appears central to the programme's success in filling a majority of seats with women. The paper contends that for graduates in small town India, the location of training is not a mere logistical detail but a substantive component of the intervention; that short duration is defensible when the programme completes an education rather than substitutes for one; and that such initiatives should explicitly measure affective and identity related gains, which learners themselves place at the centre of their accounts.

Keywords: short-term training; digital skills; project-based learning; graduate employability; tier-2 and tier-3 cities; qualitative case study; capability approach; India.

INTRODUCTION

The employability of university graduates has become a persistent concern within Indian higher education. The issue is particularly visible among graduates of technical and professionally oriented programmes, where possession of a degree does not necessarily translate into an ability to perform the kinds of tasks expected in the workplace. Employers frequently expect graduates to move beyond conceptual understanding and demonstrate applied competence: writing and debugging code, working with contemporary digital tools, analysing problems, completing projects, collaborating with others, and communicating technical decisions. Yet many students complete their formal education with comparatively limited opportunities to practise these capabilities in settings that resemble professional work.

Much of the debate surrounding this problem has focused, understandably, on the quality and relevance of the higher-education curriculum. Questions are raised about whether university syllabi remain sufficiently responsive to technological change, whether students receive adequate exposure to contemporary software and tools, and whether teaching methods encourage application rather than reproduction of theoretical knowledge. Teaching quality is also central to this discussion. Differences in faculty capability, institutional resources, laboratory access, industry engagement, and opportunities for project-based learning can produce substantial differences in what students are able to do by the time they graduate.

These explanations are important, but they do not fully account for the problem. A less visible dimension concerns geographical access to opportunities for supplementary skill development.

For students studying or living in large educational and economic centres, shortcomings in formal degree education can sometimes be addressed outside the university. Cities such as Pune and Mumbai, for example,

contain dense educational and technology ecosystems in which graduates may encounter private training institutes, specialised academies, internships, professional networks, technical communities, employers, and peer groups pursuing similar career objectives. Even where the undergraduate programme itself does not provide sufficient applied learning, an urban graduate may therefore have several possible routes through which to acquire additional skills.

The situation can look very different for graduates living in smaller towns and non-metropolitan parts of Maharashtra.

Consider two graduates who possess broadly equivalent technical qualifications but live in different locations. A computer science graduate in Pune may be able to enrol in an additional programming course, attend face-to-face training, access technical communities, or seek an internship without permanently relocating. A similarly qualified graduate living in Pusad, Sangola, or another smaller centre may recognise precisely the same weaknesses in her preparation but have far fewer realistic options for addressing them locally. Formally, both students hold the same educational credential. In practical terms, however, they do not necessarily possess equal access to the ecosystem through which that credential can be converted into employable capability.

This distinction is significant because supplementary training is not genuinely accessible merely because a course exists somewhere in the state. Accessibility depends on whether an individual can realistically participate in it.

For a young graduate from a smaller town, travelling elsewhere for several weeks or months can involve substantial direct and indirect costs. These may include tuition fees, accommodation, food and transportation, but they may also include income forgone while studying and the loss of the graduate's contribution to household responsibilities. Relocation therefore changes the economic calculation of participating in training. A nominally affordable programme can become inaccessible once the cost of living away from home is included.

The burden may be greater still when participation requires a family to accept a young person's temporary migration. This is particularly important when gender intersects with geography. For some women, decisions concerning travel, accommodation and residence outside the family home involve considerations of safety, social expectations and family approval in addition to financial affordability. Geographic distance can consequently operate not merely as an inconvenience but as a mechanism of exclusion.

The relevant divide, therefore, is not simply between graduates who possess skills and graduates who lack them. It is also between graduates who can access mechanisms for correcting skill deficits and those for whom such mechanisms remain geographically, financially or socially out of reach.

This distinction provides the starting point for the present study.

1.1 From educational access to post-degree capability

The expansion of higher education has enabled students from increasingly diverse social and geographic backgrounds to obtain university qualifications. Yet widening access to a degree does not automatically produce equal access to the opportunities that follow graduation. A student may successfully enter university, complete a technical programme and receive a recognised qualification while remaining disadvantaged in the transition from academic knowledge to occupational competence.

This creates an important analytical distinction between credential acquisition and capability acquisition.

A credential records successful completion of a prescribed programme of study. Employability, however, depends on a broader set of capabilities. Technical graduates may need to interpret unfamiliar problems, select suitable tools, produce working outputs, troubleshoot failures, communicate solutions and operate under deadlines. These abilities generally require repeated practice rather than knowledge of concepts alone.

Where such practice has been limited during formal education, supplementary training can potentially serve as a bridge between graduation and employment. However, this possibility depends upon the design of that training. If supplemental programmes remain concentrated in major urban centres, charge fees beyond the means of many graduates, or replicate classroom-oriented teaching practices, they may reproduce rather than reduce existing inequalities.

The central challenge is therefore not simply to provide *more training*. It is to design training around the constraints experienced by the intended participants.

This shifts attention from a supply-oriented question:

What courses can a training institution provide?

to a learner-oriented question:

What conditions must be created for graduates who are geographically and economically constrained to participate in meaningful applied learning?

The difference between these questions is central to the programme investigated in this paper.

1.2 The Digital Academy as an intervention

This study examines a Digital Academy established by a skills-focused private university based in Pune. The programme operates across three successive phases, beginning in September 2021 and extending to a planned completion date in December 2028. Rather than functioning as a conventional degree programme, the Academy offers short-duration technical training intended primarily to strengthen the applied capabilities of graduates who already possess relevant educational qualifications.

The programme is distinctive in four interrelated respects.

First, learners are not charged a training fee. Removing tuition costs reduces one of the most obvious financial barriers to supplementary professional education. This feature is particularly significant for graduates for whom paying for an additional qualification after completing an undergraduate degree may be difficult to justify or afford.

Second, training is decentralised geographically. Courses are delivered at 31 locations across Maharashtra rather than requiring every learner to travel to the university's Pune campus. This design reverses the conventional mobility assumption embedded in much specialist training. Instead of expecting learners to move toward the institution, the programme attempts to move training closer to learners.

Third, the instructional model places a strong emphasis on learning through practice. Approximately 70 per cent of training is oriented toward practical work. In principle, this emphasis is designed to move participants from knowing about a technical concept toward being able to use that knowledge to produce an output or solve a problem. The distinction is particularly relevant for graduates whose previous education may have provided theoretical exposure but insufficient opportunities for sustained application.

Fourth, the programme incorporates an explicit gender dimension by reserving a majority of its available places for women. This element is especially relevant to a locally delivered model because the barriers associated with travelling or relocating for training are not necessarily gender-neutral. Locating training closer to learners potentially reduces some of the practical and familial constraints that can prevent women from participating in supplementary technical education.

These four characteristics should not be understood as independent programme features. Collectively, they constitute an access model. Removing fees addresses affordability. Distributed delivery responds to geographic constraints. Practice-oriented teaching addresses the gap between academic knowledge and operational capability. Preferential provision for women responds to unequal patterns of participation and mobility.

The programme can therefore be understood as an attempt to intervene simultaneously in where training occurs, who can participate, what learners do during training, and what kind of capability the training is intended to produce.

1.3 Why study a three-month programme?

The relatively short duration of the Academy's courses deserves particular attention. Training typically lasts approximately three months, and short-term skilling programmes appropriately attract methodological and policy scepticism.

Duration alone cannot guarantee meaningful skill formation. Short courses may promise rapid employability while offering limited opportunities for learners to develop durable competence. They can become compressed versions of classroom instruction, cover numerous technologies superficially, or emphasise certification over demonstrable capability. Any evaluation of a short-duration programme must therefore resist the assumption that participation is equivalent to skill acquisition or that completion of a course automatically indicates improved employability.

For the present case, however, course duration needs to be interpreted in relation to the characteristics of the participants.

The Digital Academy is not primarily attempting to provide an entire technical education within three months. Its learners have already completed, or possess, relevant graduate-level educational preparation. The intervention therefore begins at a different point from an introductory skills programme aimed at participants with no prior technical education.

This difference is fundamental.

Three months is clearly insufficient for reproducing a three- or four-year university education. It can nevertheless represent a meaningful period for focused supplementation if participants already possess disciplinary foundations but have had insufficient exposure to application. Under these circumstances, the relevant question is not whether a three-month programme can replace a degree. It is whether concentrated practice, structured around existing knowledge, can help graduates convert elements of that knowledge into usable technical capability.

This conceptualisation makes the learner profile an essential part of programme evaluation. Any claims regarding the effectiveness or transferability of the model need to specify the educational starting point of its participants.

1.4 The problem of employability as a problem of conversion

The case also invites a broader reconsideration of what is meant by a graduate "skills gap."

Skills gaps are sometimes presented as if students simply possess too little knowledge. Yet the difficulty may instead lie in the conversion of knowledge into action. A learner might understand the principles of a programming language but struggle to construct a working application independently. Another might have studied databases academically but have little experience integrating one into a project. A graduate may know technical terminology while lacking confidence in debugging, collaborating, explaining a solution, or dealing with an unfamiliar task.

From this perspective, employability is not adequately represented by either a degree certificate or a list of topics studied. What matters is the learner's capacity to mobilise knowledge under practical conditions.

A programme that deliberately devotes substantial instructional time to hands-on work is therefore making a specific pedagogical claim: that the deficit experienced by at least some technical graduates is not simply insufficient curricular exposure, but insufficient practice in using what they have learned.

This study does not assume in advance that the claim is correct. Instead, it examines participants' descriptions of their educational experiences and of the changes they associate with Academy participation. The purpose is to understand what learners believe they gained, what they believe had previously been missing, and which aspects of programme design appear to have contributed to those changes.

1.5 Why location matters to programme design

The decentralised nature of the programme is similarly more than an administrative delivery choice. It reflects a particular conception of educational access.

Access is often measured through the presence or absence of institutions and programmes. Such measures can obscure the distinction between formal availability and practical attainability. A technical course may be available in Pune and therefore technically available to a learner from another district. Yet if participation requires relocation, accommodation expenses, daily commuting, or family permission that cannot realistically be obtained, the opportunity remains inaccessible in practice.

A locally delivered training model seeks to reduce the distance between formal availability and effective access.

This matters particularly after graduation. University students may have accepted relocation as part of obtaining their initial qualification, but they cannot necessarily repeat that investment each time an employer requires additional competencies. A model of lifelong or continuing skill development that repeatedly assumes individual mobility may therefore systematically disadvantage people outside large urban centres.

Seen in this way, the programme examined here tests a simple but consequential design proposition:

If learners cannot readily travel to specialised skill-development opportunities, specialised skill-development opportunities can instead be brought closer to learners.

The importance of this proposition extends beyond the specific Academy. If geographically decentralised provision allows technically educated graduates to acquire additional practical experience without migrating to a metropolitan centre, it may offer insights for universities, training organisations and policymakers concerned with regional inequalities in graduate employability.

1.6 Purpose of the study

The primary purpose of this paper is not to establish that the Digital Academy has solved graduate unemployment in Maharashtra. Such a conclusion would exceed both the scale of the intervention and the nature of the evidence available.

Nor does the study seek simply to report numbers of centres, courses or participants. These indicators describe programme reach, but they offer limited insight into how or why an intervention may matter to learners.

Instead, the paper treats the Digital Academy as a programme-design case. Its analytical value lies in examining the relationship between the constraints experienced by its target group and the mechanisms incorporated into the programme.

The study therefore focuses on three linked elements:

1. the gaps that learners perceive in their prior educational preparation;
2. the benefits they associate with participation in supplementary applied training; and
3. the programme features that appear to make those benefits possible.

This approach deliberately separates learner-reported outcomes from stronger causal claims. Participants' accounts can provide important evidence concerning their experiences, perceived skill development, confidence and access to learning. However, such accounts cannot by themselves demonstrate that the programme caused longer-term employment or income outcomes. Maintaining this distinction is necessary for an analytically credible interpretation of the case.

1.7 Research questions

Against this background, the paper is organized around two principal research questions.

RQ1: What benefits do learners in a locally delivered, practice-weighted digital skilling programme describe, and how do those benefits relate to what their prior education had and had not provided?

RQ2: What features of the programme's design appear, from learner accounts and programme documentation, to be doing the work?

A recurring criticism of Indian higher education is that graduates complete their degrees without acquiring the practical capabilities that their qualifications ostensibly certify. Employers across sectors frequently report that degree holders possess theoretical knowledge yet struggle to apply that knowledge in workplace settings, leading to a persistent gap between educational attainment and employability. While shortcomings in curriculum design and instructional quality are often identified as primary causes, these explanations capture only part of the problem. Beneath them lies a less visible but equally significant challenge: the unequal geographic distribution of opportunities for skills development and professional training.

In India, access to supplementary technical training is highly concentrated in major urban centres. Metropolitan cities such as Pune, Mumbai, Bengaluru, Hyderabad, and Chennai host dense ecosystems of training institutes, internship opportunities, industry partnerships, and professional networks. Graduates residing in these locations can often compensate for deficiencies in their formal education through short courses, boot camps, certification programmes, and industry-oriented training. By contrast, graduates from smaller towns and semi-rural regions frequently possess the same academic qualifications but lack comparable opportunities to convert academic knowledge into practical competence. The issue is therefore not merely one of educational quality but also one of educational access.

The requirement to migrate in pursuit of training opportunities imposes substantial economic and social costs. For many graduates, participation in metropolitan training programmes entails expenses associated with accommodation, transportation, food, and the loss of income from local employment or family responsibilities. These costs are not equally distributed across all learners. Women frequently face additional constraints arising from household obligations, concerns regarding safety, mobility restrictions, and family negotiations over relocation. Consequently, a programme that is technically available may nonetheless remain practically inaccessible. In such contexts, geographic location functions as a mechanism that shapes educational and labour market outcomes.

This study examines a digital skilling initiative developed in response to these structural barriers. The programme under investigation, referred to here as the Digital Academy, is operated by a skills-focused private university in Pune and has been implemented across three successive phases beginning in September 2021, with completion planned for December 2028. Rather than requiring participants to travel to a centralized campus, the programme delivers training through a distributed network of thirty-one locations across Maharashtra. The model seeks to bring skill development opportunities closer to learners' places of residence, thereby reducing the economic and social costs associated with participation.

The programme possesses several noteworthy characteristics. First, participation is free of charge, eliminating a financial barrier that often prevents graduates from enrolling in professional training. Second, instruction is delivered through local centres, reducing the need for migration and enabling participation by individuals who might otherwise be unable to attend. Third, the curriculum is structured around a strong practical orientation, with approximately seventy per cent of instructional time devoted to hands-on activities, projects, and application-based learning. Finally, a majority of seats are reserved for women, reflecting the programme's explicit commitment to addressing gender disparities in access to technical training and employment opportunities.

At first glance, the programme's three-month duration may appear insufficient to produce meaningful outcomes. Such scepticism is understandable. Short-term training programmes occupy a contested position within India's skill development landscape. Many have been criticized for emphasizing certification over competence, delivering compressed curricula that prioritize completion rates rather than deep learning, and promising employment outcomes that fail to materialize. Consequently, short-duration training has often acquired a reputation for producing credentials without substantially improving learners' capabilities.

However, the Digital Academy differs from many conventional skilling initiatives in a critical respect: its target population consists of graduates who have already completed technical degree programmes. This distinction alters the role that short-term training is expected to play. Rather than introducing learners to entirely new domains of knowledge, the programme seeks to bridge the gap between formal academic learning and practical application. In effect, the three-month period is dedicated not to creating expertise from scratch but to activating, contextualizing, and operationalizing knowledge that participants already possess in theoretical form. The programme therefore raises an important question about the circumstances under which short-duration interventions may be effective and the mechanisms through which they generate value.

The significance of this case lies less in the overall scale of the initiative than in the assumptions underpinning its design. Rather than treating access to training as a precondition that learners must solve individually, the

programme views access itself as a problem requiring intervention. Similarly, it shifts attention away from the completion of prescribed syllabi toward the development of demonstrable practical capabilities. This orientation reflects a broader reconsideration of what employability entails and how educational institutions might contribute to it. From this perspective, employability is not simply a function of possessing academic credentials but of being able to translate knowledge into action within real or simulated professional contexts.

The analysis presented in the study therefore focuses on two interconnected issues. First, it examines the kinds of benefits that participants attribute to their involvement in the programme and the extent to which those benefits address limitations they experienced during their prior educational journeys. These benefits include not only technical skill acquisition but also confidence, professional identity formation, workplace readiness, and enhanced perceptions of career opportunity. Second, the analysis investigates which aspects of programme design appear most consequential in producing these outcomes. Particular attention is given to the interaction between local delivery, practical pedagogy, intensive project work, learner support structures, and policies intended to expand participation among underrepresented groups.

LITERATURE REVIEW

2.1 Coverage without capability

Indian technical education has long been characterized as strong on theoretical coverage and weak on application. Pilz and Regel (2021), reviewing the vocational and technical landscape from outside, describe a system fragmented across ministries, uneven in quality assurance and short of trainers with recent industry experience. Agrawal (2013, 2014) documents both the historical marginality of vocational training within Indian education policy and its persistent status problem: a residual option for those who could not manage a degree.

The consequence for graduates is a particular kind of gap. It is not that they have learned nothing. It is that what they have learned sits inert. A student may be able to describe object orientation, name the stages of a software lifecycle and write syntactically correct code in three languages, and still have never built, tested, debugged and deployed a working application. Employers experience this as unreadiness. Learners, as this study shows, experience it as a discrepancy they can feel but cannot name until training makes the contrast visible.

2.2 Short-term training and the duration problem

Short-term training occupies a distinct and contested position in Indian skilling. It is the dominant delivery format under the national skilling architecture, where courses typically run from a few weeks to a few months and are funded on a per-candidate basis (Ministry of Skill Development and Entrepreneurship, 2015). Its appeal to policymakers is obvious: it produces countable certifications quickly and at low unit cost.

The criticisms are equally well established. Prasad (2026) argues that funding models rewarding enrolment rather than outcomes push providers toward short cycles and volume, since the incentive is to certify as many candidates as cheaply as possible. Agrawal and Agrawal (2017) find that formal vocational training in India delivers a real but modest wage premium, distributed unevenly across sectors. Kumar and Hooda (2024) catalogue the recurring operational failures — trainer availability, curriculum drift from industry requirements, weak placement linkage. Underlying all of these is a straightforward pedagogic objection: a person cannot be made competent in a technical occupation in three months.

That objection is sound, but it carries an assumption worth examining. It assumes a learner who arrives without prior knowledge of the field, for whom three months must supply an entire occupational foundation. A large share of short-term training in India is indeed directed at exactly this learner, and for that learner the criticism holds.

The programme examined here recruits differently. Its participants are graduates of computer science and engineering degrees who have spent three or four years covering the relevant technical material. For them, three months is not being asked to build a foundation. It is being asked to make an existing foundation usable. This is a substantially smaller task, and whether short-term training is adequate depends entirely on which of these two tasks it is attempting.

The distinction is largely absent from the Indian literature, which tends to evaluate short-term training as a single category. It matters for programme design, because it implies that duration cannot be assessed independently of the entry profile, and it matters for the present case, because it is the reason the learner accounts in Section 6 look the way they do.

2.3 The geography of training provision

Where training is delivered determines who can take it. This is obvious and yet under-theorised in the Indian skilling literature, which tends to treat provision as a national aggregate rather than a spatial distribution.

The classification of Indian cities into tiers is administratively imprecise, but the relevant distinction for this

study is between locations with an established technology employment base and training ecosystem and locations without one. Maharashtra has one clear centre of the former kind and a large number of towns of the latter kind, many of which host degree colleges producing science and commerce graduates every year. The capability approach offers the sharpest framing for what this means. Sen's (1999) distinction between a formal entitlement and a real freedom to exercise it applies directly: a graduate in a small town is formally free to enrol in a training course in Pune and substantively unable to. Bonvin (2019) develops this as a "capability for education", the actual opportunity to access learning rather than the nominal right to it, and argues that vocational programmes should be assessed partly on whether they expand it. McGrath (2012) and Powell and McGrath (2019) make the broader case that vocational education should be evaluated by what it enables people to be and do rather than by productivity gains alone. Distance interacts with gender. Women's participation in India's technology workforce remains low, and Arun and Arun (2023) show in their study of women from low-income backgrounds in IT-based enterprises that class and gender operate together to shape which segments of technology work women can reach. Mobility is one of the mechanisms. A training course requiring relocation filters out women more sharply than men, and it does so before any question of aptitude or interest arises.

2.4 Project-based and experiential pedagogy

The pedagogic response to inert knowledge is well established. Project-based learning organises instruction around the production of an artefact, requiring learners to integrate knowledge in the service of building something rather than absorbing it for later recall (Blumenfeld et al., 1991). Kolb's (1984) experiential learning cycle provides the underlying account of why this works: concrete experience and active experimentation are constitutive phases of learning rather than optional applications of it.

Guo, Saab, Post and Admiraal (2020), reviewing seventy-six empirical studies of project-based learning in higher education, found that affective outcomes were the most commonly studied and reported category — students' perceptions of the benefits of the approach and of their experience of it — and that these were measured largely through questionnaires, interviews and self-reflection journals. Their findings matter methodologically for this paper. Learner self-report is the dominant evidence base in the project-based learning literature, and it is treated there as legitimate data about affective and perceptual outcomes rather than as a weak proxy for cognitive gain.

2.5 Employability as more than skill

If a programme's benefits are assessed only as skills acquired, much of what learner's report will fall outside the frame. The employability of literature has moved decisively away from that narrow reading. McQuaid and Lindsay (2005) argued that employability is relational, constituted by individual attributes, enabling circumstances and demand-side conditions together. Clarke (2018) similarly situates it at the intersection of capital, attributes and context.

Tomlinson's (2017) graduate capital model provides the most usable vocabulary. It identifies five capitals: human (skills and knowledge), social (networks and access to opportunity), cultural (fluency in a professional field's codes and expectations), identity (a coherent sense of oneself as a particular kind of worker) and psychological (resilience and self-efficacy). The model has attracted criticism for extending the capital metaphor further than it comfortably stretches and framing structural problems in individual terms, and those criticisms are fair. As an analytic vocabulary for reading first-person accounts, however, it is well suited to the task, because it names the categories learners actually talk about.

Bandura's (1997) self-efficacy construct connects the pedagogy to the psychological outcome. Mastery experiences in a valued domain are the strongest source of efficacy beliefs, which supplies a mechanism by which a project-based course might produce confidence gains disproportionate to the technical content delivered.

3. CONCEPTUAL FRAMEWORK

This study is guided by a conceptual framework that combines two complementary perspectives: Tomlinson's (2017) Graduate Capital Model and the Capability Approach developed by Sen (1999) and extended in education and vocational training research by Bonvin (2019), McGrath (2012), and Powell and McGrath (2019). These perspectives address different dimensions of the phenomenon under investigation and, when used together, provide a more comprehensive understanding of how a locally delivered digital skilling programme generates value for learners.

The first perspective, Tomlinson's Graduate Capital Model, provides the analytical vocabulary for understanding the outcomes reported by learners. Traditional evaluations of skilling programmes frequently focus on the acquisition of technical competencies, treating employability as a direct consequence of skills development. Such

an approach risks overlooking a range of outcomes that learners themselves often consider important, including increased confidence, professional identity formation, improved communication, expanded networks, and a stronger sense of preparedness for employment.

To address this limitation, the present study draws on Tomlinson's framework of five forms of graduate capital. Human capital refers to technical knowledge, practical skills, qualifications, and the capacity to perform occupational tasks. Social capital encompasses professional networks, industry contacts, peer relationships, and access to information and opportunities. Cultural capital involves familiarity with workplace norms, professional expectations, communication practices, and the behavioural conventions of a particular occupational field. Identity capital refers to an individual's sense of self as a legitimate participant in a profession, including clarity regarding career aspirations and professional roles. Psychological capital includes confidence, resilience, motivation, adaptability, and self-belief.

This framework is particularly useful because learner experiences rarely fit neatly into a single category of skill acquisition. Participants often describe outcomes such as becoming more confident during interviews, feeling more comfortable working in teams, gaining clarity about career pathways, or believing for the first time that they can succeed in a technology-related occupation. While such outcomes may not immediately appear as measurable technical skills, they are nevertheless important dimensions of employability. The graduate capital framework therefore enables the study to capture the full range of benefits that learners attribute to programme participation rather than restricting analysis to technical knowledge alone.

The Capability Approach shifts attention away from resources alone and toward the real opportunities available to individuals. Sen (1999) argues that possessing a formal entitlement does not necessarily mean possessing a genuine freedom to make use of it. Individuals may theoretically have access to a resource while lacking the practical means to utilize it. In educational contexts, this distinction is especially significant. A graduate living in a small town may technically be eligible to enroll in a training programme located in a metropolitan city. Yet factors such as travel costs, accommodation expenses, family responsibilities, social norms, and mobility restrictions may make participation impossible in practice.

Within the capability literature, such influences are often described as conversion factors. These are the social, economic, geographic, and personal conditions that determine whether available resources can be transformed into meaningful opportunities. Educational opportunities therefore cannot be evaluated solely in terms of whether programmes exist. They must also be evaluated in terms of whether individuals possess the practical freedom to access and benefit from them.

This perspective is particularly relevant for analysing the Digital Academy programme because access constitutes a central element of its design. The programme does not simply provide training; it relocates training opportunities closer to learners. By delivering instruction through multiple centres across Maharashtra, eliminating fees, and reserving a majority of places for women, the programme attempts to modify the conversion factors that often prevent participation in skill development initiatives.

The importance of this perspective becomes especially apparent when considering gender and geography. For many learners, particularly women residing in smaller towns, participation in metropolitan training programmes may require family approval, relocation, financial resources, and mobility that cannot be assumed. Consequently, a training opportunity that exists on paper may remain inaccessible in reality. The Capability Approach allows these constraints to be treated not as peripheral issues but as central components of educational opportunity itself. From this viewpoint, increasing access is not merely an administrative achievement; it represents an expansion of learners' capabilities and therefore a meaningful educational outcome.

Bringing the two frameworks together enables the study to address both outcomes and opportunities. The Graduate Capital Model helps explain what participants appear to gain through programme participation, while the Capability Approach helps explain why those gains become possible for learners who may otherwise have lacked access to comparable opportunities. One framework focuses on the resources, attributes, and forms of capital accumulated through training; the other focuses on the conditions that enable individuals to convert educational opportunities into valued achievements.

The relationship between the two perspectives is productive because each compensates for the limitations of the other. A capital-based analysis can identify the development of skills, confidence, networks, and professional identity, but it may pay insufficient attention to the structural conditions that shape access to these outcomes. Conversely, the Capability Approach is highly effective for analysing opportunity structures and constraints but is less specific in categorizing the various forms of development reported by learners. Used together, the frameworks provide a balanced account that recognizes both individual growth and the contextual factors that make such growth possible.

The combined framework also introduces an important analytical caution. Positive learner accounts can legitimately be interpreted as evidence of perceived capability development, increased confidence, enhanced professional identity, and improved access to learning opportunities. However, such accounts should not automatically be interpreted as evidence of long-term labour market success. Learner experiences provide

valuable insights into educational processes and immediate outcomes, but they do not by themselves demonstrate sustained employment gains or career progression. The framework therefore allows learner narratives to be taken seriously as evidence of educational value while remaining cautious about broader claims regarding employment outcomes.

4. METHODOLOGY

4.1 Research Design

This study adopts a qualitative single-case study design (Stake, 1995; Yin, 2018) to examine a digitally enabled skilling programme delivered across multiple locations in Maharashtra. A case study approach is appropriate because the research seeks to generate an in-depth understanding of a contemporary educational intervention situated within its real-world context rather than to isolate variables under controlled conditions. The programme is examined as a bounded case, defined by its operational period from 2021 to 2028, its implementation across thirty-one training locations, and its focus on providing short-term, practice-oriented training to graduates from technical disciplines.

The study is best understood as an instrumental case study. The primary interest does not lie in documenting the programme for its own sake or evaluating it as a unique institutional initiative. Rather, the case serves as a means of exploring broader issues concerning graduate employability, access to skill development opportunities, the role of practice-based pedagogy, and the significance of geographic accessibility in post-secondary training. By examining a programme intentionally designed to address barriers faced by graduates outside major metropolitan centres, the study seeks to generate insights that extend beyond the immediate case.

A qualitative approach was selected because the focus of the investigation is on how participants experienced the programme and how they interpreted its value. Questions concerning confidence, employability, professional identity, practical competence, and perceived opportunity are more effectively explored through qualitative evidence than through numerical indicators alone. The design therefore prioritizes depth of understanding over statistical generalization.

4.2 Data Analysis

The analysis proceeded in two stages, corresponding to the two primary data sources.

Analysis of Learner Narratives

Learner narratives were analysed using reflexive thematic analysis following the framework developed by Braun and Clarke (2006, 2019, 2021). Reflexive thematic analysis is well suited to research seeking to identify patterns of meaning within qualitative data while acknowledging the active role of the researcher in constructing interpretations.

The analysis followed six interrelated phases:

1. **Familiarisation with the data** through repeated reading of all learner narratives.
2. **Generation of initial codes** that captured significant statements, experiences, and perceptions.
3. **Development of candidate themes** by examining relationships among codes.
4. **Review and refinement of themes** against both coded extracts and the complete dataset.
5. **Definition and naming of themes** to ensure conceptual clarity and analytical distinctiveness.
6. **Theme development and writing**, in which themes were interpreted in relation to the broader research objectives and conceptual framework.

The first stage of coding adopted an inductive and primarily semantic orientation, focusing closely on participants' explicit descriptions of their experiences. Subsequent analysis moved beyond description to consider underlying meanings and patterns. During this second stage, coding was informed by the study's conceptual framework, particularly the categories derived from the Graduate Capital Model and the Capability Approach. This process enabled learner accounts to be interpreted in relation to broader concepts such as human, social, cultural, identity, and psychological capital, as well as issues of access, opportunity, and capability.

Consistent with Braun and Clarke's understanding of thematic analysis, themes were not treated as objective features waiting to be discovered in the data. Rather, they emerged through the interaction between the data, the conceptual framework, and the interpretive work of the researcher.

4.3 Ethical Considerations and Anonymization

The study was conducted with careful attention to participant privacy and confidentiality. All personally identifying information contained within the learner narratives was removed prior to analysis. Participants are referred to using the pseudonyms Learner A, Learner B, and Learner C throughout the paper.

5. THE PROGRAMME

The programme examined in this study, hereafter referred to as the Digital Academy, is a fee-free technical skilling initiative designed to improve the employability of graduates from technical and professional disciplines. The programme is implemented by a skills-oriented private university based in Pune in collaboration with a technology-sector partner. Its central objective is to bridge the gap between academic learning and workplace requirements by providing practice-oriented training to graduates who possess formal qualifications but may lack industry-relevant experience.

The initiative has been implemented in three successive phases, reflecting a long-term commitment to skill development and workforce preparation. The first phase operated from September 2021 to August 2024, establishing the programme model and creating the initial network of training centres. A second phase was launched in November 2022 and is scheduled to continue until November 2025, expanding programme reach and consolidating delivery mechanisms. A third phase commenced in January 2026 and is planned to run until December 2028, extending the intervention and enabling continued support for graduates across Maharashtra.

5.1 Target Learners

The programme primarily serves graduates from engineering, computer science, and related technical disciplines. These learners typically possess a formal academic foundation acquired through degree-level study but require additional opportunities to develop practical skills aligned with industry expectations. The programme is therefore intended not as a substitute for higher education but as a bridge between academic qualification and professional employment.

A notable feature of the initiative is its focus on inclusion. Recruitment efforts explicitly prioritize learners from economically weaker backgrounds and communities that traditionally face barriers to accessing advanced training opportunities. In addition, the programme incorporates a strong gender-equity component, with 60 per cent of available seats reserved for women. This policy reflects recognition of persistent disparities in access to technical training and technology-related employment, particularly among women residing outside major metropolitan centres.

By combining socioeconomic and gender-based targeting, the programme seeks to broaden participation among groups that are often underrepresented within the technology workforce and underserved by conventional training ecosystems.

5.2 Curriculum and Pedagogical Design

The Digital Academy offers a portfolio of seven short-term courses aligned with contemporary industry requirements. Each course has a duration of approximately three months and focuses on skills that are widely demanded across the technology and business sectors. The courses include:

- Full Stack Java Development
- Software Testing
- Cybersecurity
- .NET Development
- AWS with Python
- Financial Analysis
- Accounts Administration

While the specific technical content varies across courses, all programmes share a common pedagogical philosophy centred on practical learning. Approximately 70 per cent of instructional time is devoted to hands-on activities, while the remaining 30 per cent focuses on conceptual and theoretical foundations. This allocation reflects the programme's emphasis on application rather than content coverage alone.

Learning activities are organised around project work, practical assignments, skill boot camps, and problem-solving exercises designed to simulate workplace tasks and professional environments. Rather than treating practical application as a supplementary component, the curriculum positions it as the primary mode of learning. Participants are expected to work with tools, technologies, and workflows commonly encountered in industry settings, thereby developing familiarity with professional practices alongside technical competencies.

In addition to technical instruction, the programme incorporates employability-oriented components such as aptitude development, communication skills training, and career preparation activities. Industry practitioners contribute through mentoring and guidance sessions, exposing learners to professional expectations and helping them understand current workplace requirements. This combination of technical, behavioural, and professional development elements reflects a holistic conception of employability that extends beyond disciplinary knowledge alone.

5.3 Distributed Delivery Model

Perhaps the most distinctive feature of the programme is its delivery model. Unlike many technical training initiatives that are concentrated in metropolitan centres, the Digital Academy operates through a geographically distributed network of thirty-one training locations across Maharashtra.

Only one centre is located within a major metropolitan area. The remaining locations are situated in district headquarters, smaller cities, and regional urban centres distributed across the state's major regions, including Western Maharashtra, Marathwada, Vidarbha, North Maharashtra, and the Konkan region. This structure enables learners to access training closer to their homes, reducing the financial and social costs associated with relocation. The distributed model addresses barriers that frequently limit participation in technical skilling programmes, including travel expenses, accommodation costs, family responsibilities, and mobility constraints. For many graduates, especially women and learners from economically disadvantaged households, the ability to access high-quality training within their local region significantly expands opportunities for participation.

Rather than requiring learners to migrate to established technology hubs, the programme brings training opportunities to locations where graduates already live and study. In doing so, it treats geographic accessibility as a core element of programme design rather than as an issue external to the learning process. This emphasis on local delivery reflects the programme's broader objective of extending employability-oriented training beyond metropolitan centres and making professional skill development accessible to a wider range of graduates across Maharashtra

Table 1. Programme scale by phase

Programme	Duration	Target	Enrolled/Certified	Placed	Placement Rate (%)
SDA	Sep 2021 - Aug 2024	1,665	1,775	1,192	67.2
SDA-XT	Nov 2022 - Nov 2025	4,775	4,950	2,100	42.4
SDA 2.0	Jan 2026 - Dec 2028	4,500	396*	Ongoing	N/A
Total	-	10,940	7,121	3,292	46.2

Source: programme records. Both completed phases exceeded their enrolment targets. Employment outcomes are recorded by the programme but are not analysed here; see Section 9.

The programme data demonstrates the progressive expansion of digital skilling initiatives across Maharashtra's Tier-2 and Tier-3 towns. The first phase, SDA, enrolled 1,775 learners against a target of 1,665, achieving approximately 106.6% of the planned target. Furthermore, the programme facilitated the placement of 1,192 learners, resulting in a placement rate of 67.2%, which indicates strong alignment between training delivery and labour market opportunities. This performance suggests that the initial phase was highly effective in translating skill acquisition into employment outcomes.

The second phase, SDA-XT, represents the largest programme intervention, enrolling 4,950 learners against a target of 4,775, thereby surpassing expectations by around 3.7%. The substantial increase in enrolment reflects the programme's enhanced outreach and growing demand for digital skills training among youth in smaller towns. While SDA-XT achieved 2,100 placements, yielding a placement rate of 42.4%, the lower rate compared to SDA may be attributed to several factors, including the larger scale of implementation, varying learner backgrounds, local labour market constraints, and the timing of placement tracking. Nevertheless, SDA-XT contributed the highest absolute number of placed candidates, highlighting its significant impact on workforce development.

The latest phase, SDA 2.0, is designed with an ambitious target of 4,500 beneficiaries over the period 2026-2028. At the current reporting stage, 396 learners have already been enrolled or certified, while placement activities remain ongoing. As implementation progresses, this phase is expected to build upon lessons learned from the previous initiatives, focusing on improved learner engagement, industry partnerships, and employment outcomes. Collectively, the three programme phases reveal a strong commitment to decentralizing digital skills training and expanding access to employment-oriented learning opportunities in non-metropolitan regions. The achievement of enrolment targets across all active phases demonstrates substantial demand for digital skilling among youth in Tier-2 and Tier-3 towns. Moreover, the cumulative placement of 3,292 individuals underscores the programme's contribution to enhancing employability and supporting local economic development. These findings suggest that bringing training closer to learners can successfully address geographical barriers to skill acquisition and create pathways to sustainable employment in underserved regions.

6. RESULT AND DISCUSSION

The enrolment and placement trends observed across the SDA programme phases indicate the effectiveness of localized digital skilling interventions in expanding access to workforce-relevant training in Tier-2 and Tier-3 towns of Maharashtra. While the original SDA initiative demonstrated a comparatively high placement conversion rate (67.2%), the subsequent SDA-XT phase significantly scaled programme outreach, enrolling nearly three times

as many learners and generating the highest absolute number of placements. These trends highlight the inherent trade-off between programme scale and placement efficiency often observed in large-scale skill development initiatives. The ongoing SDA 2.0 phase seeks to further consolidate these gains through expanded coverage and sustained industry engagement. Overall, the data provide evidence that decentralized, community-based digital skilling models can play a critical role in enhancing employability, reducing regional disparities in skill access, and strengthening the human capital base of emerging urban centres in India.

Five themes were constructed from the learner narratives, read against the documentary record.

6.1 Proximity as the enabling condition

The most consequential design feature operates before any teaching happens.

Learner A, a computer science undergraduate at a women's degree college in a tier-3 town in western Maharashtra, describes the training as something that arrived where she already was. In her account the programme "started" at her college and became, in her words, a golden opportunity. She did not search for it, apply to something distant, or weight the cost of relocating. It appeared.

That passive framing is easy to overlook and worth dwelling on. Learner A's narrative is otherwise dominated by constraint — a lost admission, an examination she could not sit, a career path narrowed by circumstance. Against that background, the arrival of industry-standard Java training at her own college represents a genuine expansion of what was available to her, and she registers it as such.

Learner C, at the same institution, describes the same structural fact without commenting on it, which is arguably stronger evidence. The proximity is unremarkable to her because it was simply how the training was arranged.

The documentary record makes the design intention explicit. Thirty-one locations, thirty of them outside the metro, is not incidental dispersion. It is a deliberate inversion of the standard model in which learners travel to training. Read through the capability approach, the programme is removing conversion factors rather than only supplying skills. Bonvin's (2019) capability for education — the real rather than nominal freedom to access learning — names precisely what fee waiver plus local delivery accomplishes.

6.2 From syllabus coverage to working capability

The learner accounts contain a consistent and initially counterintuitive pattern. What they report gaining is largely not new subject matter.

Learner A lists her prior knowledge before the training: C, C++, Python, Java, and a working familiarity with SQL, HTML and CSS. She had, in other words, already covered the ground. What she describes gaining from the training is knowledge about Java of a kind her degree had not delivered — the same nominal subject, encountered differently.

This is the coverage-without-capability problem in miniature, and it clarifies what a programme of this kind is actually for. It is not remedial in the ordinary sense of supplying missing content. It converts knowledge the learner already holds in a declarative form into knowledge she can use. Guo et al. (2020) note that producing an artefact is the defining characteristic of project-based learning; the artefact is what forces the conversion, because a program that must run cannot be half-understood.

In Tomlinson's (2017) terms this is human capital being operationalised. But it shades immediately into cultural capital, since what the learner acquires alongside the working competence is familiarity with how the work is actually done — the tools, the sequence, the vocabulary that marks someone as a plausible entrant to the field.

6.3 Integrated stack exposure and practitioner contact

Learner C is the most specific of the three about content. She contrasts hands-on instruction with what she had received previously and names the additional material — SQL, Hibernate, JDBC — as what gave her an understanding of how the components fit together. Her emphasis falls consistently on application: she values the training for showing her what the language is used for in practice rather than what it consists of.

The distinction between learning a language and learning a stack is significant. A degree course typically teaches components in isolation across separate semesters. Integration is left to the student, and for most students it does not happen. A three-month project-based course that requires a working application forces integration as a condition of completion.

Learner C also foregrounds the instructors — their knowledge, and an interactive environment she describes as making the experience engaging. Learner B, at an engineering college in another district, is more pointed, crediting his trainers with preparing him not only in technical content but for interviews. Practitioner mentoring appears in the programme's design documentation as a stated component, and in the learner accounts it registers as one of the more valued elements. This is social and cultural capital in Tomlinson's (2017) sense: access to people who know how the field works and can transmit its expectations.

6.4 Confidence, readiness and the repair of educational identity

The most striking material in the narratives concerns neither skills nor tools.

Learner A devotes the majority of her account to a setback. She had aimed at an engineering seat at a government college, prepared seriously, performed well in the state entrance examination and secured admission and then lost the place through what she describes as her own error. She returns to it twice, calling it the biggest mistake of her life and describing her efforts as wasted. She enrolled in a BSc instead, intended to retake the entrance examination, and was unable to sit it. The variance

The training enters this narrative as a counterweight. Having established herself as someone whose plans failed, she closes by stating that she is confident of having achieved something by the time she graduates, and that a job is her priority because knowledge matters more than a degree. The reasoning is a little defiant, and it reads as someone reconstructing a workable account of herself.

Read through the capital's framework, this is identity and psychological capital (Tomlinson, 2017). The training gave Learner A grounds for a revised self-description: not the person who lost an engineering seat, but a person with practical development experience heading toward employment. Bandura's (1997) account supplies the mechanism, since mastery experiences in a valued domain are the strongest source of efficacy beliefs, and a project course that ends with something working supplies exactly those.

The capability of reading is broader and closer to what she is saying. The training did not principally change what she could do — she could already write Java. It changed what she could reasonably imagine doing. Powell and McGrath (2019) place the expansion of aspiration at the centre of what vocational education is for, and this account is a compact illustration of the claim.

Learner B reports the same category of benefit in more instrumental terms, describing the training as having prepared him to navigate interviews successfully and crediting the programme with a change in his professional trajectory. Learner C's version is quieter: an enjoyable and engaging experience that exceeded her expectations and left her, in her framing, with skills she is glad to have.

Across all three, the reported benefits are affective and dispositional at least as much as technical. Guo et al. (2020) found affective outcomes to be the most reported category in the project-based learning literature, which suggests this pattern is characteristic of the pedagogy rather than peculiar to this programme.

6.5 Local delivery and women's participation

Sixty per cent of seats are reserved for women. Combined with fee waiver and local delivery, this constitutes a specific theory about how to get women into technical training: guarantee the seat, remove the cost, and remove the journey.

Two of the three narratives come from women at a women's degree college in a tier-3 town. Both describe the training arriving at their institution. Neither mentions relocation, and neither mentions negotiating with family permission to travel — an absence that is itself informative, because the design has removed the occasion for that negotiation.

Both completed phases exceeded their enrolment targets while operating under the sixty per cent reservation, which suggests the seats were filled rather than left vacant. That is a meaningful operational result. Programmes that set gender targets without addressing the conditions that keep women out routinely fail to meet them.

A caution belongs here, drawn from Arun and Arun (2023). Access to technical training is not equivalent to access to technical work, and the segment of technology employment that opens to women from lower-income households in smaller towns may be narrower and less well remunerated than the training implies. The present data cannot speak to this, since the programme's records are not disaggregated by gender beyond enrolment.

Establishing whether the reservation produces equitable outcomes as well as equitable entry would require outcome data broken down by gender, role and location — a straightforward addition to existing reporting.

The case suggests that for graduates outside metropolitan India, the location of training is not an operational detail but a substantive part of the intervention. This is the study's central claim and it follows directly from the learner accounts. Learner A's opportunity was not created by curriculum design; it was created by the training being in her town. Everything the pedagogy then accomplished depended on that prior fact.

This has a straightforward implication for how programmes of this type are described and assessed. Delivery model is usually reported as logistics — a list of centres in an annexure. In a capability framing it belongs in the theory of change, because it determines the population for whom the programme is real (Bonvin, 2019; Sen, 1999).

The second finding concerns what the training does once access is secured, and it bears directly on the duration question raised in Section 2.2. The learners had covered the syllabus. What they lacked was the capacity to use it, and what the programme supplied was the conversion.

This reframes the standard objection to short-term training. Three months is manifestly too short to make a novice competent in software development, and programmes that claim otherwise deserve the scepticism they

receive. Three months is not obviously too short to make a computer science graduate — someone who has spent years on the underlying material — able to build and ship a working application. The intervention is completing an education rather than substituting for one, and that is a different and much smaller task. Learner A's account is the clearest illustration: she arrived already able to write Java and left able to use it, which is exactly the kind of gain a short course delivered to a prepared learner can plausibly produce.

The design implication is that duration cannot be evaluated in isolation from entry profile. A three-month course is short or adequate depending entirely on where the learner starts. Evaluations of short-term training that pool programmes with very different intake populations will produce findings that apply to neither. The seventy-thirty practice-to-theory weighting fits the same logic: it is a correction calibrated to a specific and known deficiency, not a general pedagogic preference.

None of this is an argument that short-term training works. It is an argument that the question is wrongly posed when duration is assessed on its own.

The third finding is the prominence of confidence and readiness in learner accounts. All three narratives foreground dispositional gains, and one is organised almost entirely around them. Programmes of this kind rarely claim credit for this, partly because it sounds soft and partly because it is not measured. Both reasons are weak. Self-efficacy is measurable with validated instruments at modest cost, and the employability literature has long recognised that psychological and identity capital materially affect labour market transitions (Clarke, 2018; Tomlinson, 2017). A programme that reliably produces the shift visible in Learner A's account is producing something worth documenting.

There is a necessary qualification. Confidence that is not matched by opportunity becomes its own difficulty, and the demand side sits outside the programme's control. McQuaid and Lindsay (2005) made the point two decades ago and it remains the binding constraint in Indian skilling: supply-side training cannot generate jobs where the local labour market lacks them, and the demand environment in a district town differs sharply from that in Pune. This is an argument for pairing local delivery with active employer linkage rather than an argument against local delivery.

10. CONCLUSION

The programme examined here does something that is straightforward to describe and difficult to execute: it takes industry-standard technical training, compresses it into three months, removes the fee, and puts it in the towns where the learners already are. The graduates who wrote about it describe benefits that extend well past syntax and frameworks. They describe knowledge they already possessed becoming usable, exposure to how the work is actually done, contact with people who could tell them what the field expects, and — most emphatically — a changed sense of what they could reasonably expect for themselves.

That last benefit is the one most likely to be dismissed as sentiment and least likely to appear in a programme report. It should not be. For a graduate who had written herself off after losing an admission, the recovery of a credible professional future is not a by-product of the training. On her own account, it is the main thing that happened.

The design lesson is that proximity, cost and pedagogy are not three separate features but one mechanism.

Removing the journey makes the training real; removing the fee makes it possible; weighting it toward practice makes it useful. Programmes seeking to serve graduates outside metropolitan India would do well to treat all three as constitutive of the intervention rather than as arrangements around it.

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