# How should South Africa redesign education, industrial policy, and fiscal incentives to harness artificial intelligence for productivity growth while limiting labour market disruptions?

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## Introduction

South Africa faces the challenge of using artificial intelligence (AI) to raise productivity in an economy already struggling to create jobs. In the second quarter of 2026, official unemployment reached 33.6%, while unemployment among people aged 15–34 was 47.4% (Statistics South Africa, 2026). Harnessing AI while protecting workers requires coordinated redesign of education, industrial policy and fiscal incentives. This essay argues for an integrated strategy that builds foundational and applied skills, targets adoption where benefits can spread across firms, and makes public support conditional on credible training and employment outcomes. Implementation should begin with a capped pilot whose expansion depends on demonstrated results.

## The AI opportunity and labour market risk in South Africa

AI can automate tasks, improve decisions and help workers produce more with the same resources. Evidence from 5,172 customer-support agents shows that access to an AI assistant increased issues resolved per hour by approximately 15%, with larger benefits for less experienced and lower-skilled agents (Brynjolfsson, Li and Raymond, 2025). This finding supports investment in tools that complement workers, although evidence from one firm cannot establish the gains South Africa should expect across its economy.

The risks also require careful interpretation. IMF analysis estimates that almost 40% of global employment is exposed to AI; this measures potential interaction with the technology, including opportunities for complementarity, rather than predicted job losses (Georgieva, 2024). It should not be converted into a South African displacement forecast. Generative AI can affect cognitive tasks such as drafting and customer communication, while physical automation follows different technical and economic constraints. Policy should assess occupations at task level instead of assuming that all manual or lower-skilled work is equally vulnerable.

Disruption may occur through slower hiring and non-replacement as well as retrenchment. Mazodze (2026) identifies this risk in South Africa, where firms may expand output without increasing headcount. Protecting existing employees alone would therefore leave young entrants exposed. The policy objective should encompass access to employment, earnings and productivity, rather than treating unchanged headcount as sufficient evidence of success.

Policy status matters. The April 2026 draft national AI policy was formally withdrawn in June (Department of Communications and Digital Technologies, 2026). Its proposals cannot be treated as an operative national policy. Nevertheless, government can improve existing education, industrial and fiscal instruments while developing a credible replacement framework.

## Redesigning education for the AI economy

Education reform must operate across three time horizons: immediate upskilling of the current workforce, medium-term curriculum reform in schools and Technical and Vocational Education and Training (TVET) colleges, and sustained development of advanced expertise. Each stage requires a different intervention and a realistic account of institutional capacity.

### Basic education and teacher capability

In its 2025 parliamentary reply, the Department of Basic Education outlined a phased introduction of Coding and Robotics, beginning with Grades R-3 in 2026. It also emphasised resource constraints and the priority of foundational literacy and numeracy (Department of Basic Education, 2025). AI literacy should therefore develop alongside strong reading, mathematics and reasoning skills. Learners need to understand how to question an answer, interpret data and recognise uncertainty before relying on automated systems.

Research on AI in schools identifies opportunities for personalised learning and support for learners with special needs, while highlighting infrastructure gaps and the need for teacher expertise (Saal et al., 2025). Funding should prioritise teacher development, dependable connectivity and usable learning resources in under-resourced schools. Purchasing devices without maintenance, accessible content and trained teachers risks producing expenditure without better learning. Low-bandwidth and offline resources should remain available so that participation does not depend on a household subscription.

Assessment should require pupils to explain their reasoning through supervised work, oral discussion and practical tasks. Teachers should receive guidance on checking AI outputs, protecting learner information and designing assignments that reveal understanding. The educational goal is to improve learning and judgement; schools should evaluate tools against these outcomes before expanding their use.

### TVET colleges and workforce reskilling

TVET colleges can connect AI adoption with practical workplace skills. The launch of a Fourth Industrial Revolution laboratory and a Centre of Specialisation at Gert Sibande TVET College illustrates an existing institutional platform for this approach (SAnews, 2026). Expansion should depend on employer demand and college readiness, rather than assuming every institution can immediately deliver advanced AI programmes.

Sector Education and Training Authorities (SETAs) should work with employers, colleges and worker representatives to identify tasks that are changing and design short, recognised learning programmes. Training should combine digital foundations with sector knowledge. Agricultural workers may need to interpret crop-monitoring information; manufacturing technicians may need to maintain equipment and investigate faults; service workers may need to verify automated responses and handle complex cases. Not every participant needs to become a programmer or data scientist.

Courses should include supervised workplace practice, recognition of prior learning and clear progression into further qualifications. Employers should provide paid learning time for incumbent workers and placements for entrants. Transport, data and childcare costs can prevent participation, so support should be targeted to demonstrated need. Colleges and training providers should receive part of their payment after independently assessed competence and verified employment or redeployment outcomes, with safeguards against excluding participants who need greater support.

### Tertiary education and local research capability

Universities should integrate relevant AI modules into economics, law, health sciences and education, alongside specialist programmes in computing and engineering. These modules should teach students to assess evidence, understand limitations and apply tools within professional responsibilities. Partnerships with employers can connect coursework to actual production and service problems while preserving independent academic judgement.

Mentorship, applied research fellowships and university-industry laboratories should support local talent development. Research careers also require access to computing resources and projects with

local demand. Scholarships should therefore form part of a wider effort to develop viable domestic opportunities. Shared facilities and competitive research partnerships can help smaller institutions participate, while transparent selection should prevent support from becoming concentrated in a few established organisations.

## Industrial policy targeting adoption in priority sectors

South Africa's Industrial Development Strategy identifies digital infrastructure, AI and cloud services within its digitalisation agenda (Department of Trade, Industry and Competition, 2026). Implementation should select projects using explicit criteria: a measurable productivity problem, credible demand, benefits for suppliers or customers, and feasible pathways for workers. Initial priorities should be manufacturing and agro-processing, agricultural services and business services. Mining projects should qualify where they offer transferable capabilities, safety benefits or opportunities for local suppliers.

The economic case for intervention is strongest when firms cannot capture all the benefits of their investment or cannot coordinate complementary investments. A small manufacturer may struggle to finance a trial when benefits are uncertain, while trained employees and suppliers may subsequently spread knowledge to other firms. Public support can share these early risks. It should not subsidise every purchase described as AI, especially where large firms would invest without assistance.

### Manufacturing and mining

Adoption programmes should support practical trials of predictive maintenance, quality inspection and process optimisation. Participating firms should specify their baseline costs, expected benefits and implications for jobs before receiving support. Training should prepare operators and technicians to work with the resulting systems, rather than assume that displaced workers can immediately enter highly specialised occupations. Pilot results, including unsuccessful trials, should inform other firms' investment decisions.

In mining, support should focus on safety, maintenance and supplier development where benefits extend beyond the mine itself. Large companies should finance most firm-specific investment and contribute to training. Where tasks disappear, agreements should provide for realistic redeployment or supported movement into adjacent activities. Public funding should protect workers' ability to earn a living without committing government to preserving every existing task indefinitely.

### Agriculture and services

AI applications such as crop monitoring and disease detection could help farmers use resources more efficiently (Marrie et al., 2023). However, access depends on affordable equipment, trusted advice and useful data. Extension services and producer organisations should help smallholders test shared solutions before committing scarce capital. Support should favour tools that work in local conditions and languages, with farmers retaining meaningful control over their information.

In business process outsourcing and retail, firms should combine AI assistance with training in problem-solving, verification and customer relationships. The customer-support evidence suggests potential for new workers to learn faster when tools are introduced appropriately (Brynjolfsson, Li and Raymond, 2025). Public programmes should therefore assess graduate and entry-level recruitment alongside retention. Otherwise, a firm could satisfy a retention condition while steadily closing routes into employment.

### Innovation ecosystems and enabling infrastructure

Existing Special Economic Zones and university partnerships can host shared demonstration facilities, technical advice and access to computing resources. Support should also reach firms

outside these locations through regional colleges and extension programmes. Public procurement can create demand for locally relevant solutions, but contracts should require competitive pricing, demonstrable performance, data portability and transparent evaluation. Local capability should be developed without insulating suppliers from competition or locking public institutions into one vendor.

Energy and computing constraints require coordination. Data centres demand substantial power, water and capital, while their development can also support investment in additional energy capacity (Hancock et al., 2026). Incentive decisions should therefore consider efficient cooling, additional electricity supply and the costs of network upgrades. Shared computing and appropriate cloud access may serve many smaller users more effectively than each institution building a separate facility. Projects should account for resource costs and protect the reliability of surrounding services.

## Fiscal incentives rewarding innovation and worker development

Fiscal instruments should address distinct problems. Research support encourages the creation of knowledge; adoption assistance helps firms use existing technologies; employment and training support reduces barriers facing workers. Combining these objectives into an unrestricted AI tax break would make costs difficult to control and benefits difficult to assess.

### Research and development incentives

Section 11D allows qualifying companies a 150% deduction for eligible operational research and development expenditure, subject to the applicable requirements and approval. The incentive extends to 31 December 2033. Accelerated depreciation for qualifying machinery or plant used in research and development is provided under section 12C (SARS, 2025). Routine adoption of an existing AI product should not automatically be described as qualifying research.

At the standard company tax rate of 27%, the additional 50% deduction produces an additional tax benefit of 13.5 cents per eligible rand, above the ordinary deduction, where the company can use the deduction (SARS, 2026a; author's calculation). Government should improve guidance and processing for qualifying AI research without weakening eligibility checks. Since deductions offer limited immediate assistance to firms without taxable profits, carefully selected grants and shared facilities remain important for young businesses.

### Employment incentives and reskilling grants

The Employment Tax Incentive (ETI) reduces qualifying employers' Pay-As-You-Earn (PAYE) liability and generally targets eligible workers aged 18–29, with specified exceptions. The current guide provides for the incentive to cease from 1 March 2029 (SARS, 2026b). Its youth-entry purpose should be retained. Reskilling incumbent workers of different ages is better tested through a separate, capped grant window, rather than immediately extending the ETI into an open-ended retention subsidy.

Training grants should require co-financing, recognised assessment and a credible plan for hiring or redeployment. Government should check for duplicate claims and avoid paying twice for the same eligible cost. Retention conditions should be time-limited and allow verified movement to another employer. Rules should discourage firms from replacing unsubsidised workers or relabelling ordinary training simply to claim assistance. Smaller firms should be able to apply through industry consortia with shared administrative support.

### Funding and fiscal discipline

The Skills Development Levy already provides a mechanism for financing skills development (SARS, 2026c). The 2026 Budget Review projects R31.982 billion in expenditure by skills development levy institutions for 2026/27, comprising SETAs and the National Skills Fund (National Treasury, 2026, Table 5.5). It does not establish that these resources are uncommitted or legally available for transfer.

The Department of Higher Education and Training and National Treasury should identify legally reprioritisable allocations before launch and publish which activities would receive less funding. Existing learner commitments and effective programmes should be protected. If less funding is available, the cohort should be reduced. Higher unit costs should also reduce the number of places within the ceiling, rather than create an automatic spending increase. Wider curriculum, infrastructure and research reforms require separate appraisal and budgeting; this pilot cannot finance the entire transition.

## Limiting labour market disruption through implementation and evaluation

The 2026 National Economic Development and Labour Council (NEDLAC) summit highlighted worker participation, skills alignment and the Labour Activation Programme as part of the response to technological change (Department of Employment and Labour, 2026). Sectoral transition agreements should build on these institutions. Employers receiving support should discuss changing tasks and training plans with workers before displacement occurs, including where adjustment is expected through natural attrition.

Income protection should accompany training where workers face a genuine loss of earnings. Existing Unemployment Insurance Fund (UIF) and labour activation arrangements should be assessed for lawful use, eligibility and financial capacity before any extension is promised. A wider benefit would require separate costing and legislation where necessary; uncertainty about future AI displacement does not itself establish a need to recapitalise the UIF.

Implementation should assign clear responsibilities. Higher Education and Training, participating SETAs and colleges should organise skills delivery; the Department of Trade, Industry and Competition should coordinate firm selection and adoption support; National Treasury should oversee fiscal limits. NEDLAC should support dialogue and scrutinise sectoral plans. Using existing institutions avoids spending the first phase establishing another agency, but requires common reporting standards and named officials accountable for delivery.

The first three months should establish selection criteria, baselines and independently checked training contracts. Delivery should then proceed in cohorts, followed by employment and earnings checks at six and twelve months after completion. Approval should cover the full follow-up obligation even when it extends beyond the delivery year. Publication should include the cost per participant, completion, sustained employment, earnings, productivity and new recruitment, disaggregated by relevant participant characteristics while protecting personal information.

Evaluation must distinguish genuine gains from outcomes that would have occurred anyway. A phased rollout can compare early participants with similar eligible applicants receiving support later; transparent random selection among equally eligible applicants would strengthen that comparison where feasible. Firms that volunteer may already be more capable, so their performance alone is insufficient evidence of programme success. Expansion should follow independently verified benefits and acceptable cost per additional sustained job or earnings improvement. Poor-performing components should be redesigned or closed, and successful elements should compete for funding in the normal budget process.

## Conclusion

South Africa should pursue AI adoption through education that strengthens foundational and applied skills, industrial support focused on measurable productivity problems, and fiscal incentives that distinguish research, adoption and worker development. The approach must include unemployed entrants as well as existing employees. A capped pilot, employer contributions and independent evaluation offer a practical starting point while limiting fiscal exposure. Broader reforms should build on demonstrated results and realistic institutional capacity. The central test is whether public support improves productivity and people's ability to obtain and sustain decent work, at a cost the country can afford.

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