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Agriculture

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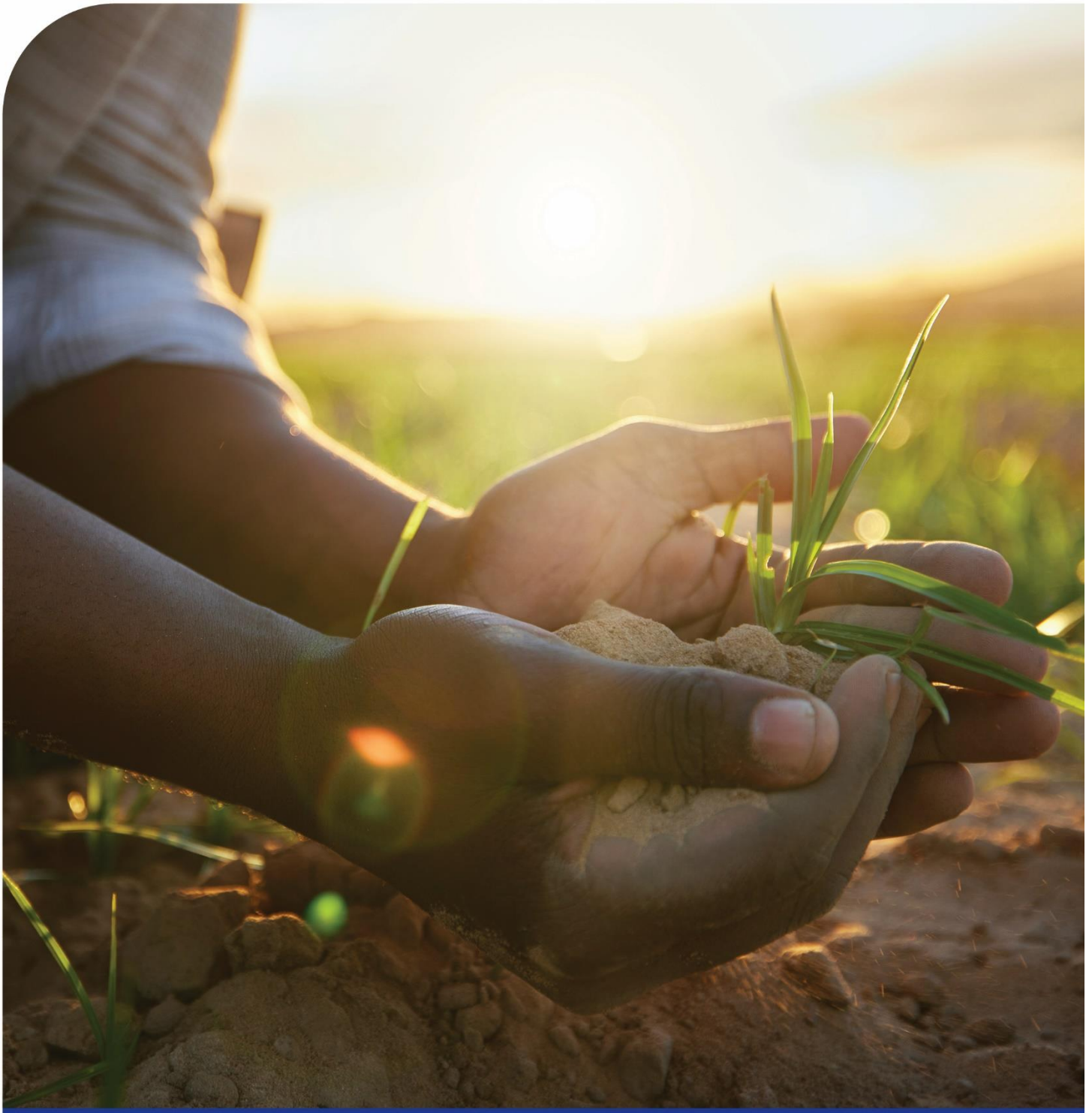

Graduate Employability
Final Report

JET EDUCATION SERVICES
THINK EDUCATION. THINK JET.

FINAL REPORT

WCDoA EATI Employability Evaluation

JET Education Services

JULY 2023

RESEARCH • IMPLEMENTATION • MONITORING & EVALUATION

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Acronyms

4IR	Fourth Industrial Revolution
AET	agricultural education and training
AgriSETA	Agricultural Sector Education Training Authority
ASD	agricultural skills development
BAgric	Bachelor of Agriculture
CBA	cost-benefit analysis
COVID-19	corona virus disease 2019
EATI	Elsenburg Agricultural Training Institute
DipAgric	Diploma in Agriculture
FGD	focus group discussion
HEI	Higher Education Institution
HET	higher education and training
JET	JET Education Services
NPS	Net promotor score
NPV	net present value
NSC	National Senior Certificate
NQF	National Qualifications Framework
POPIA	Protection of Personal Information Act
PSM	Propensity Score Matching
QLFS	Quarterly Labour Force Survey
ROI	return on investment
RPL	recognition of prior learning
SAQA	South African Qualifications Authority
StatsSA	Statistics South Africa
ToC	theory of change
WCDoA	Western Cape Department of Agriculture
WIL	work integrated learning
ZAR	South African rand

Policy Summary

The Western Cape Department of Education's (WCDoA) Agricultural Education and Training (AET) programme is delivered via agricultural skills development (ASD) and Higher Education and Training (HET) offered at Elsenburg Agricultural Training Institute (EATI). AET aims to contribute towards 'ensuring a skilled and capable workforce to support an inclusive growth path, vibrant, equitable and sustainable rural communities, and food security for all' (WCDoA, 2021, 23). JET Education Services (JET) undertook a design, implementation and impact evaluation, focused on the employability of EATI graduates over the period 2016-2022, when eight ASD and HET programmes were offered. Key findings and policy implications are presented below.

EATI education is highly regarded by industry stakeholders, students and graduates, and is considered by some stakeholders to be the best quality AET in South Africa. Graduates face a more challenging work seeking environment now than when a previous evaluation - covering 2009-2014 graduates, was - conducted (JET, 2016). Employment outcomes vary considerably per programme with Certificate in Horse Mastership, Diploma in Cellar Technology and BAgric graduates faring better than those from the Diploma in Extension and Learnership programmes. At the time of the study[1] 61% of graduates were employed, in a learnership/ internship/ apprenticeship of self-employed whilst 26% were unemployed. The majority of employed graduates work in agriculture. EATI is supplying graduates for South Africa – not just the Western Cape - who enter diverse agricultural sub-sectors and types and size of organisations. Graduating from EATI brings benefits for individuals, their families, agricultural enterprises and their communities.

Access and equity

Student cohort demographics have changed very little since the previous evaluation (JET, 2016). EATI conducts marketing but word of mouth is the most effective recruitment strategy, which reinforces the existing student demography. It is recommended that EATI implement structured initiatives targeted at individuals from previously disadvantaged and non-traditional agricultural backgrounds and investigate why such individuals who are offered places chose not to study at EATI.

Curriculum and programme development

EATI needs to constantly stay abreast of trends and developments in industry to ensure that curricula remain relevant. All programmes must undergo regular scheduled reviews to maintain their relevance and effectiveness. Engagement between programme leaders and industry is crucial, and reviews should also consider graduate feedback and employability. It would be beneficial to enhance students access to practical and work experience and consider offering work experience and internships as part of all AET programmes.

Industry engagement and partnerships

Engagement between EATI and industry is taking place, driven mainly by individual lecturers, is consequently uneven and requires engagement at a senior level for coherent direction and sustainability. This should be strategically informed by curriculum and programme priorities and protocols to incorporate industry experts and practitioners, as appropriate. It is recommended that EATI initiate a formal senior management level structure that includes clear communication channels and regular engagement with industry stakeholders. An example of strategic collaboration with industry is the offering of short courses focused on emerging developments and trends, such as drone technology and climate change, which could be expanded.

[1] January-March 2023.

Student support and guidance

A range of support services are available to EATI students to help them succeed in their studies. Academic support and career guidance is mainly offered via the initiative of individual lecturers and structured academic support and career guidance programmes would be beneficial. EATI could strengthen links with graduates and consider a formal alumni association to foster networking and ongoing support.

Data management, monitoring and evaluation

The good practice of undertaking regular evaluation should be continued. It is recommended to strengthen record keeping, data management and monitoring, to facilitate the regular tracking of application, enrolment, student and graduate metrics and strategic application of data for decision making.

Executive Summary

Introduction and methods

This report presents the findings of a design, implementation and impact evaluation by JET Education Services (JET) for the Western Cape Department of Agriculture (WCDoA) focused on the employability of graduates of Elsenburg Agricultural Training Institute (EATI). EATI offers training at National Qualifications Framework (NQF) Levels 1 to 4 under the Agricultural Skills Development (ASD) sub-programme and Levels 5 to 7 under the auspices of Higher Education and Training (HET). Eight ASD and HET programmes offered during the period 2016–2022 were included in the evaluation.

The *design evaluation* included a review of EATI's contribution to the WCDoA's theory of change for addressing challenges in Agricultural Education and Training (AET). The *implementation evaluation* focused on the content, quality and perceived value of the EATI education and learning experience, and alignment with industry needs. The *impact evaluation* focused on programme outcomes regarding employability and perceived value of graduates entering the agriculture sector.

The methodology comprised: (a) a *survey of graduates* (n=125), students who dropped out (n=6) and current students (n=62); (b) *key informant interviews* with internal and external stakeholders including industry and employers; (c) *focus group discussions* with graduates and current students; (d) analysis of EATI enrolment and graduation data; (e) *propensity score matching* (PSM) comparing employment outcomes of EATI graduates with a similar national group from the StatsSA Quarterly Labour Force Survey (Q4, 2022); and *a return on investment* (ROI) analysis.

Findings

Relevance and alignment of programmes

The general **quality of teaching** was perceived to be good. Many lecturers have master's degrees while some have doctoral degrees. Most lecturers are reported to have personal qualities that engender good relationships with students, whereas some are perceived as not approachable. Concerns were voiced by some industry stakeholders and students about a need to improve lecturers' technological and practical agricultural experience. **Staff shortages** and resulting **heavy workloads** were reported. Challenges include hard-to-fill vacancies and lengthy staff recruitment processes. For staff support, there is a formal induction programme. Some lecturers belong to professional associations, and financial assistance is available for continuing professional development. The COVID-19 pandemic required fast-tracking the implementation of **blended learning**. There were mixed findings about readiness for blended learning. Some respondents thought that the infrastructure needs further development, and some staff need more time to adjust

Engagement with industry is essential for staying up to date with emerging trends and needs, updating curricula, workplace exposure for students and supporting graduate employment. EATI engages with industry in several ways, including negotiating and planning practical excursions and work-integrated learning and collaboration in short course training. There is some input into course design and reviewing curricula, mainly via the initiative of individual lecturers. Staff and industry stakeholders expressed the need for more coordinated and streamlined engagement.

EATI has amended curricula to incorporate emerging technological advances and increased mechanisation via the introduction to drone technology and precision farming. Staff are exploring inclusion of harvesting

robots and implementation of cocurricular courses. In the field of climate change, staff are updating modules, supported by ongoing research into climate developments. With respect to the green economy, there is a limited curriculum response. Graduate strengths were reported to include specialised knowledge and skills, technological knowledge and skills, whilst soft skills (including people and communication skills), and business and management skills were reported to be areas that need strengthening. Although entrepreneurial skills are part of curricula, very few graduates were self-employed, and more exposure to the concept of agricultural commodity value chains was suggested; none of the surveyed graduates were employed in this area.

Efficiency of programme processes

EATI employs a variety of marketing strategies to recruit students; however, word of mouth is by far the strongest influence, indicated by 58% of students. This mode, though successful, will tend to reproduce the social and demographic make-up of the current student body (63% White and 69% male in 2022).
Various forms of support are available to students and are being accessed including: Bursaries (received by 70% of surveyed graduates and 65% of students); Accommodation (84% of graduates and 77% of students); outsourced Psychosocial support (37% of graduates and 35% of students); Academic support/tutoring provided by individual lecturers (53% of graduates and 63% of students); informal career guidance from individual lecturers (50% of graduates and 52% of students); and Assistance in finding employment from individual lecturers (45% of graduates). If these forms of support currently being offered by individual lecturers are formalised, more students may be able to access them.

Staff felt that programmes had an adequate balance between theory and practice, but employers and students felt more practical and on-site exposure was necessary. A total of 59% of graduates and 44% of surveyed students reported having had practical work experience. Some respondents observed that certain equipment and facilities for practicals needed upgrading (e.g. orchards).

Language of instruction is an issue for some graduates and current students: EATI's language policy caters for English, Afrikaans and isiXhosa, but some students still felt that their needs were not being met.

Effectiveness

In the six months after graduating, 42% of surveyed graduates found employment, 18% were engaged in a learnership/apprenticeship/internship, and 2% were self-employed; the unemployment rate was 21%.

At the time of the survey[2], 54% of graduates were employed, 6% in a learnership/internship/ apprenticeship (6%), and 1% were self-employed, whilst 26% were unemployed; 71% of the employed were working in agriculture in a wide range of sub-sectors. Employment rates varied considerably per programme and were highest for the Certificate in Horse Mastership (1/1), the Diploma in Cellar Technology (4/5) and the BAgric (69%); none of the few Diploma in Extension (0/3) and Learnership (0/4) graduates surveyed were employed.

Females (31%) were more likely to be unemployed than males (24%), and Black (39%), Coloured (32%) and Indian (1/2) graduates were more likely to be unemployed than White graduates (16%). The 2020–2022 graduates were more likely to be unemployed (24-43%) than the earlier 2016–2019 graduates (0-28%). This was likely due to COVID-19-related economic and labour market disruption for the former and the latter benefitting from longer experience in the labour market.

[2] January–March 2023.

PSM found that overall, EATI graduates (65.9%) were slightly more likely to be employed than their counterparts in the QLFS (65.3%), but this was not statistically significant. EATI youth graduates (18-35) were more likely to be employed (68.1%) than their counterparts in the QLFS (41.7%), and this difference was statistically significant ($p<0.000$). However, these results should be treated with caution due to the small sample sizes.

Graduates were predominantly working for private enterprises/farms (65%), with some working for government (14%) or on family farms (12%). They were working for enterprises of varying sizes, ranging from micro enterprises (<10 employees) to medium enterprises (51–250 employees). Security of job tenure had improved over time as a higher proportion of employed graduates indicated that their job was permanent (78%) as compared to temporary (16%) than in the six months after graduating.

Employed graduates confirmed the value and relevance of their studies for their work. The majority strongly agreed or agreed that they were working in the industry for which they had trained (77%) and that their knowledge and skills are valued in the workplace (86%). Importantly, graduates also affirmed that their EATI studies had prepared them well for their current job (80%) and that they were making an important contribution to the agricultural sector (75%).

Impact

Employed graduate salaries had increased over time and ranged from a low of R4 489 to a high of R1 923,692 per annum. Average annual income was R192,291 for the employed and R100,203 for those in a learnership/ internship/ apprenticeship. Access to benefits such as medical aid, pension/provident fund and training had also increased over time.

Positive spillover effects were experienced by EATI graduates' families and communities, demonstrating how EATI programmes contribute to social mobility. Many graduates had attained a higher educational level than their parents, the majority of graduates (60%) contribute money to their household and close to half (42%) had assisted a friend or family member to get a job since they graduated.

All AET programmes offered at EATI yielded net benefits that outweighed the investment cost, with a short payback period before increasing consistently in net present value over ten years. The ROI analysis affirmed that investing in AET at EATI is good value for money.

Conclusion and recommendations

EATI education is highly regarded by industry stakeholders, students and graduates and is considered by some stakeholders to be the best quality AET in South Africa. To maintain this, EATI needs to constantly stay abreast of trends and developments in industry to ensure that curricula remain relevant. Graduates face a more challenging work seeking environment now than when the previous evaluation covering 2009-2014 graduates was conducted (JET, 2016), and employment rates vary considerably per programme. The majority of graduates who are employed work in the agricultural sector, and EATI is supplying graduates for South Africa who enter diverse agricultural sub-sectors and types and sizes of organisations. Graduating from EATI brings benefits for individuals, their families, agricultural businesses and communities.

JET makes the following recommendations based on the evaluation findings:

- Explore implementation of a HET programme or articulation agreement with other institutions, leading to a qualification as an Agricultural Extension Officer who can be employed by the WCDoA after graduating.
- Ensure that all programmes undergo regular scheduled reviews to maintain their relevance and effectiveness and that such reviews include input from industry stakeholders and consider graduate feedback and employability.
- Strengthen partnerships to provide students with practical experience. Consider offering work experience and internships as part of all AET programmes.
- Establish a standardised approach to engaging with industry, moving away from relying solely on individual lecturers' initiatives. Implement a formal structure at a senior management level that includes clear communication channels and regular engagement with industry stakeholders.
- Expand collaborate with industry to design and offer short courses focused on emerging developments and trends, such as drone technology and climate change.
- Develop structured recruitment initiatives specifically targeted at individuals from previously disadvantaged and non-traditional agricultural backgrounds to increase their participation and investigate the reasons why individuals from previously disadvantaged and non-traditional agricultural backgrounds turn down offers to study at EATI.
- Initiate a structured academic support programme available to all students who need additional academic support.
- Provide structured career guidance to students during their studies. Consider implementing a formal programme that assists in exploring career options, particularly in relation to emerging job opportunities within the agricultural sector.
- Consider establishing an alumni association to foster networking and ongoing support among graduates and allow graduates to share their experiences transitioning to work post-studies.
- Continue the good practice of undertaking regular evaluation.
- Strengthen student record keeping, data management and monitoring, to ensure the regular tracking of applicant, student and graduate metrics, and strategic application of data in the administration and operations of EATI.

Summary Report

1 Introduction, background and purpose

JET Education Services (JET) conducted an evaluation for the Western Cape Department of Agriculture (WCDoA) in 2022/2023 to assess the employability of graduates of Elsenburg Agricultural Training Institute (EATI). Although the terms of reference stipulated the scope of the evaluation as the five-year period from 2016 to 2020, it was agreed that the evaluation would include graduates of 2021 and current students of 2022 (WCDoA, 2022) and ultimately, because the evaluation was concluded in 2023, it included current students who graduated in 2022.

1.1 EATI programmes being evaluated

The Higher Education and Training (HET) and Agricultural Skills Development (ASD) programmes of EATI are designed to equip youth interested in pursuing careers in agriculture with the necessary knowledge and skills base to enable them to find employment or to establish themselves as entrepreneurs and employers in the agricultural sector (WCDoA, 2021). Furthermore, the vision of EATI is to become an 'agricultural and educational centre of excellence to the benefit of the broader community. Accordingly, the high-level purpose of EATI is to establish a knowledgeable, prosperous, and competitive agricultural sector' (WCDoA, 2021).

The following HET programmes were offered by EATI during the period 2016 to 2022:

- Bachelor of Agriculture (BAgric): This degree programme, offered over three years, leads to a National Qualifications Framework (NQF) Level 7 certification (EATI, 2022a). It is offered in association with the Faculty of AgriSciences at Stellenbosch University (WCDoA, 2022a). Entry requirements for eligible candidacy include having a National Senior Certificate (NSC) or equivalent qualification and an aggregate of at least 55%. In addition to this, Code 4 (50–59%) in four subjects recommended for university admission is required. Electives for the course include: Plant Production; Animal Production; Plant and Animal Production; Cellar Technology; Agricultural Extension and Plant Production; and Agricultural extension and Animal production (EATI, 2022a).
- Diploma in Agriculture (DipAgric): The three-year diploma, which leads to an NQF Level 6 qualification and started in 2020, was initially not included in the evaluation, but there are current students in the sample who are enrolled for the diploma and some 2021 and 2022 graduates. Eligible students are required to be in possession of an NSC or equivalent qualification, with Code 3 (40–49%) in four subjects recommended for university admission. Three specialisations are possible: Plant and Animal Production; Plant Production; Animal Production; and Cellar Technology (EATI, 2022b).
- Certificate in Horse Mastership and Equine Studies: This programme follows the curriculum of the Equine Qualifications Authority of South Africa and generally lasts 18 months. Eligible students are required to have an NSC or equivalent qualification. The programme consists of three modules, and a student who successfully completes Module 3 will be qualified to run a stable yard (WCDoA, 2022a).

- Higher Certificate in Agriculture: This two-year programme (phased out in 2020) led to certification at NQF Level 5. Eligible students had to be in possession of an NSC or equivalent qualification and achieve the minimum entrance requirement of Code 3 (40–49%) in four subjects recommended for university admission. Students specialised in two of the following areas: Agricultural Extension; Agronomy; Animal Production; Pomology; Vegetable Production; and Viticulture (WCDoA, 2021a).
- DipAgric: Students could enrol for this one-year programme, phased out in 2020, following completion of the Higher Certificate in Agriculture with a mark of at least 55%. The diploma led to a qualification at NQF Level 6. Students participated in a work placement programme (WCDoA, 2021a).
- Diploma in Cellar Technology: Students could enrol for this one-year programme (phased out in 2020) following completion of the Higher Certificate with Oenology as a major subject (NQF Level 5) with a mark of at least 55%. The diploma led to a qualification at NQF Level 6. A maximum of 20 students were enrolled per year, and students participated in a work placement programme (WCDoA, 2021a).
- Diploma in Extension: Students could enrol for this one-year programme (phased out in 2020) following completion of the Higher Certificate (NQF Level 5) or an equivalent qualification with a mark of at least 55%. The diploma led to a qualification at NQF Level 6. A maximum of 20 students were enrolled per year, and students participated in a work placement programme (WCDoA, 2021a).

The following ASD programme was offered by EATI during the period 2016 to 2021:

- Learnership: Students in possession of different levels of practical experience in farming operations and farm operators/farm foremen who wish to obtain a formal skills qualification at the level of junior farm manager/farm supervisor may enrol for this 10-month programme. The learnership is registered with the Agricultural Sector Education Training Authority (AgriSETA) and is accredited with the South African Qualifications Authority (SAQA) to offer the following: Certificate: Plant Production (NQF Level 1); Certificate: Plant Production (NQF Level 4); National Certificate: Animal Production (NQF Level 1); National Certificate: Animal Production (NQF Level 4); Students obtain an NQF qualification on successful completion of the learnership. Admission requirements for NQF Level 1 include learners being in 'possession of different levels of practical experience in farming operations, with basic numeracy/literacy and communication competencies equivalent to NQF Level 1 (Grade 9 / Standard 7)'. Admission requirements for NQF Level 4 include 'Learners possessing different levels of practical experience in farming operations, with basic numeracy/literacy and communication competencies equivalent to NQF Level 3 (Grade 10 / Standard 8; EATI, 2022d). EATI offered the learnership at NQF level 4 only based on applications (Cornelissen, M. Personal communication, 5 June 2023).

1.2 Purpose of the evaluation

The South African agricultural landscape is characterised by factors that impact on sustainable growth and development in the agricultural sector. These include climatic conditions, political imperatives that relate to land reform and rural development and socioeconomic challenges such as food insecurity, poverty, malnutrition and, in particular, unemployment (Kalaba, 2015). It is a landscape that EATI needs to understand in order to prepare its graduates to enter the agricultural sector as well equipped as possible with the appropriate knowledge and skills.

The EATI training programmes have been conducted over several years, and a considerable sum of the WCDoA's resources has been invested in them. Hence, the commissioning of this evaluation (spanning the period 2016 to 2021) to evaluate the employability of EATI's graduates.

2 Key findings from the literature review

A document and literature review were undertaken to understand the context in which EATI agricultural education and training and skills development programmes are being offered and in which graduates are seeking employment. This covered: the labour market and employment context; a situational analysis of agriculture in the Western Cape, including current and anticipated future needs and trends; the national and provincial policy context for agricultural education and training (AET); the WCDoA's **theory of change (ToC)** for addressing challenges in AET; and relevant information about **EATI, its history and programmes.** It also includes information about **select other institutions offering good quality AET programmes**, from which lessons can be drawn for EATI. Key findings are presented below, and the full document and literature review can be found in Annexure A.

At the macro level, COVID-19 impacted severely on all sectors of the South African economy, interrupting demand and supply and sector value chains, forcing closure of marginal enterprises and disrupting employment patterns. The national extent of the pandemic impact on the agricultural sector is reflected in the figure below. By 2022, employment had not fully recovered.

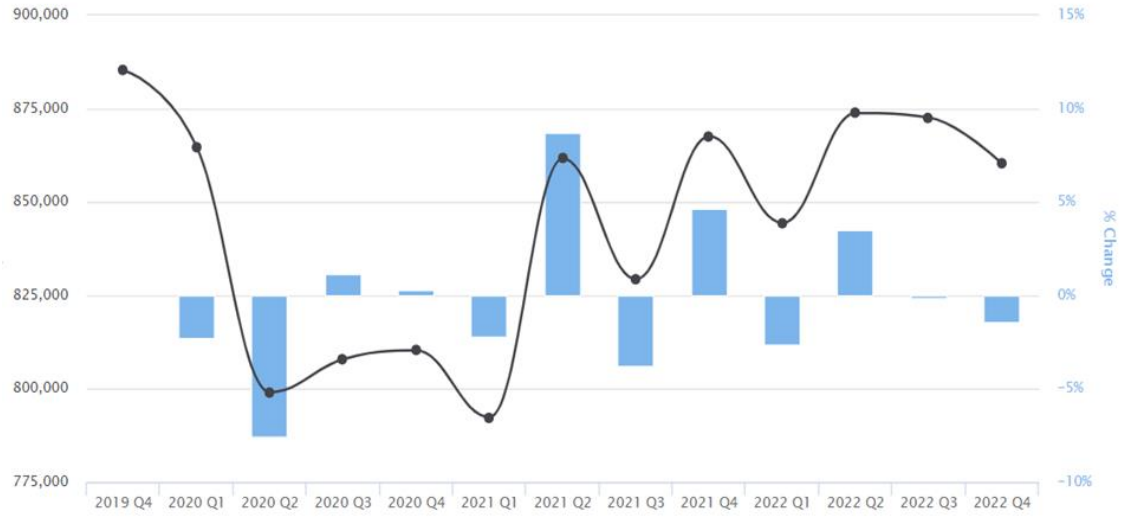

Figure 1: Agricultural sector employment in South Africa between 4th Quarter 2019 and 4th Quarter 2022
Source: South Africa, Quarterly Labour Force Survey 31/03/2008–31/12/2022. Moody's Analytics (2023)

This turbulence doubtless affected the Western Cape agricultural labour market and also the short- to medium-term employment prospects of EATI graduates. The general economic and health uncertainty would have reduced employer confidence in hiring new personnel. Since 2020, local and global recovery has been gradual. Thus, in this period, actual success in securing employment may not reflect the true employment potential.

A somewhat more positive picture is encountered when turning to the performance of the provincial economy and the conditions faced by EATI graduates who elected to seek jobs in the Western Cape. By 2020, the agricultural sector of the Western Cape employed 209 000 people, and the agricultural share of

provincial share of employment had risen to 8%, indicating that the sector labour market was growing relative to other economic sectors of the Western Cape economy. Further, by 2019, the Western Cape's share of national agricultural employment had increased from 23.8% to 25.9% (Partridge et al., 2020, 30-31). Also noteworthy is that in 2017, of the top 10 district municipalities – in numbers of people employed on commercial farms in South Africa – three were from the Western Cape: Cape Winelands 93 343 (#1), West Coast 34 277(#5) and Overberg 29 218 (#7). From this we infer that the agricultural economy was competing successfully with other economic sectors within the Western Cape and was also competing for a larger share of the national agricultural workforce. Reliable and detailed large-scale survey data on the post-COVID-19 labour market period that could shed light on the occupations of agricultural graduates is not yet available.

Unemployment of agricultural graduates in the period under study may be partially ascribed to the COVID-19 pandemic, which started in 2020, and the aftermath thereof. At the same time, the Western Cape agricultural labour market is: 94% Black, 39% female, 70% rural and 48% youth (Partridge et al., 2020, 32). This segmentation of the provincial agriculture labour market in terms of race, gender, age and location reflect an historical and contemporary pattern of unequal access to employment. Thus, graduates are likely to have experienced frustrations in work seeking due to COVID-19 and prior existing constraints (Manoko, 2022).

Those in permanent agricultural employment as compared to seasonal employment are disproportionately located in urban districts. In the City of Cape Town and agricultural district, 82% of the agricultural workforce was permanent, whereas in all other districts the permanent workforce was below 60%, and in the Central Karoo, only 47% of workers were permanently employed (Partridge, Morokong, & Sibulali 2020, 33). This reflects how better-quality agricultural work is to be found in urban areas. Particular forms of agricultural commodity production tend to concentrate in urban areas, with higher competition for positions.

Districts endowed with greater density of agricultural production activity and infrastructure may offer greater job opportunities for particular specialisations. Cape Winelands District is most endowed with agricultural production infrastructure (e.g. chicken batteries, homesteads, nurseries, piggeries and tunnels). Across all districts in the province, Cape Winelands had by far the highest concentration of processing infrastructure such as pack-houses, distilleries, fruit packer facilities, cool chain facilities, olive cellars and wine cellars. This reflects how the Winelands district is the beneficiary of the bulk of agricultural investment. In addition, Cape Winelands has higher concentrations of agritourism outlets or facilities such as cellars, wine merchants, locations for conferences/functions, restaurants and nearby rural recreation opportunities (Partridge et al., 2020, 42-44, 50).

Characteristics of Western Cape agriculture may be of interest to graduates from other provinces with backgrounds in technologies of production. For instance, the province has a higher share of presses and crushes for processing (40%) and also of chemical application appliances (35%; Partridge et al., 2020, 59). Overall, the province hosts the highest proportion of national counts of agricultural machinery. The factors above point to the likelihood of increasing competition for work opportunities in the Western Cape.

Wages represent a relatively high operating expense in agriculture in general; this is more the case in the Western Cape. Here, agricultural wages account for 17.5% of gross farm income, compared with the rest of the country where wages average at 12% (Partridge et al., 2020, 59). The prominence of wages as an operating expense, particularly in the Western Cape – depending on occupation – would likely attract greater competition from work seekers originating from other provinces or trained at other institutions.

Hard-to-fill vacancies in the agricultural sector include the occupations: 'Farm Manager' for horticulture, grains and cereals, red meat, sugar and poultry, and 'Farmer' for horticulture, dairy and red meat (AgriSETA, 2023). However, this data is collated from sources nationally and cannot be reliably disaggregated to a provincial level, though these shortages are reported by respondents across the country. Reasons given are: 'poor remuneration', 'unsuitable job location', 'equity considerations', 'lack of relevant qualifications', and 'lack of relevant experience' (AgriSETA, 2023, 25-26). The responses show that candidates *and* employers put forward these causes. On the importance of finding ways for rural local people to access agricultural jobs that involve decent work opportunities, Geza et al. (2022, 1) argue that 'there is a need to connect more rural youth to support services, local employment programmes, and youth inclusion' for local youth. This approach might be appropriate for the Western Cape and is aligned with the WCDoA's ToC for addressing challenges in AET.

Agriculture is one of the primary pillars of the Western Cape economy and brings food security, job creation and economic development to the province. The largest agricultural sub-sector in the Western Cape is horticulture (47%), followed by livestock farming (37%) and field crops (16%). Sub-sectors that are growing include maize, vegetables (including onions, carrots, butternut and sweet potato) and fruits (including apples, lemons, naartjies, avocados and berries).

Technology has gradually infiltrated the agricultural sector and holds many promises for the future, including smart farming. Climate change necessitates the development of new environmentally friendly practices and technologies, and it is projected that farmers will use smart farming technologies increasingly. Hard skills and soft skills are necessary to achieve smart farming, driving the idea of a multidisciplinary field which incorporates agriculture and science. Agriculture has been identified as one of the sectors that will drive the green economy in the country where 'green' jobs will benefit the environment directly. Thus the fourth industrial revolution (4IR), climate change and the green economy should be incorporated into EATI's curriculum, teaching, and learning.

Land reform has potential to enable agricultural sector growth and create employment, if executed correctly. However, studies have found that most land that has been transferred is unused – due to a lack of capital, a lack of skills of the beneficiaries and inadequate post-settlement support – and agricultural productivity, beneficiary income and livelihood have been poor.

EATI's curricula and educational practices were compared to other local and international AET institutions to see what lessons EATI could draw from them. Three South African and three international agricultural education institutions were investigated to see what lessons EATI could draw from them. Boland College, Stellenbosch University and the University of Pretoria are located in South Africa. The international institutions are Wageningen University and Research (Netherlands), Lentiz International (Netherlands) and the Orange Agricultural Institute and Tocal College (Australia). The following recommendations were made on the basis of this: Adopt a blended learning and e-learning approach; offer a variety of programmes and modules that students can choose from and that are linked to different career paths in the agricultural sector; look into offering interdisciplinary programmes, for instance via collaboration with other institutions and organisations; offer online courses; cooperate with other institutions and organisations to ensure that curricula are constantly updated and reviewed.

3 Methodology

The evaluation focused on the employability of graduates of EATI and comprised three components which were:

- **Design evaluation**
  A review of the ToC for addressing challenges in AET, which was developed to inform the WCDoA's strategic plan for 2020–2025 (WCDoA, n.d.);
- **Implementation evaluation**
  As assessment of the extent to which the EATI programme and component offerings are on track to achieving their purposes and the alignment with agricultural industry needs;
- **Impact evaluation**
  An assessment of the impacts of the EATI programmes on beneficiaries, relating to the extent to which graduates from the various programmes are being employed in the agricultural sector and their respective fields of study, as well as an assessment of the agro-economic impacts of the programmes in relation to quality and value.

The table below summarises the evaluation components and questions and where relevant information can be found.

Table 1: Evaluation components and questions and their location in the report

Evaluation component	Evaluation focus/question	Section
Design	The evaluation terms of reference stated that EATI's implicit ToC should be documented (WCDoA, 2021). However, it was agreed that JET would review the WCDoA's ToC for addressing challenges in AET in relation to the EATI programmes that were implemented from 2016 to 2021 and make suggestions for refinements, if necessary (JET, 2022).	Appendix E
Implementation	a) How relevant have EATI curricula been to the needs of the current and future agricultural sector? b) To what extent is educator capacity and experience sufficient to serve the educational needs of students entering a rapidly evolving agricultural sector? c) What are the challenges faced in producing graduates that are fit for employment in the increasingly technical agricultural environment? d) What changes may need to be introduced to improve the quality and value of teaching and learning at EATI and to increase the value-add that graduates bring to the agricultural sector?	4.2 4.2.2 4.2 5.2

Evaluation component	Evaluation focus/question	Section
Impact evaluation	a) What has been the employment history of EATI graduates since graduation?	4.4
	b) What are the socio-demographic profiles of employed graduates (gender, age, sociocultural demographics, background in agriculture)?	4.4
	c) How well are graduate knowledge and skills aligned with the needs of the developing and changing agricultural industry?	4.2.3/4.4.5
	d) To what extent are graduates employed in industries/enterprises aligned with their studies?	4.4
	e) To what extent have the acquired skills and knowledge of graduates benefitted their employability prospects?	4.4
	f) Which are the agricultural industries/enterprises where there is the biggest demand for graduates?	4.4
	g) What is the range of salary scales for newly employed graduates?	4.5
	h) What have been the social, employment and economic impacts of the training programmes on participating candidates?	4.5
	i) To what extent and how have the skills acquired by graduates in the course of their studies added value to the skills base of the South African agricultural sector, and to what extent have these skills improved the sustainability of farms?	4.4-4.5
	j) What are the different South African agricultural education models, how are they constituted, and what can be learnt from a review of the models to make EATI more successful?	Appendix A

3.1 Data collection

A variety of primary and secondary data collection methods were used and data sources consulted as indicated below. More detailed information can be found in the fieldwork report (Appendix C).

A **document and literature review** was undertaken of EATI HET and AET programmes, relevant policy documents and relevant literature, to understand alignment of the EATI programmes in relation to the needs of the agricultural sector.

In its proposal, based on information in the terms of reference that 716 people had graduated between 2016 and 2020 in the programmes of interest, JET recommended **surveying** a sample of 446 graduates (JET, 2021). However, However, EATI was required to obtain permission from all graduates to pass on their personal information to JET. This reduced the potential survey sample considerably. To maximise the potential survey population, 2021 graduates were included, as well as dropouts from 2016–2021 and 2022 current students. The sample population comprised 368 individuals (264 graduates, 10 dropouts and 94 current students) who gave permission for their personal information to be shared with JET. JET attempted to reach the entire population of 368 and after piloting, was able to reach 193 (125 graduates, 6 dropouts and 62 current students), giving a response rate of 52.5%.

Semi-structured interviews were conducted with WCDoA and EATI staff, industry role players, host employers and representatives from other AET institutions. Eight EATI staff members and one

representative from the WCDoA involved in driving technological initiatives was interviewed online. Seven **host employers** were interviewed either telephonically or online. Seven industry representatives and three representatives from the **agricultural benchmarking institutions** identified via the literature review were interviewed online.

Focus Group Discussions (FGDs) were conducted with graduates and students. Three graduate FGDs were initially planned with six to eight participants in each. A screening question was asked in the survey to identify potential FGD participants, and 51 graduates indicated that they were willing to participate, of which 15 committed to participating. Three FGDs with graduates were conducted remotely via Google Meet. However, the first and third FGDs had just one participant and the second had three, thus five participants in total. Two FGDs were conducted face to face with students on the EATI main campus. For the first FGD, only two students showed up, so a WCDoA representative approached students and asking them if they would participate. Thereafter, the first FGD had eight participants, and the second had two, thus 10 participants in total.

EATI provided **programme data** for the purposes of the evaluation, namely anonymised student records, which were used to compile demographic profiles and calculate throughput and completion rates and estimated costs of the various programmes, which were used to calculate return on investment (ROI).

3.2 Data analysis

Data analysis was guided by an analysis matrix that linked the various data collection instruments to the evaluation questions.

Stata version 16 was used to process and analyse the **survey data**. Data verification, validation, cleaning and analysis processes involved checking variable labels, correcting implausible variable values, checking for missing data and duplicates as well as deriving new variables. Valid skip logic patterns in the data were checked, allowing for missing data to be identified and noted. Descriptive analyses such as means, proportions and frequencies were used to gain insight into the data. Standard errors were provided for all the estimates. These give measures of precision for the estimates. Checks were conducted on the questions for which survey respondent chose 'Other' instead of one of the survey options. Respondents were asked to specify their answer when choosing 'Other'. Their open-ended responses were reviewed to determine whether they could be recoded into one of the existing options. The most common 'Other' responses were also identified. Open-ended qualitative data was analysed using MS Excel. All open-ended answers were analysed in order to identify common themes. They were then coded into one or more of these emerging themes or under 'Other'.

Propensity score matching (PSM) was undertaken to compare the employment outcomes of EATI graduates to those recorded in the Statistics South Africa (StatsSA) Quarterly Labour Force Survey (QLFS) for those with similar demographic characteristics who had similar AET qualifications, to assess how whether the EATI graduates were relatively more or less likely to be employed.

Interviews and FGDs were recorded, and detailed notes were taken. Data tables were generated from these notes, using inductive thematic analysis. This process entailed organising the data in meaningful chunks in a table that highlighted the research event as a code, i.e. whether the data is from an interview (I) or a focus group (FG), and the participants, e.g. STAFI for staff interview or GFG for graduate FGDs. Analytic codes for the meaningful chunks of data were derived from the evaluation themes that constitute the primary codes and evaluation questions, which generate secondary codes.

Anonymised **student data** was used to calculate throughput and completion rates. The data was sorted and analysed using Stata 16 as follows: Cohorts were identified by extracting (first-time) registration from the dataset using the Start Year, Year [of study], and Data Type variables, for each year of intake (2016–2021) and for each programme. Completion rate was computed by extracting the number of students from each incoming cohort who went on to graduate, taking the quotient of this number by the total cohort size. Throughput rate was computed by extracting the number of students from each cohort who graduated within the minimum amount of time for their respective programme and taking the quotient of this number by the total cohort size. Students who articulated between programmes were excluded from the calculations.

ROI per programme was calculated based on a cost-benefit analysis (CBA) using the net present value (NPV) method. The NPV was calculated using a 5% discount rate over a 10-year period using the costs of study and the mean wages earned by graduates who reported their income. The 5% discount rate was chosen since it is the one currently recommended rate by the National Treasury of South Africa and used in national CBA studies. The discounting factor was used to calculate the present value of future cash flows. The cumulative NPV represents the total present value of all cash flows over the 10-year period. It is calculated by adding the discounted cash flow for each year to the previous cumulative NPV.

Qualitative system dynamics modelling based on a systems thinking approach was utilised in to assess the socioeconomic impacts of investing in AET. System dynamics modelling is used to study and manage complex systems that change over time (Ford, 2009). Coyle (1996) further defines system dynamics modelling as a methodology that deals with dependent behaviour of managed systems with the aim of describing the system and understanding, through qualitative and quantitative models, how information feedback governs its behaviour, and designing robust information feedback structures and control policies through simulation and optimisation. Thus this approach enables us to improve our understanding of the relations between the structure of a system and its behaviour and the extent to which various policies influence its functioning mechanisms. The qualitative system dynamics model designed for this study was based more on a macroeconomic perspective.

3.3 Limitations

The evaluation had the following **limitations,** which should be noted:

To comply with the Protection of Personal Information Act (POPIA), EATI had to obtain permission from graduates, dropouts and students to pass on their contact information to JET for research purposes. This took longer than expected to obtain and was not obtained for the full population of graduates, dropouts and students. The actual total number of individuals for whom contact information was received was greatly reduced as compared to the intended number mentioned in the terms of reference (i.e. 264, 2016–2021 graduates as opposed to 716, 2016–2020 graduates). Moreover, a smaller number of these ultimately agreed to participate in the survey (i.e. 125 graduates). This affected the sampling methodology and may have introduced selection bias, as individuals were 'opting in' to participate in the evaluation survey. The smaller sample size also meant that there was a very low number of dropouts (i.e. n=6 in total) and graduates and students for some programmes (i.e. fewer than 10 from the Higher Certificate, Learnership, Certificate in Horse Mastership, Diploma in Cellar Technology and the Diploma in Extension). Thus, findings disaggregated by programme must be treated with caution. Where the number of respondents is fewer than 10, findings are reported in integers to avoid presenting percentages that may be misleading.

In a number of cases, there was a discrepancy between the data provided by EATI regarding the programme or course that each individual had enrolled for and the programme or course indicated by the individual when they were surveyed. There was some confusion with the start and graduation dates, due to students transitioning from one programme to another (i.e. Higher Certificate into a Diploma). There were also some discrepancies in what graduates and dropouts reported they were doing in the six months after leaving EATI and at the time of the survey. Callbacks were made to some individuals to clarify these issues.

All graduates and students who expressed an interest in participating in the FGDs were invited to do so. However, participation rates were very low (i.e. five graduates and 10 students in total). Reasons for some graduates failing to show up for the online FGDs included having connectivity issues during load shedding or having to work late or study. Due to these challenges, it was not possible to include individuals from each of the programmes or with a range of demographic characteristics, which may have resulted in the expression of limited viewpoints.

The **ROI** was based solely on the estimated costs provided by EATI and the mean wages of the surveyed graduates who were employed and provided income information; other externality costs and benefits that are difficult to monetise were not included. Few individuals provided income information, which could potentially skew the results. It was not possible to calculate the NPV of the one-year Diploma in Extension or the Learnership programme, as no graduates provided salary information, and the NPV was also not calculated for the Certificate in Horse Mastership as there was salary information for only one graduate.

4 Evaluation findings

This chapter presents **key evaluation findings**. Additional detail can be found in the annexures, where indicated.

4.1 Demographic profile of current students, dropouts and graduates

This section describes the demographic profile of EATI current students, students who dropped out and did not complete their studies and graduates. The data sources were student records provided by EATI, and data from the surveys, additional detail can be found in Annexure D. The extent to which the data from EATI and the surveys are similar gives an indication of the extent to which the survey respondents were similar to the broader student, dropout and graduate populations.

4.1.1 Profile of current students

In 2022, there were 552 registered students at EATI. The enrolment numbers varied slightly between 2016 and 2022, averaging at around 550 per year, with the exception of a substantial decrease in 2020, followed by a similarly substantial increase in 2021.

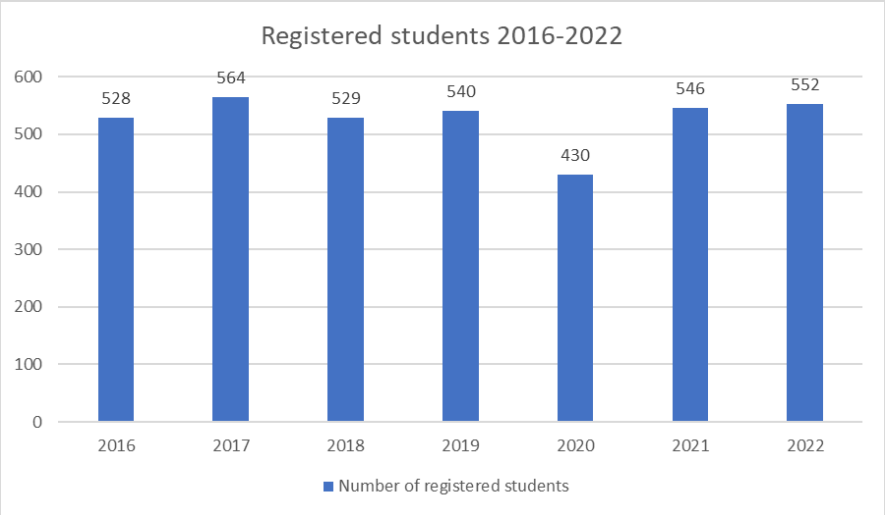

Figure 2: Registered students at EATI between 2016 and 2022 (EATI)

The demographic profile of students from records provided by EATI and the survey data are summarised in Table 2 and discussed below. The survey respondents were not very similar to the broader student population, suggesting that the survey sample is not that representative of the broader student population in 2022.

In 2022, about two-thirds of current students (69%) were males: the student population and survey sample were well aligned with respect to gender. White students comprised 63% of current students, 20% were Black and 17% were Coloured: the student population and survey were well aligned with respect to Coloured students, but a higher proportion of Black students and a lower proportion of White students were surveyed. EATI records specified the preferred language of instruction, whereas the survey data pertained to home language. The most preferred language of instruction was Afrikaans (66%), while fewer Afrikaans home language speaking students were surveyed. The most popular programme to study was the BAgric (47%), followed by the three-year DipAgric (40%): the survey sample was generally well-aligned with respect to the BAgric degree and Equine Studies, but with slightly fewer Learnership students and slightly more three-year Diploma students. Almost half of the students were in their first year of study (47%).

Table 2: Demographic profile of current students, 2022

	EATI data	Survey data
Number of current students	552	62
Gender	Male 69% (n=380); Female 31% (n=172)	Male 63% (n=39); Female 35% (n=22); Declined to answer 2% (n=1)
Race	White 63% (n=345); Black/African 20% (n=109); Coloured 17% (n=95); Indian 0.2% (n=1); Other 0.4% (n=2)	White 44% (n=27); Black/African 35% (n=22); Coloured 19% (n=12); Indian 0%; Declined to answer (2%) n=1
Language	(Chosen language of instruction): Afrikaans 66% (n=362); English 34% (n=190)	(Home Language): Afrikaans 48% (n=30); English 29% (n=18); isiXhosa 11% (n=7); isiZulu 6% (n=4); Sesotho 3% (n=2); Setswana 2% (n=1)

	EATI data	Survey data
Programme	BAgric 47% (n=257); DipAgric (three-years) 40% (n=219); Learnership 12% (n=68); Equine Studies 1% (n=8)	BAgric 45% (n=28); DipAgric (three-years) 47% (n=29); Learnership 6% (n=4); Equine Studies 2% (n=1)
Year of study	Year 1 – 47% (n=258); Year 2 – 25% (n=138); Year 3 – 28% (n=156)	Information not available

The demographic profile of students varied accordingly per programme. The Equine Studies students were mostly female (7/8), while the students of the other programmes were predominantly male. The BAgric degree was the most popular programme for both females (45%) and males (47%). The largest proportion of female survey respondents (64%) studied BAgric, while the largest proportion of male survey respondents (54%) studied the three-year DipAgric. Black/African students comprised the highest proportion of students in the Learnership programme (44%), while White students comprised the largest proportion of students in the other programmes. The largest proportion of survey respondents studying the BAgric programme was White (57%). Most White students studied BAgric (63%), while 50% of Black students and 58% of Coloured students studied the three-year DipAgric.

The age of the student survey respondents ranged from a low of 20 to a high of 39, and the average age was 25 years.

Province of residence

The majority, 60% of student survey respondents, are currently residing in the Western Cape, thereafter, 16% live in the Eastern Cape, while 13% live in Gauteng.

Educational background and background in agriculture

The parents of the student survey respondents had the highest level of education in comparison with the parents of the graduate and dropout survey respondents. Twenty-one percent (21%) of the mothers and 26% of the fathers of the student survey respondents were graduates, while 24% of the mothers and 24% of the fathers had obtained another tertiary qualification.

A minority, 27% of current students, did not have prior exposure to agriculture before studying at EATI. The parents of 18% of current students owned their own farms, the parents of 11% of students were farm workers, the parents of 8% of students lived on a farm and 24% of students had family members who either owned a farm or worked on a farm. The largest portion of BAgric students (29%) had family members who either owned a farm or worked on farm, followed by 21% of BAgric students whose parents owned their own farm.

4.1.2 Profile of dropouts

The demographic profile of dropouts from the student records provided by EATI and the data from the surveys are discussed below. There were only six survey respondents, and thus the survey sample cannot be considered representative. The demographic characteristics of both groups are summarised in Table 3 (overleaf):

The number of students that dropped out of EATI from 2016 to 2021 was 95. More than two thirds of dropouts (74%) were males, which was slightly higher than the demographics of the current male students (64%) and male graduates (69%): the survey sample had a lower proportion of males surveyed, while the proportion of females was higher. More than two-thirds of dropouts (77%) were White, while 12% of

dropouts were Coloured and 9% were Black: the survey sample had a lower proportion of Afrikaans-speaking dropouts, while the proportion of English-speaking dropouts was slightly lower. It seemed that White students were more likely to drop out, as 63% of current students and 52% of graduates were White. The survey sample had a much lower proportion of White dropouts, while the proportion of Black dropouts were much higher, and the proportions of Coloured and Indian dropouts were slightly higher. More than half of the dropouts (51%) were studying BAgric: the survey sample had a lower proportion of BAgric dropouts, a higher proportion of DipAgric (three-year) and DipAgric (one-year) dropouts and no Higher Certificate and Equine Studies dropouts. The number of dropouts has fluctuated over time, with the largest portion of students (22%) dropping out in 2021 and the smallest portion of students (12%) dropping out in 2016.

Table 3: Demographic profile of dropouts, 2016–2021

	EATI data	Survey data
Number of dropouts	95	6
Gender	Male 74% (n=70); Female 26% (n=25)	Male 33% (n=2); Female 50% (n=3); Declined to answer 17% (n=1)
Race	White 77% (n=73); Coloured 12% (n=11); Black/African 9% (n=9); Indian 2% (n=2)	White 17% (n=1); Coloured 17% (n=1); Black/African 50% (n=3); Indian 17% (n=1)
Language	(Chosen language of instruction): Afrikaans 62% (n=59); English 38% (n=36)	Home language: Afrikaans 33% (n=2); English 33% (n=2); isiXhosa 33% (n=2)
Programme	BAgric 51% (n=48); Higher Certificate 31% (n=29); DipAgric (three-years) 12% (n=11); Equine Studies 5% (n=5); DipAgric (one-year) 2% (n=2)	BAgric 33% (n=2); Higher Certificate 0%; DipAgric (three-years) 17% (n=1) ; Equine Studies 0%; DipAgric (one-year) 33% (n=2); Diploma in Extension 17% (n=1)
Year students dropped out	2016 - 12% (n=11); 2017 – 18% (n=17); 2018 – 16% (n=15); 2019 – 20% (n=19); 2020 - 13 % (n=12); 2021 - 22% (n=21)	2017: 17% (n=1); 2019: 17% (n=1); 2020: 17% (n=1); 2021: 17% (n=1); 2022: 33% (n=2)

The demographic profile of dropouts varied accordingly per programme. The dropouts of the Equine Studies were mostly female (4/5), which is similar to the demographics of the current students (7/8 female) and graduates (84% female). The dropouts of the other programmes were predominantly male, which is similar to the demographics of the current students and graduates. Almost half of the female dropouts (48%) and male dropouts (51%) dropped out of the BAgric degree.

White dropouts had the highest dropout rates in comparison with the Black and Coloured dropouts in each of the programmes. The largest proportion of Black dropouts (56%) and White dropouts (55%) dropped out of the BAgric degree, while the largest proportion of Coloured dropouts (45%) dropped out of the Higher Certificate.

The age of the dropout survey respondents ranged from a low of 21 to a high of 26, and the average age was 23 years.

Province of residence

Half (3/6) of dropout survey respondents are currently residing in the Western Cape, and the remaining three currently live in the Eastern Cape, Mpumalanga and North West provinces respectively.

Educational background and background in agriculture

One in six (1/6) of the mothers and one in six (1/6) of the fathers of the dropout survey respondents had graduated, while none of the mothers and fathers of the dropout survey respondents had obtained a tertiary qualification.

Two of the six (2/6) dropouts did not have prior exposure to agriculture before studying at EATI and 1/6 dropouts had family members who either owned their own farm or worked on a farm.

4.1.3 Profile of graduates

The demographic profile of graduates from records provided by EATI and the survey data are quite similar with respect to key demographic characteristics as compared to the broader graduate population. The demographic characteristics of both groups are summarised in Table 4 below.

A total of 1172 students graduated from EATI from 2016 to 2021. About two thirds of graduates (64%) were males: the student population and survey sample were well aligned with respect to gender. More than half of graduates (52%) were White, 28% of graduates were Coloured, and 20% were Black: the student population and survey were well aligned with respect to White graduates, but a slightly lower proportion of Coloured graduates and a slightly higher proportion of black graduates were surveyed. The most preferred language of instruction was Afrikaans, as more than two thirds of graduates (69%) preferred to be taught in Afrikaans, while fewer Afrikaans home language speaking students were surveyed.

The most popular qualification was the BAgric, with more than a third of the graduates (36%) obtaining the BAgric degree: the survey sample had a slightly higher proportion of BAgric graduates. The number of graduates has fluctuated slightly over time, with the largest portion of graduates (19%) graduating in 2019 and the smallest portion of graduates (14%) graduating in 2020. The survey sample had the largest portion of graduates graduating in 2021 and the smallest portion of graduates graduating in 2016.

Table 4: Demographic profile of graduates, 2016–2021

	EATI data	Survey data
Number of graduates	1172	125
Gender	Male 64% (n=747); Female 36% (n=425)	Male 63% (n=79); Female 34% (n=43); Declined to answer 2% (n=3)
Race	White 52% (n=610); Coloured 28% (n=326); Black 20% (n=236)	White 50% (n=62); Coloured 18% (n=22); Black 29% (n=36); Indian 2% (n=2); Declined to answer 2% (n=3)
Language	(Chosen language of instruction): Afrikaans 69% (n=812); English 31% (n=360)	(Home language): Afrikaans 46% (n=58); English 27% (n=34); isiXhosa 14% (n=17); isiZulu 6% (n=7); Sepedi 1% (n=1); Sesotho 3% (n=4); Setswana 2% (n=3); Xitsonga: 1% (n=1)

Programme	BAgric 36% (n=426); Learnership 31% (n=363); Higher Certificate 15% (n=181); DipAgric (1 yr) 7% (n=81); Equine Studies 5% (n=63); DipAgric (3 yrs) 5% (n=58)	BAgric 57% (n=71); Learnership 3% (n=4); Higher Certificate 7% (n=9); DipAgric (1 yr) 12% (n=15); Equine Studies 1% (n=1); DipAgric (3 yrs) 13% (n=16); Diploma in Cellar Technology4% (n=5); Diploma in Extension 2% (n=3); Unknown 1% (n=1)
Year of graduation	2016: 16% (n=186); 2017: 19% (n=225); 2018: 15% (n=176); 2019: 19% (n=221); 2020: 14% (n=167); 2021: 17% (n=197)	2016: 4% (n=5); 2017: 6% (n=7); 2018: 14% (n=18); 2019: 21% (n=26); 2020: 22% (n=28); 2021: 27% (n=34); 2022: 6% (n=7)

The demographic profile of graduates varied accordingly per programme. The graduates of Equine Studies were mostly female (84%), and the graduates of the other programmes were predominantly male. The BAgric degree was the most popular programme to study for male graduates (44%), and the learnership programme was for female graduates (40%).

Black graduates comprised the highest proportion of graduates in the DipAgric (1-yr programme; 43%); Coloured graduates comprised the highest proportion in the Learnership programme (56%); and White graduates comprised the highest proportion in the other programmes. Most of the White graduates graduated with the BAgric (62%), while the largest proportion of Black graduates (38%) and Coloured graduates (63%) graduated with a Learnership qualification.

Province of origin and residence

Half (50%) of graduate survey respondents were born in the Western Cape. The next highest proportion came from the Eastern Cape (22%), Gauteng (6%) and KwaZulu-Natal (6%). Every South African province was represented. A similar proportion, 53% of graduate survey respondents, are currently residing in the Western Cape, 17% currently live in the Eastern Cape, while 11% live in Gauteng.

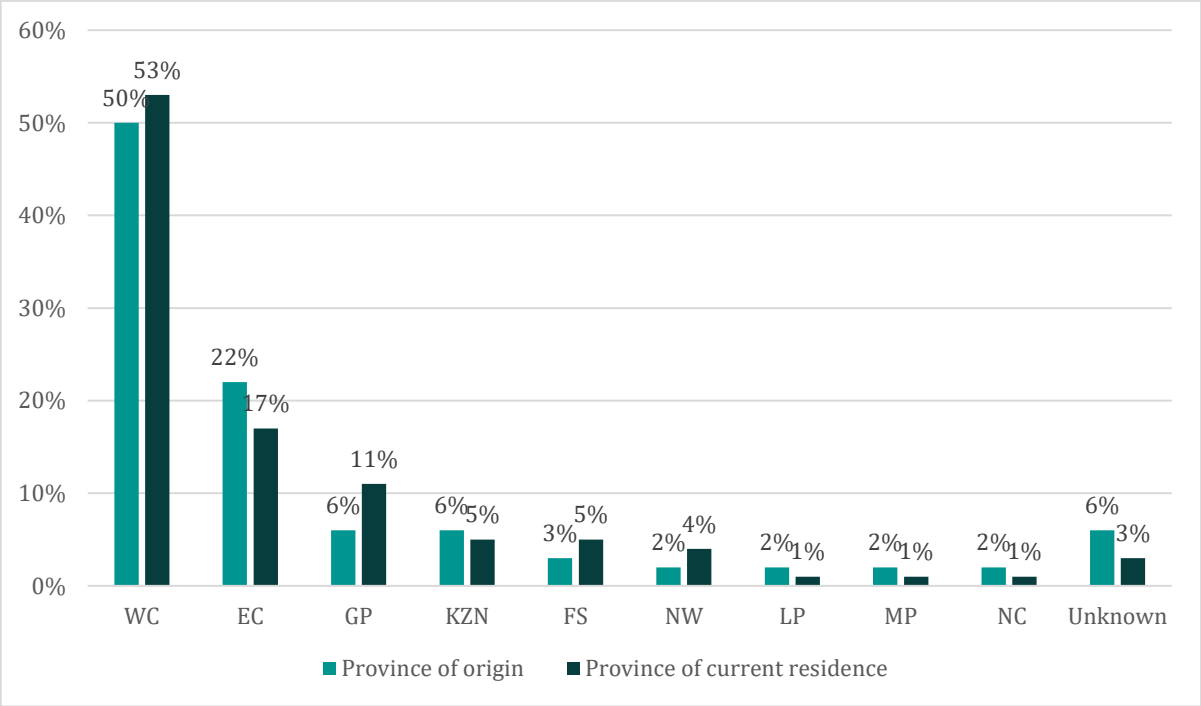

Figure 3: Provinces of origin and residence of graduate survey respondents, n=125

Educational background and background in agriculture

A total of 18% of the mothers and 20% of the fathers of the graduate survey respondents were graduates, while 14% of the mothers and 10% of the fathers of the graduate survey respondents had obtained a tertiary qualification.

Thirty-eight percent (38%) of graduate survey respondents did not have prior exposure to agriculture before studying at EATI. The parents of 18% of graduate survey respondents owned their own farms, the parents of 6% of graduate survey respondents were farm workers, and 10% of graduate survey respondents had family members who either owned a farm or worked on a farm.

4.2 Relevance and alignment of programmes

4.2.1 EATI relationship with industry

Feedback from EATI staff and industry stakeholders show that EATI engages with the agricultural industry at different levels. According to some staff members, industry experts are included in the formal design of the various curricula of the programme offerings, which should take place every five years. For the new three-year diploma, the academic staff designed the curriculum in consultation with industry representatives and academics from other HEIS. EATI also conducts short courses in collaboration with the wool industry and, via the WCDoA, engages with winemakers, cheesemakers and cannabis growers and attends agricultural shows, markets and exhibitions. The activities mentioned above are in line with the WCDoA's AET ToC to engage with industry representatives in course design and obtain information about industry needs as well as to help other institutions communicate their programme offerings.

However, some staff indicated that involvement with industry takes place mainly on an individual basis, with lecturers reaching out to industry for various reasons that include: contact with farmers and farm managers to assist with work integrated learning (WIL) placement for students; inviting guest lecturers to address students; arranging practical excursions; and inviting input into the curriculum of the different subjects. One respondent does not engage with industry stakeholders at all because his/her subject does not warrant it, and two respondents commented on the tedious administrative process involved in inviting guest lecturers – 'By the time I went through that … you're leaving it. So the structures aren't conducive to that.' One of these respondents also cautioned against simply inviting guest lecturers for 'just a talk', emphasising the need for integration of the guest speaker's address into the module: 'Also, we've got one of my colleagues, lecturers, having invited so many speakers this semester, the students are complaining. And, also, you're losing integrity of the module.' However, a graduate was in favour of guest lecturers addressing students on topics that might not be included in the curriculum because her experience of such instances of exposure broadened her view of what was actually happening in industry. She appreciated those classes because she learnt much about managing finances and thought that the lecturer went the extra mile to provide them.

The perception of industry stakeholders differs somewhat from the college staff in that some stakeholders want to see more engagement with EATI – more opportunities to have experts to teach in specific specialist areas. Smaller agricultural industries of the Western Cape, traditionally not the focal areas of EATI, could benefit from more engagement with EATI to ensure that they offer courses that speak to the needs of the relevant industries.

Because Elsenburg has a reputation and the reality of working more closely with the deciduous and table fruit, they tend to focus more on that and cater more for those farms. Much more can be done to support the citrus industry. (Industry stakeholder)

Take experts to Elsenburg to be guest lectures in specific topics. How to deal with a specific disease. I think for one module or certain topic, that could be valuable. (Industry stakeholder)

Industry stakeholders generally felt that industry involvement in course design is considered crucial to ensure that the courses are up to date with the latest developments and trends. Courses need to speak to the latest trends being implemented and practised in agriculture, rather than based on the latest research that is not relevant to the South African agricultural sector and not being used in the local context.

It's very important that academic institutions must stay close to industry organisations so that there's a very clear understanding of what are the practices that are actually employed on farms and in practice and what and how do those practices change over time. (Industry stakeholder)

The current engagement that EATI has with industry appears to be lacking a coherent, streamlined approach, as summed up by a respondent who held the view that partnerships are important: 'I think we need to have a focused strategy because I think it's all very loose. Partnerships open up new opportunities.'

4.2.2 Educator capacity and experience

Lecturers are expected to be at least one NQF level above the students they teach and be in possession of a three-year qualification, either a degree or an advanced diploma. However, most of the lecturers who were interviewed have master's degrees, and some have doctoral degrees, as can be seen in Annexure D. The level of the position usually dictates the required qualification.

Although there was a mainly positive response from industry stakeholders, students and the majority of staff members themselves regarding the qualifications and experience of the lecturers at EATI, some respondents expressed alternative views about the lecturers' skills and personal characteristics.

The majority of graduates (n=5) and current students (n=10) participating in the FGDs thought that the lecturers have the necessary knowledge and experience in their subjects.

It was not just theory; the lecturers showed you a scenario and explained it, and this is how you navigate it in the test. And when you go to your textbook, 'Oh, this is what he was talking about.' And you see it in your practicals as well. They were very well educated when it came to that. (Graduate)

One graduate, however, thought that a lecturer had theoretically sound knowledge but not necessarily technological expertise. This would be evident in the lectures as the students would not see the bigger picture of the lesson because of the lecturer's lack of experience in the field.

This sentiment was also expressed by industry stakeholders who, although complimentary about Elsenburg's focus on practical production, expressed concern not only about students receiving more theory and less practical exposure but also about lecturers having increasingly less practical and industry knowledge and experience.

> *The lecturers also don't have the practical experience to highlight the difference to students. They are incredibly intellectual. That side they offer to the student is fantastic, but I find that the valley between practice and theory is getting wider.* (Industry stakeholder)
>
> *Sometimes when I meet lecturers, I find it sad that they really don't have a clue how it works in practice. I think in the past, a lecturer would have a connection with two or three farmers who they would visit or talk with. There used to be a better link between academy and practice.* (Industry stakeholder)

One staff respondent expressed not knowing the criteria for appointments and could not see the logic in some appointments. Providing an example of, on the one hand, a person with experience in their subject being appointed but, on the other hand, another person who had had no experience in their subject also being appointed, the respondent remarked: 'I don't know what are the criteria for you to be appointed at Elsenburg. I don't know why they're choosing certain people for certain posts. I cannot see a trend.'

Personal traits of lecturers can often determine the relationships that they develop with their students. There was general consensus amongst staff respondents that lecturers need to be open and approachable, show respect for and have compassion towards students, know how to manage anger, have good time management skills and be committed to their tasks, and importantly, be passionate about teaching. The importance of a 'get-up and go' attitude was noted, as well as the need to keep up with industry trends and advancements. A theme that echoed through all the staff responses was that EATI lecturers 'go the extra mile' for students.

According to a staff respondent, although the characteristic of lecturers being approachable is not a criterion for employment at EATI, this quality, nevertheless, is considered during an interview. It was interesting to note, therefore, student perceptions that some lecturers are not approachable: 'Some of them are intimidating … I feel like he is going to bite my head off. I don't feel like I can ask them for help.' A different student said that a different lecturer did not want to give them contact details, which makes it challenging for the students if they cannot contact the lecturer, who teaches one of the most difficult subjects.

Four members of staff raised the issue of staff capacity being problematic for the following reasons: 1). It is difficult to find lecturers for certain subject areas (e.g. deciduous fruit). Although the college receives many job applications from candidates from other provinces (according to a staff respondent), the applicants do not necessarily have the required academic background. 2). There are not enough lecturers. According to a respondent, 'Staffing is an issue. When the new diploma was developed, there was talk about new posts, but when it came to the budget, it was a different matter. This has not happened.' A different respondent, who has a fairly large workload because of additional administrative tasks, iterated the same sentiment: 'We need more lecturers – this is something that needs to be addressed. I'm a senior lecturer. I carry the same workload and more of other [than] junior lecturers in other faculties. And I still have to manage … So it becomes quite a challenge.' 3). Staff recruitment (which occurs via the internet, mainstream media and an online process of application) takes a long time. According to the respondent, some documents sit on people's desks for a long time, and recruitment could take place much faster. 4). The expectations of one lecturer differed from the requirements of the position for which he/she was appointed. In this instance, the respondent's view of the job and the actual situation of the job is very different. The respondent was under the impression that he/she would teach only a particular subject, but he/she also teaches an additional subject, which 'is a totally different ballgame': 'I'm not doing what

I thought I was appointed to do. … So it is a bit of a challenge. … I'm a new scholar in a new environment, which leaves you not with much extra time.'

Though the quality of teaching and learning is perceived to be good at EATI by most industry stakeholders, and the lecturers are perceived to have the necessary knowledge and skills, there are concerns about the work ethics of the lecturers and the professional example set for students. One host employer, whose son studied at EATI, mentioned that the lecturers sometimes do not show up for classes. Furthermore, despite JET finding that one of the eight staff respondents has been at the college for more than four years and five respondents in excess of seven years, one industry stakeholder respondent expressed concern about a high staff turnover that is perceived to impact negatively on the quality of teaching and learning:

> *The one thing they are struggling with is, their staff turnover is very high. There is not a lot of stability, and that is starting to impact on the quality of the curriculum and what is being taught. There is sometimes not continuity. … I don't think the qualification or the skill set of the people they appoint is problematic. There's something else that is causing a turnover. (Industry stakeholder)*

Although some staff respondents commented on heavy workloads and the lack of staff capacity, no-one referred to staff turnover being an issue of concern.

4.2.3 Industry needs and emerging trends

Feedback from the majority of industry and HEI stakeholders centred on the various skills that workers need in an increasingly technological agricultural sector and increased mechanisation on farms. New graduates entering the agricultural sector are attractive to potential employers if they are skilled and knowledgeable about the latest technological developments, particularly to older employers who do not have the necessary expertise or have not kept up to date with new practices.

> *I am not interested. I get a service provider, and they do the technology-related stuff. If the new guys can stay up to date with the new technology, IT, precision farming, the software programmes, then that will help them. (HEI stakeholder)*

> *One of the reasons why I get a graduate is partly for my own benefit – to have somebody question me so that I don't just do it because I have done it before. (HEI stakeholder)*

Farms increasingly make use of technology to manage their businesses; and graduates are expected to be creative and innovative critical thinkers who can integrate the latest technological innovations with science in the context in which they find themselves. As indicated in the literature review, this characteristic of Western Cape agriculture may appeal to graduates from other provinces with backgrounds in technologies of production, thereby increasing the competition for work opportunities in the Western Cape. Certain industries, such as poultry, are becoming technology driven, which requires technicians who understand technologically intelligent management systems and how to use them. In addition, adherence to industry standards, especially for exporting produce, also requires technological skills.

> *If you want to export your product or delivery to certain buyers, then there are all these technological systems that you can use. The IT skills needed to use these systems are very important. (Industry stakeholder)*

> *We can't just use the normal old-school technologies. We need to introduce the students to different technologies even though they may not have access to it all in their training, if we want to keep agriculture sustainable. (Industry stakeholder)*

Concern was expressed by both industry and HEI stakeholders that EATI students might not have sufficient exposure to the technological developments taking place. Furthermore, there was also the view that some students lack proficiency in simpler technological tools such as tablets or smartphones. Some think that these skills are not well developed enough.

> *They have good computer skills, but there are also other implements we use with technology, tablets and cell phones to make field notes. They struggle with that and could have mastered those skills. (HEI stakeholder)*

While such major technological advancement is happening at a macro level, there are still smaller farms and cellars with fewer financial resources to adopt and utilise new technology. In these instances, it appears that students' understanding of the basic principles in agriculture is regarded as more important than a focus on the latest technological developments. This is, in part, related to many farms still using older technology and needing graduates to be able to function in such a setting.

Stakeholders mentioned the importance of students understanding the complete agricultural value chain (not only the product they produce on the farm) and possessing the necessary knowledge to produce quality products that are saleable to the market, a characteristic that is currently lacking: 'I don't think student have enough knowledge of the value chain in which they participate. Students need to have a realistic idea of costs to produce a product' (HEI stakeholder). Interestingly, the survey employment data showed that no-one is working in this area.

Furthermore, industry specific knowledge and understanding is perceived to be lacking by some industry stakeholders. In addition to the general farming knowledge and practices, students also need specific, specialised technical skills related to specialist areas, which vary from industry to industry, for example, the citrus and the wool industries (a course on citrus cultivation is included in the Horticulture module in the diploma, Wool Science is an elective in the third year of the BAgric, and the study of wool is included with small stock and meat in the second year of the DipAgric). Various short courses are also available at EATI for graduates to hone their skills; however, the short courses in pomology focus mainly on deciduous fruit and olive trees.

Besides having knowledge of agriculture, some industry stakeholders thought that graduates should acquire entrepreneurial and business skills that include financial management and communication skills as well as knowledge of labour law, all of which are actually covered in modules of both the BAgric and the DipAgric.

> *Business management and financial management skills should be an integral part. You need to understand finance and management with the technical aspects of farming. (HEI stakeholder)*

> *The business element is missing. (Industry stakeholder)*

These skills not only allow for graduates to add value to farms by which they are employed and equip them better in understanding the agricultural value chain but also provide them with skills for self-employment. One stakeholder noted that students 'need more than what is currently trained. … students need additional skills that are in the business and entrepreneurial innovation side. That is where the

opportunity lies' (Industry stakeholder). The comments from industry mentioned above may indicate a lack of knowledge of the programme curricula of EATI, but the survey findings may support the notion that graduates are insufficiently equipped to be self-employed or employ others as only one respondent, a graduate, was self-employed at the time of the survey. In addition, graduate knowledge and skills in these areas are perceived to be ineffective.

4.2.4 EATI/curriculum responsiveness to needs and opportunities in the agricultural sector

The section above shows that the agricultural sector needs workers with varied skills, especially technological, business and people skills, to contribute to its sustainability within the ambit of the 4IR that includes climate change and the green economy. Agricultural training institutions need to adapt their curricula accordingly so that their students can keep abreast of the changing environments within various agricultural industries.

According to all the lecturers, the curricula for the various programmes are reviewed every four to six years and updated, if necessary, in collaboration with industry representatives. However, lecturers can update their individual subject curricula annually. There were divergent views of how much could be changed, with respondents mentioning a range from 10% to 50%. One staff respondent questioned this practice in relation to horizontal and hierarchical integration, asking, 'Twenty-five percent of what – the outcomes, the topics, what?', adding that the college 'doesn't seem to know how curriculum development renewal and so forth need to be addressed'. So the staff of EATI are generally aware of changes and innovations that are taking place, but engagement with some of the matters that pertain to industry needs appears to depend on the subjects that are taught by individual lecturers.

For example, some staff respondents commented on adaptations to and incorporations into certain modules by individual lecturers (although they did not know specific details) that include drone technology and precision farming, which play an important role in agriculture. EATI and the WCDoA graduated the first group of students in drone licences in 2022. Drone technology and harvesting robots are being investigated for inclusion in the curriculum (Farm maintenance plan module). Optional cocurricular courses in technology, cybersecurity, basic coding, and geographical information systems are also available to students. Although one staff respondent conceded that incorporation of 4IR elements into the curriculum 'probably needs a little bit more coordination because one is reactive rather than proactive', another respondent was definite about EATI ensuring that 'all these principles of the basics of technology that can assist in agriculture are made known to the students'.

The numerous references to climate change by staff respondents suggest that this matter is high on the agenda at EATI. The institution has been responsive in both the diploma and the degree, with modules such as natural resource management and sustainable resource management being regularly updated. Current research pertaining to animal health in relation to climate change is also underway. According to a staff member, a team has been working together to include climate change in both the diploma and the degree and, to a lesser extent, in the learnership.

> *Through continuous research, those modules are all updated continuously with the latest technology and working together with our research department that has a climate change drive. (Staff respondent)*

Graduates who participated in the FGDs confirmed that they were introduced to climate change during their studies at EATI, on both theoretical and practical levels. On the other hand, however, four of the five

graduates indicated that they did not know much about 4IR (two graduated with the BAgric in 2016 and 2017 respectively, and two graduated with diplomas in 2021). One indicated that he had not been sufficiently prepared to work in agriculture in the 21st century, having had minor exposure to technology for irrigation and satellites to plot out farms. He learnt much about technology only after graduating. The fifth graduate (graduated with BAgric in 2021), who had some exposure to technology, waxed lyrical about milking cows mechanically: 'It is just interesting how EATI has that kind of innovation'.

Curriculum response to the green economy appears to be limited, although a staff respondent mentioned that there is investigation into recycling for plant production. One graduate mentioned that they had learnt about the green economy in natural resource management, while three graduates indicated that they had not covered it in their curriculum at all. Feedback from industry and HEI stakeholders also showed that though developments in the green economy are important, it is not regarded as the most important knowledge and skills that graduates should have.

> *We take knowledge and we try to farm as green as possible. There is enough information about that. It is relevant but not the most important. (HEI stakeholder)*

> *Yes, green energy is very important. We live in a world where, you know, the old methods are obsolete, and polluting the world. But I think in South Africa at this stage, I wouldn't say green energy specifically, I would say alternate energy. We just need energy. But obviously, one needs to try and implement the energy that is sustainable. (Industry stakeholder)*

There was a view that the biggest challenge in equipping students for 4IR and technology, climate change and the green economy is the South African infrastructure where students do not have free access to WIFI or available technologies.

> *You need to have the data to access systems. … We really need free access, free data for people to be fully partaking in this whole revolution. We experienced that some of the students, although we provided them with data, they eventually do not necessarily have a smartphone. They might have a cell phone but not necessarily a smart cell phone or a laptop even. That is a challenge for some students – data and electronic equipment. (Staff respondent)*

There is certainly evidence of EATI's attempts to meet the needs of the agricultural sector; but again, these attempts are driven by individuals within the institution, as summed up by a staff respondent: 'Prof. XX is Ms Climate Change. She's been instrumental in the changes in the diploma and degree.'

4.2.5 Overall alignment of EATI/curriculum to industry needs

Feedback from all respondents shows a mix of views regarding overall alignment of EATI's curriculum with agricultural industry needs. Many industry stakeholders expressed the need for greater alignment with the trends and changes in the agricultural sector, while most staff members seemed to think that the college makes efforts to make the curriculum relevant wherever possible.

During the period under evaluation, governmental regulations regarding alignment with the Higher Education Qualifications Sub Framework were gazetted (Government Gazette, 2016), and three EATI programmes were phased out (beginning in 2020) – a Higher Certificate in Agriculture (two-year programme), a DipAgric (one-year programme) and a Diploma in Cellar Technology (one-year

programme). A three-year diploma, which took into consideration the needs and trends in the agricultural sector (agricultural industry experts were consulted), was developed. However, one staff respondent noted that the development of the new diploma might have been compromised because of EATI's late response to the new regulations and the lack of time for the process. According to the same respondent, some lecturers indicated that they had not been part of the change process despite requests to submit their input. The diploma was finally submitted very late – in March 2019 – to be ready for delivery by 2020. While there was consultation, the respondent did not believe that enough thought had gone into the development of the programme.

> *So there was consultation, but the final nuances of having people check (diploma vs degree [in terms of outcome standards]), I don't think was very well thought out. (Staff respondent)*

This view was corroborated by a different staff respondent who related an incident in which the outcomes and standards of the diploma and the degree might have been conflated. It could not, however, be ascertained with certainty because by the time of the interview, the respondent had not yet received the curriculum document (pertaining to the BAgric), which had been requested five months earlier.

The BAgric programme is currently under review. According to a staff respondent, the offering has been the same since 2004. Lecturers, however, may have been updating the modules of this curriculum on an individual level.

The graduates also held different views from one another. The three who ventured opinions had all completed the BAgric: one thought that the curriculum was relevant and up to date (2021 graduate); another thought that it was mostly up to date and relevant (particularly for someone who wants to become a production manager or a farmer), with parts that were not (2016 graduate). According to this graduate, the curriculum is very limited in relation to the various career options that the agricultural sector offers (similar to the views held by many industry stakeholders); the third graduate was of the opinion that the curriculum was relevant regarding the classes and materials, but the tests were not always up to date (2017 graduate).

One staff respondent raised the irony of EATI students not being able to be employed as extension officers by the WCDoA, despite being trained at an educational institution under the auspices of the WCDoA itself. The WCDoA requires a minimum of a four-year degree (the BAgric under the auspices of EATI is a three-year programme delivered and endorsed by Stellenbosch University) and, therefore, will not employ Elsenburg graduates until they have completed further studies at another HEI, many of whom do not recognise the EATI BAgric as an entry requirement. The University of the Free State is currently the only HEI that accepts EATI students with the BAgric. This is the only avenue available to students, which the respondent regards as 'unfair'. The respondent thought that the WCDoA should lower the entry requirement to a three-year qualification, and perhaps EATI could increase the student's practical experience. In relation to this matter, all students from the FGDs (all enrolled in the BAgric) thought that the relationship between the college and Stellenbosch University could be strengthened, particularly to accommodate a postgraduate qualification. Additionally, these students desire a greater connection with Stellenbosch University.

> *I feel that we have no backing from the university. We are very disconnected. (Current student)*

Just that connection with Stellenbosch. That was one of the big factors for me coming to Elsenburg. (Current student)

The grading of the learnership programme (offered at NQF Level 1 – equivalent to Grade 9 and offered to candidates with a Level 1 qualification; and offered at NQF Level 4 – equivalent to Grade 12 and offered to candidates with a Level 4 qualification) resonated with two staff respondents, both of whom thought that the NQF Level 4 learnership should be directed at candidates who do not have a Senior Certificate or equivalent in order to provide them with an opportunity for formal training rather than requiring an NQF level qualification to enrol. One of these respondents was also of the view that EATI should be helping students to attain NQF Levels 1 to 3 qualifications.

What is the purpose of providing matriculants with an NQF Level 4 with another Level 4? So the learnership should really be focused on people who can't get to matric level. We should be assisting those students to get through an NQF Level 4. (Staff respondent)

There's also Level 1, 2, 3 that's not offered. So I think we're missing a crucial segment of the market. And that is those students that will never make matric – a lot of them in rural communities, dropouts, let's say from Grade 8, 9, 10, 11. How are we going to give them the opportunity? That's an area, I think, that should be addressed. (Staff respondent)

It is crucial that course design, theory and practice are based on the latest theories and practices implemented in the agricultural sector in order to provide students with relevant education that is useful to their future employers. Besides concerns in the agricultural sector that the training and education students receive in general, not only at EATI, is not always relevant to the latest development and trends in the sector, EATI is still regarded as providing students with good quality education, and it is important that the institution continues to provide such quality education because the agricultural sector needs it. Regular engagement with industry is vital to ensure that the programme offerings remain relevant.

4.2.6 Creation of a healthy culturally diverse environment

EATI has had almost three decades to respond to creating a healthy culturally diverse environment since South African democracy in 1994. Changes at the college have taken place over the years at various levels of EATI's engagement with students, some of which include the enrolment of students of colour and more female students, amendments in the language of learning and teaching, and even changes at a social/sporting level.

The agricultural sector, historically, was dominated by a culture of White participants. Staff were asked about the status quo of the college regarding cultural diversity, and while most agreed that 'definite shifts are visible, there is still a long way to go' (Staff respondent).

One staff respondent indicated that the culture at EATI regarding diversity had changed significantly since her arrival but also thought that it was probably not enough because there was still the perception of the agricultural sector being dominated by White culture. Another staff respondent was emphatic in his belief about EATI's positive response to the changing environment: 'I believe that we are the best in terms of catering for cultural diversity.' According to two different respondents, the institute is still predominantly White, a perception confirmed by EATI's data, which showed that the 2016–2021 cohort of graduates comprised the following students: White – 52% (n=610); Coloured – 28% (n=326); Black – 20% (n=236).

Females constituted 36% (n=425) of the cohort. The composition of current students in 2022 was: White – 63% (n=345); Coloured – 17% (n=95); Black – 20% (n=109); Indian – 0.2% (n=1); Other – 0.4% (n=2). Females constituted 31% (n=172) of this cohort.

A fifth respondent commented on progress towards equal numbers of Black and White students having regressed over the last three years – 'Some of the previous progress has been damaged, damaged in the sense that we used to have a lot more people of colour at the college.' Furthermore, according to the respondent, only the diploma programme students reflect equality because the bachelor's degree programme has mainly White students, while the learnership has mainly Black students. (Disaggregation of students per race per programme can be found in Appendix D, Section 4.1.)

Two respondents referred to disparities in student knowledge that relate to school educational background (e.g. a student had not done physical sciences at school) and the lack of an agricultural background (e.g. not having grown up on a farm or having been exposed to agriculture), which could make students 'feel a little bit left behind or outside of the dominant culture' (Staff respondent).

In 2016, EATI's language policy – that 'aims to promote diversity and equity by adopting a multilingual approach in support of all three official languages of the Western Cape, namely, Afrikaans, English and Xhosa' was implemented to facilitate the learning of students 'registered for higher education qualifications at the Institute'. It also applies to 'all employees of the Institute (EATI, 2016). However, practical and functional limitations (mentioned in the policy) relating to staff and students' spoken languages and the translation of texts means that learning and teaching support materials are generally only available in English and Afrikaans, and classroom interaction relies on oral translation by students themselves – 'Where we are not able to provide full translation, we revert to English' (Staff respondent). Besides English and Afrikaans, students are allowed to use isiXhosa in tests and assignments, but using this language in examinations is omitted from the policy.

Staff respondents were generally positive about the manner in which language usage plays out at the college, even though, according to one respondent, the dominant language is still Afrikaans. Staff members navigate the language differences in various ways: some are able to translate their study materials into all three languages; one lecturer has begun separate classes in English and Afrikaans, thus doubling the teaching time; and one lecturer who speaks a few indigenous languages is currently learning Afrikaans.

However, the views of most of the graduates and current students from the FGDs differed from those of the staff. There was general consensus from these two groups of respondents that language in practice at the college is problematic, for the following reasons:

- Some non-English speakers struggle with English when the lecturer speaks and provides learning materials in this language, particularly the Afrikaans-speaking students.

  They talk to you in English, and it's quite difficult, but we need to ask them what is this in Afrikaans, as we don't know it. (Current student)

- Some Afrikaans-speaking students find the direct translation of tests from English to Afrikaans difficult to understand.

- Students expressed concern about people other than their own lecturers marking their work.

> *I don't want to say it is unfair, but if you are my teacher, then I expect you to mark my work; and now you don't understand my language, and you are sending my paper to someone else to mark. I don't feel it is a good way to communicate with your student by giving their paper to someone else. (Current student)*
>
> *We don't always know for sure if it is someone who speaks Afrikaans that is marking our papers, or someone that is English whose home language is Afrikaans is marking your paper. You never know who is marking. (Current student)*

Most graduates thought that language was a 'big issue', with one graduate referring to the student unrest on the campus in 2015, citing similar examples of problems that current students experience with language. In contrast to the current students, though, they offered suggestions to improve the situation, for example, providing an introductory course to Afrikaans and providing separate classes for English and Afrikaans.

There is a concerted effort by the staff who work with students on an extracurricular level to encourage integration at a social/sports level. Sports such as rugby and soccer, which traditionally comprised White and Black players respectively, and mainly male players, are on offer to all students, including females. Integrated activities at the hostel (before the onset of COVID-19) have included structured social get-togethers with first-year students across the HET and ASD programmes. According to the staff respondent, it was a way to 'try to find common ground'.

Although two graduates spoke positively about their cultural engagement with others on a personal level, with one commending EATI as a 'good place with the different cultures living close to each other', a current student's perception was that EATI was 'preaching cultural diversity' that was superficial.

> *But when you are staying here at Elsenburg, you will realise it is not true, we are just tolerating each other. It is not a race thing, but the cultural differences don't help us connect. (Graduate)*
>
> *We are not trying enough to get to know each other; we are just tolerating each other. (Graduate)*

Interestingly, an international stakeholder commented on observing tensions between students from different racial backgrounds (on an international excursion) – 'There was still quite a bit of tension, looking down upon the Blacks by the White guys' – and similarly to another industry stakeholder, suggested training for students in diversity management and soft skills. It should also be noted that EATI staff do not receive training in cultural diversity management, which one staff respondent thought could be useful.

4.3 Efficiency of programme processes

4.3.1 Marketing and recruitment

Findings from the staff interviews revealed that EATI employs a variety of marketing strategies to recruit students, most of which were reported to work effectively. These include a website, career open days in collaboration with Stellenbosch University and AgriSETA (in rural areas as well), platforms at agricultural shows in collaboration with the WCDoA , open days at district offices and school visits. The college also responds positively to requests from schools and community organisations that wish to visit EATI.

The following tables show how current students and dropouts who participated in the survey heard about EATI.

Table 5: How current students heard about EATI (multiple-responses possible)

Advertising mode	Yes		No		Total	
	n	%	n	%	n	%
Friends/family	36	58%	26	42%	62	100%
Advertisements by the college	19	31%	43	69%	62	100%
School previously attended	18	29%	44	71%	62	100%
The internet	20	32%	42	68%	62	100%
Other (specify)	0	0%	0	0%	0	0%
Declined to answer	1	2%	61	98%	62	100%
Total	62	100%	62	100%	62	100%

Table 6: How dropouts heard about EATI (multiple-responses possible)

Advertising mode	Yes		No		Total	
	n	%	n	%	n	%
Friends/family	4	67%	2	33%	6	100%
Advertisements by the college	0	0%	0	0%	0	0%
School previously attended	1	17%	5	83%	6	100%
The internet	1	17%	5	83%	6	100%
Other (specify)	0	0%	0	0%	0	0%
Declined to answer	0	0%	0	0%	0	0%
Total	6	100%	6	100%	6	100%

At a more personalised level, word-of-mouth advertising seems to be a strong strategy – 58% of current students (n=62) and two thirds of dropouts (n=6) had heard about EATI from family/friends. There was a fairly even distribution between advertisements received from the college (31% of current students), advertising via the internet (32% of students and 1 dropout) and hearing about the college at a previously attended school (29% of current students and 1 dropout).

However, there were mixed responses from staff members regarding the recruitment of non-traditional and previously disadvantaged students. On the one hand, some staff respondents thought that the college is doing its best with the resources that it has, while others thought that more could be done. According to one respondent, a more targeted approach could be employed, particularly to dispel the idea that agriculture is only about being a farm labourer, which is what the children of farm workers think. While only 5/13 Coloured students from these two cohorts (current students and dropouts) had heard about the college from family/friends, 64% of Black students (n=25) and 64% of White students (n=28), had done so via family/friends. The influence of visits to disadvantaged schools may account for 36% of Black, 4/13 Coloured and 18% of White students and dropouts having heard about the college from their previously attended school. (Refer to Tables 58, 59 and 60 in Appendix D for a programme and racial breakdown of where current students and dropouts heard about EATI.)

There was also the view that different recruitment criteria should be used for non-traditional individuals and that the recognition of prior learning (RPL) policy needs reviewing to consider participants who do not have the required criteria.

One respondent mentioned the existence of a dedicated programme by the WCDoA that provides support for scholars from disadvantaged areas throughout the Western Cape. EATI is provided with the details of students who wish to follow through with a formal qualification in agriculture, but although they may be assisted by EATI in completing the applications, they compete with other applicants for entry. According to another respondent, much effort is made to recruit children from surrounding schools in the area – Grade 9 students are bussed into the college in groups.

Overall, the marketing strategies work well to attract potential students to the college, as per the comment of one staff respondent: 'The number of applications that we get far exceeds the available space that we have.'

4.3.2 Student support

EATI offers student support at different levels and to varying degrees in order to make students as comfortable as possible during their period of study. First-year students have an orientation week in which they are introduced to the different support structures and can acclimatise to their new environment. Support offered by EATI includes bursaries, hostel accommodation, psychosocial support, and transport for medical appointments. Formal academic support in the form of a fixed-term programme is put into place when needed, but generally, academic support, career guidance and assistance with employment takes place at an individual lecturer level. Student support information is also made available via billboards and emails throughout the year.

Financial support

Survey findings show that 70% of graduates (n=125) and 65% of current students (n=62) received bursaries, while the rest of the graduates (30%) and 27% of current students received financial support via other means. No dropouts (n=6) received a bursary, and one of the six dropouts received financial support via other means. (Refer to Tables 61, 62 and 63 in Appendix D.)

Across the student cohorts of graduates, current students and dropouts, bursaries were received by 82% of Black students (n=61), 69% of Coloured students (n=35) and 54% of White students (n=90). (Refer to Table 64 in Appendix D for disaggregation per race and Table 65 for disaggregation per programme.)

The amount of the EATI bursary varies according to student needs. The learnership programme, for example, is fully funded as it covers tuition and accommodation with meals. In addition, students receive a monthly stipend. Students who have work integrated learning (WIL) as part of their programme (e.g. DipAgric students) will not receive a stipend as part of the bursary. Four of the graduates who participated in the FGDs received bursaries from EATI, and a current student commented that EATI makes a concerted effort in guiding students to bursary sources.

Students suggested that a portion of the bursary (from EATI and from an external donor) could be given to students directly for living expenses (not learnership students who receive a stipend). This would be particularly useful for students who struggle financially and do not have parental financial support.

Academic support

Survey responses show that academic support was accessed by 53% of graduates, 63% of current students and only 1/6 dropouts. Academic support was accessed by 2/3 Indian students, 66% of Coloured students, 59% of Black students and slightly less than half, 48% of White students. It is highly likely that the nature of this support happens informally, with lecturers providing extra tutorial classes on request and additional information being made available via the online platforms (Google Classrooms, Moodle,

SunLearn, and WhatsApp groups). The students and graduates of the FGDs as well as the staff respondents confirmed that most lecturers are extremely helpful in providing extra academic support to students.

However, formal academic interventions occur when the need warrants them. Besides regular staff meetings that monitor student progress and results, there were instances in the past when formal structures were created in response to extreme circumstances, for example, there was a tutorial programme for first-year chemistry students. Despite the failure rate, this programme ceased because of budgetary constraints, and there is currently no formal tutoring programme.

According to one staff respondent, 'one-stop shop tutoring intervention', an in-person initiative that the college was working on was put on hold with the onset of the COVID-19 pandemic. Further development was not resumed because of focusing on the return to classes and the lack of funding for it. One student suggested that tutors should be appointed, believing that EATI should take into account the disparity in the South African education system[3] because township students struggle with the transition to higher education: 'That is where they are failing, because if universities can have tutors, why not Elsenburg?' It was also suggested well-performing senior students could be paid tutors.

Career guidance

Interviews with staff confirmed that the college does not have a formal career guidance programme, and as with academic support, it is presumed that the 50% of graduates, 52% of students and 1/6 dropouts who indicated that they used career guidance services at the college did so informally via the lecturers. Career guidance was sought by 2/3 Indian students, equal proportions (54%) of Black and Coloured students and 42% of White students.

EATI ensures that students are made aware of new and different careers via the lecturers and student administration. Interestingly, one staff respondent regarded the career open days and school visits as part of a formal career guidance programme. This particular respondent uses a booklet published by the WCDoA – *Living Agriculture: 50 career opportunities* – to assist students.

The graduates of the FGDs painted a very different picture of support for career guidance. Although one graduate received support on a personal level from a lecturer, the rest of them received no career guidance at all. According to these graduates, EATI only focuses on preparing students to become farm managers and does not expose them to the different fields of agriculture.

> *Especially the Black students [who] study agriculture, and when they don't get the farm manager position, they quit because they are not exposed to the other careers when you complete agriculture studies. (Graduate)*

Assistance in finding employment

The findings of the survey showed that 44% of graduates and 44% of current students received assistance from the college in finding employment. None of the dropouts received assistance. Assistance in finding employment was given to 2/3 Indian students, 43% each of Coloured and White students, and 39% of Black students. This assistance, however, would be at the level of individual lecturers providing job leads to students. Occasionally, the college distributes information to students about available positions.

[3] A challenge noted in the problem tree of EATI's ToC is that it has inherited poor-quality basic education.

However, most graduates of the FGDs denied having received any assistance from the college or lecturers for work opportunities after graduating, and one graduate suggested the following:

> *I feel they can give us more guidance to get work. It does not have to be the best work or best paid work but just to get your feet into the industry.* (Graduate)

Accommodation

The survey findings showed that 84% of graduates, 77% of current students and 2/6 dropouts used the accommodation facilities at EATI. The highest proportion of students who received accommodation was Black (93%), followed by Coloured (86%), White (69%) and Indian (2/3). EATI hostel accommodation is at a premium, with only about 57% (according to a staff respondent) of the annual number of students able to be accommodated, and a student from a FGD thought that the college should help students to find external accommodation. According to two staff respondents, 'accommodation is up to standard' – the buildings are old but well kept; there is a clean and healthy environment in the hostel; safety and security measures include the strict monitoring of access; and housekeeping and the quality of meals are very good.

In stark contrast, the students in one FGD pronounced the hostel not up to standard and complained about the following: lights hanging loosely in the girls' hostel; security doors not working during load shedding; illness from raw sewage that had spilt over the campus; mould in the rooms and bathrooms – 'Lots of rooms are mouldy. The showers and the roof are also full of mould. I was one of a few girls who got sick last year.'; and only the girls' hostel has a generator for light during load shedding, while the boys have to use the dining room for night-time studying.

Psychosocial support

Psychosocial support accounts for the least used support service that is formally offered by EATI, with 38% of graduates, 35% of current students and only 1/6 dropouts having utilised this service. The highest proportion of students to seek psychosocial support was amongst Black students (48%), followed by White students (32%) and Coloured students (31%). None of the Indian students accessed this type of support. Given that some graduates and current students may have been at EATI during the onset of the COVID-19 pandemic, one might have expected greater usage of this service.

Psychosocial support is outsourced to an external provider, Metropolitan Health (ICARE programme), and students are provided with a telephone number to access services related to therapy, psychosocial assessments, guidance and support and housing interventions. BAgric students also have access to the Stellenbosch University wellness programme. A staff member mentioned that social workers from the Department of Social Development are invited to address learners, and after the intensive COVID-19 period, students received professional assistance from them, especially those who had lost family members.

Despite EATI providing such support, one staff respondent and a student held similar views that an immediate service should be available to students on campus.

> *But we actually need, I believe, a full-time counsellor. I landed up having to do that kind of intervention myself, with the very clear realisation that I'm not trained. You need a skilled person to do that … who can deal with students' referrals immediately. (Staff respondent)*

Some of the demons we are coming with, they have not really been dealt with and likely to impact our academic performance. So there is supposed to be a professional, somebody you can talk to. (Current student)

Other student support

EATI is cognisant of the multiple stressors to which their students are exposed but is not able to provide a fully holistic support structure because of financial constraints. Much support, therefore, happens informally at various levels with various members of staff. Of the socioeconomic challenges, transport for students is the most challenging, and the college provides transport for medical appointments.

It is evident that students do not always access the formal structures that are available to them. An online student enquiry system, according to a staff respondent, is not usually utilised by students, as they prefer working through the Student Representative Council.

Although there is an informal network amongst hostel residents, the college does not have a formal alumni structure. (It is presumed that the 39% of graduates and 3/6 dropouts who indicated that they still have contact with EATI do via the informal networks.) There is no tracking system to monitor students' whereabouts after they have left the college, and there is thus no record of whether their students are employed or not, even though many staff respondents indicated that this is one of the aims of the college.

I think we are lacking a research strategy for the college. As much as we want people to learn, we also want them to be employable. (Staff respondent)

4.3.3 Reasons for discontinuing studies

The different reasons cited by staff and stakeholder respondents (FGDs) for student dropouts were varied, but the main reasons were a lack of genuine interest in agriculture, difficult personal family circumstances (particularly the need to earn for family members), and a lack of maturity to manage post-school learning.

These reasons were borne out by the six students in the survey who had enrolled for and subsequently discontinued their studies. Their reasons included personal circumstances, assisting the family with financial help, and one student who found the quality of the teaching and learning situation very dissatisfactory during the COVID-19 lockdown. Four of these students would like to complete their qualification at EATI.

4.3.4 Teaching quality

Provision of practical experience and exposure to work environments: The study programmes offer students practical experience via practical assignments and WIL, during which students are exposed to a working environment for a period. (The BAgric programme, although having a practical component, does not offer WIL. Neither did any of the one-year diplomas that were phased out, although they also contained a practical component. The final year of the three-year DipAgric programme constitutes WIL, and learnership students engage in WIL every alternate month.) Findings from the interviews showed that the view held by many staff members and industry stakeholders is that this practical component of the education and training is regarded as a significant benefit that contributes to the demand for and employability of EATI graduates.

While most staff respondents thought that all the programmes provide sufficient balance between theory and practical work, there were two who would like to see more practical work than theory. Most host

employers and industry stakeholders, on the other hand, reported that students need more practical exposure and experience during their training to enable them to bridge the gap between theoretical understanding and practical application.

The survey findings showed that 59% of graduates, 44% of current students and half (3/6) of the dropouts gained practical work experience while studying. According to the per programme findings (Table 66 in Appendix D), the proportion of graduates were: 1/1 (Certificate in Equine Studies); 81% (DipAgric, 3 yrs); 4/5 (Diploma in Cellar Technology); 7/9 (Higher Certificate in Agriculture); 3/4 (Learnership); 2/3 (Diploma in Extension); 67% (DipAgric, 1 yr); 46% (BAgric); with the lowest proportion being 46% (BAgric). This is a fair representation given that the majority of graduates were BAgric students (BAgric does not offer WIL, and some graduates did not have exposure to practical work because of COVID-19 [see below]). The proportions of current students per programme were as follows: 54% (BAgric); 38% (DipAgric, 3 yrs); 1/4 (Learnership); the only Equine Studies student did not receive any practical exposure. More BAgric students had gained practical experience in the current student cohort, with the DipAgric students in this cohort still having to complete their year of WIL. The question of what they would have liked more of in their programmes elicited a fair number of responses that they would have liked more practical experience – particularly from the BAgric graduates, some of whom mentioned that COVID-19 had had an impact on their practical experience. In addition, two BAgric graduates who participated in the FDGs also expressed the desire for more exposure to real-life practices. (Refer to Tables 69, 70, 71, 72, 73 and 74 in Appendix D for the type of work experience that students gained.)

One of the practical gaps mentioned by two stakeholders is that of students leaving the college without a driver's licence for various farm vehicles as well as the ability to operate various farming equipment.

> *They should leave the university with a licence. That enables you to do a lot. Tractor licence, reverse a bakkie with a trailer, how to properly lift crates, how to wash a crate. The more they are equipped with, the more responsibility they can take on. (HEI stakeholder)*

Provision of infrastructure/equipment: Suitable and well-kept infrastructure and equipment usually support the delivery of high educational standards, but responses from interviewees showed that the infrastructure and equipment at EATI are at various stages of upkeep, and lecturers 'make do' (Staff respondent) with what is available.

Feedback from the staff interviews showed that the library is well established and up to date; there is a fully fledged wine cellar that, while not state-of-the-art or in optimal condition, is being repaired and refurbished. According to most staff respondents, the college has sufficient resources, and although the computer labs are run down, they are still usable, with updated programmes. Contrasting opinions included there being insufficient laboratories, no new technologies and old orchards that need replacement. In addition, new lecturers had not received laptops yet at the time of the interviews: 'There's some of my colleagues that's been appointed last year, middle of last year, that doesn't have laptops yet. So there are challenges' (Staff respondent). According to the respondent, falling under the auspices of a government department that is not an educational institution presents difficulties in acquiring certain teaching aides, and the procurement system can take a long time before any result is evident.

Feedback from industry stakeholders also presented contrasting viewpoints, with one perception of EATI's facilities for practical education and training being of top quality – 'Their practical field laboratories are exceptional. New innovations – they will plant new vineyards. Their practical resources are great, and they should be proud of that' (Industry stakeholder) – and the other perception of the facilities as old and

not up to date – '… I think … the vineyards at Elsenburg are old. I am concerned that the Elsenburg farm itself is going backwards. There has to be more attention paid to their own farming' (Industry stakeholder). The overall sense gained from the industry interviews was that student exposure to practical experience while studying is critically important and needs to be supported by up-to-date technology – 'We want to train people and train them properly for productive careers. We got to make sure that the entities are there for them at facilities. Don't insult the students by giving them a second-rate facility' (Industry stakeholder).

Most graduates from the FGDs thought the facilities at EATI were sufficient while they studied at the college. However, except for two current students from the FGDs who concurred with the graduates, the rest complained about a range of matters: insufficient computers and only one printer in the library (students use the three in the library instead of the computer room – 'Something must be wrong at the computer hall – it might be outdated. There are a couple of glitches in the system there, therefore everyone goes to the library (Current student); usage of a storage room by second-year students to make wine – 'We take a half an hour to clean the storage room to ensure that it is clean. I think it is not good for us who make wine there' (Current student); projectors in classrooms need upgrading; lack of equipment (e.g. microscopes) for Animal Production; lack of cell phone signals and WIFI during power outages.

The onset of COVID-19 set online learning into motion, with WhatsApp groups being created and students being able to access Moodle, Google classrooms and SUNLearn (a Stellenbosch University platform for the BAgric students). According to one staff respondent, students received laptops and data, but according to another, students only received data because they were required to use their cell phones.

Most staff respondents reported that the adjustments during this time generally worked well, but because of the practical components of the programmes, students are required to be physically present, and hence a blended approach is preferable. There were mixed feelings about the readiness of EATI for blended learning. While online learning worked at a particular point in time, some respondents thought that the infrastructure needs further development – 'There's still a mix of what is going to be kept and what is really functional that is working. So the evaluation needs to be done by us, thinking of the way forward' (Staff respondent) – and that some reluctant lecturers need more time to adjust – 'We are used to the classroom contact. Perhaps next year we'll be ready' (Staff respondent).

Three graduates from the FGDs did not experience online learning at all because they had already graduated prior to 2020. Current student respondents from the FGDs simply commented on load shedding being a prohibitive factor in accessing online materials.

> *It is important for EATI to sort out the Wi-Fi problems during loadshedding. These circumstances are out of the students' control, and it is in Elsenburg's best interest to help them get online and access to the study material. Otherwise they should provide the students with physical copies of the material. (Current student)*

Most staff respondents and industry stakeholders believed that student success is also dependent on the students themselves – in their commitment to attending classes regularly, in their self-drive to finding ways of solving problems, and most importantly, in their genuine desire to work in the field of agriculture.

The students who I have considered better and kept longer was their attitude and their questions. They are not going to hand me a project and ask me to do it for them. Everything they do here is dependent on them, not me. (HEI stakeholder)

All survey respondents were asked (on a scale of 0 to 10, with 0 being very unlikely and 10 being very likely) how likely they would be to recommend EATI to others. This net promoter score is typically used as an indicator of customer loyalty and is calculated by subtracting the percentage of detractors (those who rated their likelihood from 0 to 6) from the percentage of promoters (those who rated their likelihood from 9 to 10). The table below shows the net promoter score for each of the cohorts.

Table 7: Net promoter score

	Graduates		Current students		Dropouts		Total	
	n	%	n	%	n	%		
Detractors	25	20%	9	15%	0	0%	34	18%
Passives	38	30%	23	37%	4	67%	65	34%
Promoters	60	48%	29	47%	2	33%	91	47%
Declined to answer	2	2%	1	2%	0	0%	3	1%
Total	125	100%	62	100%	6	100%	193	100%

The findings showed that the net promoter score for graduates is 28, for current students, 32 and for dropouts, 33 (there were no detractors). The following scoring categories are suggested by the creators of net promoter scores, Bain & Company (Qualtrics, 2023): Above 0 – good; Above 20 – favourable; Above 50 – excellent; above 80 – world class. There is no comparative data for EATI to be measured against other agricultural training institutions, but according to One World Network of Schools (2023), the industry average for education in South Africa is 54 and measured against this, EATI's scores for all three cohorts are way below this average.

4.3.5 Staff support

Feedback from staff and industry stakeholders showed that support is perceived differently by different staff members. All newly appointed staff members in administrative positions undergo an induction by the WCDoA, and lecturers have to attend a year-long programme (Professional Educational Development of Academics [PREDAC]) at Stellenbosch University. One lecturer thought that the PREDAC was unnecessary if they had had prior experience of working at a higher education institution and that a more general induction to the college systems and processes would have been more useful.

Some lecturers belong to professional associations, some of which provide supportive measures. Financial assistance is available to staff for continuing professional development – bursaries for further study; attendance of conferences; attendance of short courses; training in various aspects related to their subjects. According to one staff respondent, the principal encourages extra training, provided it is within the budget and at a reasonable cost.

Although the WCDoA provides training in certain topics, such as cybersecurity and how to prevent corruption, one respondent was of the view that more can happen in terms of professional development and expressed frustration about the processes:

You could say the Department of Western Cape is providing us things with cybersecurity and how to prevent corruption, and so all those kinds of things, but there's no audit being done, what professional development, not training, professional development can happen in the environment. There's no interaction to figure out where are we and what are we doing? We just go from year to year to year in the way that things has been done for the last few years. (Staff respondent)

There was also the sentiment from a few lecturers that bureaucratic systems of the WCDoA hinder, rather than facilitate, staff innovations and other processes that would take place as a matter of course at a higher education institution.

4.4 Effectiveness

This section discusses key findings that relate to programme **effectiveness**.

4.4.1 Throughput and completion rates per programme

JET used data provided by EATI to calculate **throughput**[4] and **completion**[5] rates, which can be considered measures of programme effectiveness. Tables 8 to 11 below show the number of first-time registrations by year (the cohort) and the throughput and completion rate of that cohort. Throughput rates vary per year but are overall highest for the BAgric – ranging from 64.3% (2018) to 73.5% (2019) and the Certificate in Horse Mastership and Equine Studies – ranging from 50% (2018 and 2020) to 76.9% (2019). The lowest throughput rates are for the Higher Certificate – ranging from 41.1% (2017) to 51.4% (2016) and one-year Diploma – ranging from 40% (2018) to 71.4% (2019). The completion rates are slightly higher, notably for the Certificate in Horse Mastership and Equine Studies and the last cohort of the one-year Diploma. Throughput and completion rates could not be calculated for the three-year Diploma as the first cohort graduated in 2022. Comparative national data is not publicly available, but a 2019 Council on Higher Education (CHE) cohort study found that 64% of university students who first registered for a 360-credit DipAgric in 2014 graduated within six years, as did 71% of university students doing a three-year Degree in Agriculture. EATI's BAgric completion rate compares similarly in this regard (CHE, 2021).

Table 8: Bachelor of Agriculture: First time registration, throughput and completion rate, 2016 to 2021

BAgric	2016	2017	2018	2019	2020	2021
First-time registrations	97	83	98	79	94	70
Cohort completion rate	69.1%	74.7%	64.3%		Cohorts have not yet graduated	
Cohort throughput	64.9%	73.5%	64.3%	70.9%		

[4] The throughput rate measures the percentage of people in a given cohort (c) who successfully complete a programme or qualification in the minimum required time (t).

[5] The completion rate measures the percentage of people in a given cohort (c) who successfully complete a programme or qualification, regardless of how long it takes them to complete (t + 1, t + 2, t + 3 etc).

Table 9: Diploma (1 year): First-time registration, throughput and completion rate, 2016 to 2021

Diploma (1yr)	2016	2017	2018	2019	2020	2021
First-time registrations	25	21	35	21	Phased out in 2020 (4 returning registrations, no new)	
Cohort completion rate	64.0%	66.7%	42.9%	95.2%		
Cohort throughput	64.0%	61.9%	40.0%	71.4%		

Table 10: Higher Certificate: First-time registration, throughput and completion rate, 2016 to 2021

Higher Certificate	2016	2017	2018	2019	2020	2021
First-time registrations	80	56	68	74	Phased out in 2020	
Cohort completion rate	61.3%	46.4%	48.5%	Cohort switched*		
Cohort throughput	51.3%	41.1%	47.1%			

* Because the programme was phased out, most of the 74 new registrations from 2019 graduated from another programme (only 5 from this cohort graduated with an HC)

Table 11: Certificate in Horse Mastership and Equine Studies: First-time registration, throughput and completion rate, 2016 to 2021

Certificate in Horse Mastership	2016	2017	2018	2019	2020	2021
First-time registrations	16	11	14	13	10	2
Cohort completion rate	100.0%	100.0%	92.9%	92.3%		
Cohort throughput	68.8%	72.7%	50.0%	76.9%	50.0%	

4.4.2 Employment trends over time

Another measure of effectiveness is the extent to which graduates find employment in the labour market, and more specifically in the agricultural sector. Thus, **employment trends** are discussed below. As indicated in Figure 4, 27% of graduates, 26% of current students and 1/6 of the dropouts who were surveyed indicated that they had worked prior to studying at EATI; and 10% of graduates, 10% of current students and 1/6 of the discontinued students had worked in the agricultural sector. There were no distinct differences in prior employment per programme (see tables 75 and 76 in Appendix D).

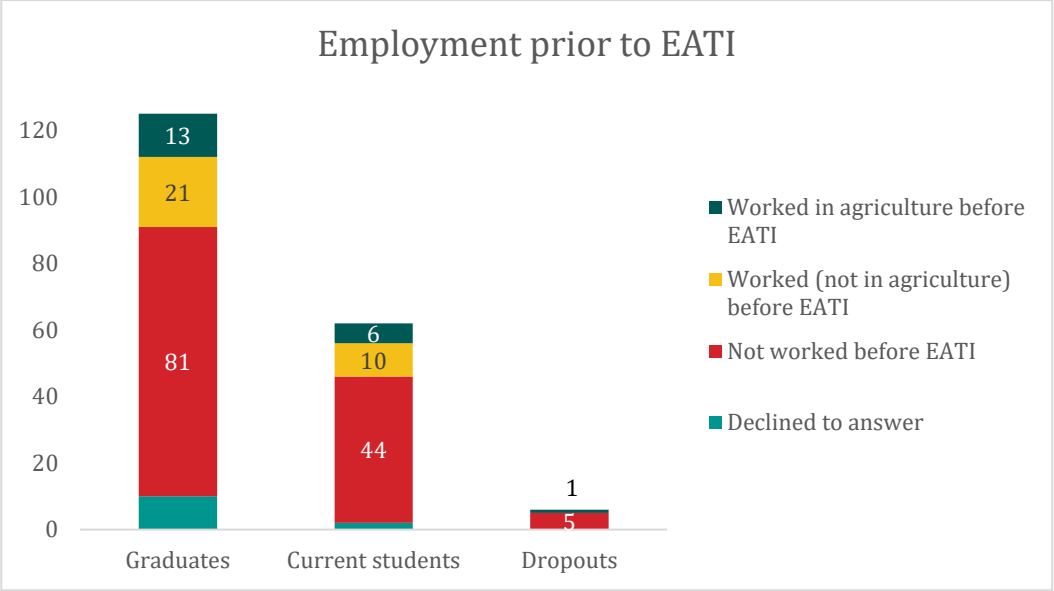

Figure 4: Were you employed before studying at EATI? n=193 (125 graduates, 62 current students, 6 dropouts)

In the six months after graduating from/leaving EATI, 62% of graduates and 1/6 dropouts indicated that their **primary economic activity** was employment (42% and 1/6), a learnership/ internship/apprenticeship (18%) or self-employed (2%). Employment/engagement in a learnership/internship/apprenticeship and self-employment was highest for the Diploma in Cellar Technology (5/5), one-year DipAgric (11/15), Higher Certificate (5/7) and BAgric (62%) graduates, whilst only one (1/5) learnership graduate reported being self-employed at this time (see Table 77 in Appendix D). The majority of those graduates who answered a question about economic sector (82%), were employed/engaged in agriculture, as was the dropout who was employed. Those who were working in agriculture, were working in a wide range of agriculture sub-sectors including: intensive livestock (n=10), viticulture (n=7), fruit (n=6), extensive livestock (n=4), vegetables (n=4) viniculture (n=3) and mixed farming (n=3). A few were working in agriculture support services (i.e. marketing n=2, producer organisations n=2 and consulting n=1) (see Table 12 overleaf).

A similar picture emerged at the time of the study (i.e. January–March 2023). Now 61% of graduates were employed in a learnership/internship/ apprenticeship or were self-employed, and a higher proportion were in employment (54%) as opposed to a learnership/internship/ apprenticeship (6%) or being self-employed (1%). One of the dropouts reported being employed (four were unemployed, and one declined to answer). The majority (71%) of those who were employed/engaged were working in the agricultural sector, and they were working in a wide range of sub-sectors including: intensive livestock, viticulture, viniculture, vegetables, fruit and extensive livestock. A few more were now working in agriculture support services including for government, labour brokers, commercial banks and consulting firms. Individuals who were NOT working in the agricultural sector indicated that this was primarily because they could not find work in the agricultural sector, they were offered a better job in another sector, or there were no opportunities for promotion in the agricultural sector. Programmes with the highest employment/engagement/self-employment rates at the time of the survey were the Certificate in Horse Mastership (1/1), the Diploma in Cellar Technology (4/5) and the BAgric (69%). The employment of one-year DipAgric (8/15) and Higher certificate (4/9) graduates had declined, and none of the Diploma in Extension (0/3) and Learnership (0/4) graduates reported being employed (see Table 80 in Appendix D). The per programme findings should be treated with caution due to the very small sample size.

Table 12: Employment/engagement in agriculture sub-sectors six months after graduating and NOW

Sub-sector	Six months after graduating	Jan-March 2023
Intensive livestock (pigs, dairy, chickens, ostriches)	10	4
Viticulture (growing of grapes)	7	6
Fruit (excluding wine, pomes, stone, citrus)	6	6
Extensive livestock (sheep, beef cattle)	4	5
Vegetables	4	4
Other farming (specify)	4	8
Mixed farming	3	3
Viniculture (processing of wine)	3	2
Marketing of agricultural products	2	0
Producer organisations	2	1
Other (specify)	2	1
Field crops	1	1
Consulting firms and services	1	1
Subtotal	49	42

4.4.3 Primary economic activity after leaving EATI

Graduates were most likely to indicate that they were primarily employed (42%) in the six months after leaving EATI, followed by unemployed (21%) and in a learnership/internship/apprenticeship (18%). Of the last category[6], 8/17 were in an internship, 6/17 in a learnership and 2/17 in an apprenticeship. By way of comparison, the national unemployment rate ranged from a low of 26.7% (Q4, 2017 & Q1, 2018) to a high of 35.3% (Q4,2021) over the period 2017–2022 (Stats SA, 2023), which would have been six months after these graduates left EATI. The unemployment rate for graduates (5.4%–12.5%) and those with other tertiary education (14.1%-–24.0%) was lower during the same time period (Stats SA, 2023).

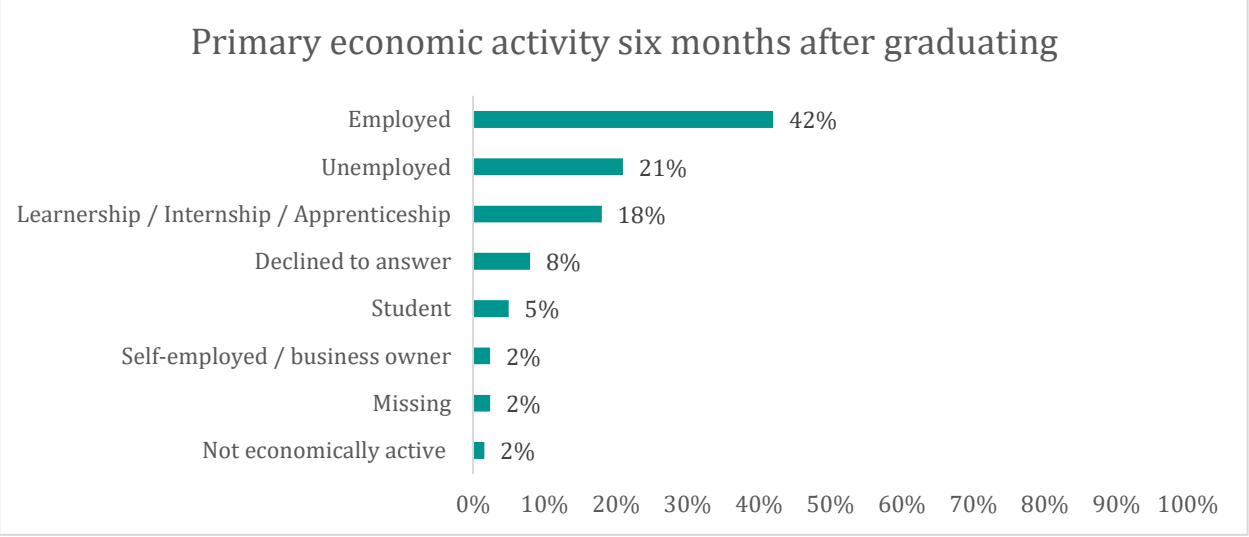

Figure 5: What was your primary economic activity in the six months after you graduated? n=125

[6] One declined to answer and information was missing for 6/23.

The graduates who were employed who answered questions about the type of institution they were working for (n=38) were predominantly working for private enterprises/farms (63%), whilst 16% were working on family farms, and 13% reported working for government. The student who dropped out was working on a family farm (see table 81 in Appendix D).

The largest share (32%) of graduates were working for small enterprises (11-50 employees), whilst 32% were working for medium enterprises (50–250 employees), and 18% were working for microenterprises (<10 employees) (see table 82 in Appendix D).

The majority of graduates who answered questions about the nature of their employment (n=38) indicated that their job was permanent (58%) rather than temporary (39%), and they had a full-time open-ended contract (53%), whilst 21% had a part-time open-ended contract, and a further 16% had a fixed-term contract (see table 82 in Appendix D).

4.4.4 Finding employment

The vast majority of graduates who were employed in the six months after graduating (33/38 or 87%) felt their studies at EATI helped them get their job. In fact, 'through EATI' was the second most common job search strategy for these graduates (9/38), after 'sent/dropped off my CV at different places' (15/38) (see Tables 85 and 86 in Appendix D). Fewer graduates who were in a learnership/internship/apprenticeship said EATI helped them get their placement (6/17), the majority (11/17) said EATI did not[7]. Encouragingly, 10/17 graduates who were in a learnership/internship/ apprenticeship said they really wanted to do it; a few said they were not all that keen, but took an available opportunity (2/17) or did it because they could not find a job (2/17) or gave other reasons (2/17)[8] (see Tables 87 and 88 in Appendix D).

Reliance on EATI as a job search strategy appears to decline over time: only 2/21 respondents who were in a new job with a new employer at the time of the survey who answered the question indicated that this was how they found their job: 'Asked my family / friends / community organisations / religious institutions', 'Checked newspapers / radio / TV / the internet / social media', and 'The job was a requirement of a bursary' – were more common job search strategies reported by 4/21 respondents respectively (see Table 89 in Appendix D).

The graduates who participated in FGDs were all employed. They utilised various job search strategies and noted that finding employment was challenging. Work exposure whilst at EATI assisted one graduate to secure work, whilst another noted that it was difficult without prior work experience.

> *Elsenburg has an, let's call it an old student Facebook group that is very active in posting job opportunities. I have also shared some opportunities that came across my path and I have applied to a lot of job opportunities that were posted on that Facebook group. It is very active and I have had a few encounters with people that received work from applying and going to interviews. But that has nothing to do with Elsenburg. It is called the 'Elsenburg Offical Group'. It is not run by the Council of Elsenburg or any department; it is pro bono; it is old students who put it up.* *(Graduate)*

> *It wasn't easy, because in my second year I remember applying for the bursary under the company, and I just didn't get in. That really bummed me out, because I was like I*

[7] Information was missing for 6/23.
[8] One declined to answer, and information was missing for 6/23.

know if you get the bursary you are definitely going to get work from them, so when I did not get the bursary it, means that I will never work for them now. But only to find that there was another opportunity where they wanted five graduates and there was a lot of competition. I remember more than 100 people applied. The interview was also intense because it was so practical. You literally had to be a farmer with your own chicken farm to understand the interview. So I am really grateful for Elsenburg taking us to all these farms and showing us this experience so that I could answer the questions at my interview. (Graduate)

Using EATI knowledge and skills in the workplace

Encouragingly, the majority of graduates who were employed in the six months after graduating who answered these questions (n=38) said they were using the knowledge (74%) and skills (66%) gained through their studies at EATI in the workplace, as did the dropout who was employed. Positive responses were highest for one-year Diploma in Cellar Technology and Higher Certificate graduates, both of whom reported using EATI knowledge AND skills in the workplace, followed by one-year DipAgric graduates, who all reported using skills, and 4/5 reported using knowledge gained through studies at EATI in their jobs (see Tables 90 to 93 in Appendix D). Specifically, horticulture, animal production, wine making, business skills, people management and using machinery were mentioned. The quotes below illustrate some of the ways that graduates used knowledge and skills from EATI in the workplace.

In terms of managing people, because I manage 75 people at work, so it's quite a big team, so people management skills I was very much taught at Elsenburg how to manage people and how to handle conflict at work, be professional and how to not project when handling two different sides. I feel like that helped me a lot, especially in my Extension classes. My lecturer did teach us a lot about that. (Graduate)

They taught us a lot of poultry diseases, so when I came to my workplace and saw the poultry diseases, I knew exactly what it was, and I knew exactly what vaccine to give. (Graduate)

4.4.5 Primary economic activity now

The figure below shows the primary economic activities of EATI graduates at the time of the survey. The highest proportion (54%) were employed, followed by unemployed (26%). Of the individuals who were employed (n=67), the largest share (40%, or 22% of all graduates) had a new job with a new employer and a similar proportion (39%, or 21% of all graduates) had a new job with the same employer; 21% (or 11% of all graduates) had a new job but with the same employer (see Table 94 in Appendix D).

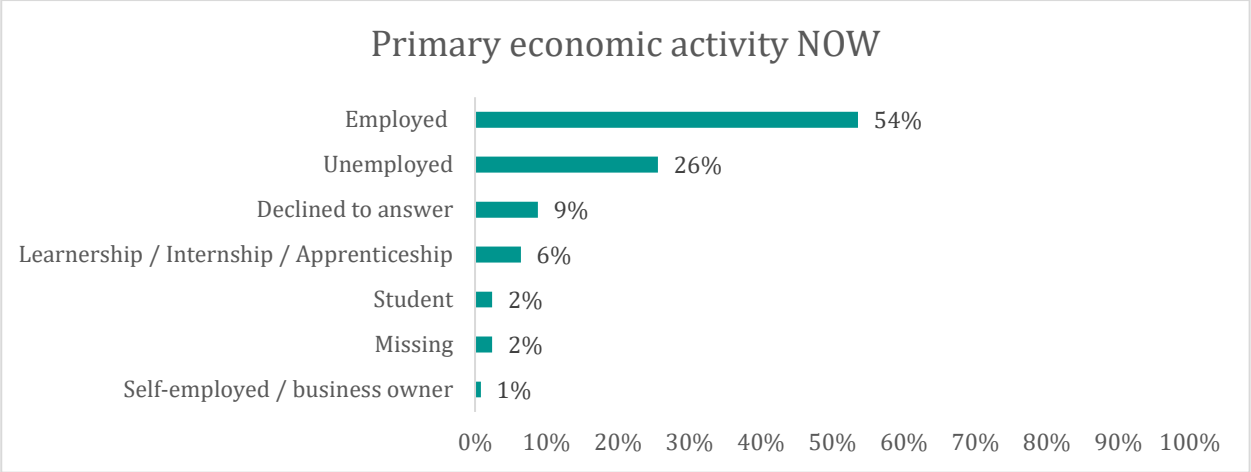

Figure 6: What are you doing now? n=125

In line with national employment trends, females (31%) were more likely to be unemployed than males (24%) and Black (39%), Coloured (32%) and Indian (1/2) graduates were more likely to be unemployed than White graduates (16%). Individuals who graduated in the period 2020–2022 were more likely to be unemployed (24-43%) than those who graduated from 2016–2019 (0-28%), reinforcing the finding that employment outcomes improve over time (see Tables 95 to 97 in Appendix D). The literature review confirmed that the period during and post-COVID-19 was a challenging time to be a work seeker. By way of comparison, the national unemployment rate was 32.7%, and 10.6% for graduates and 21.0% for individuals with other tertiary education in Q4 of 2022, (Stats SA, 2023).

Propensity score matching (PSM) found that gender was not associated with employment status for respondents in either the EATI JET survey or the QLFS. This implies that gender did not significantly influence the likelihood of being employed or unemployed. While male and female EATI graduates (70.6% and 58.1% respectively) were more likely to be employed than their counterparts in the QLFS (67.9% and 57.9% respectively), this was not statistically significant. Race was significantly associated with employment status for EATI graduates in the JET survey, at a 10% level of significance (p=0.089) and in the QLFS, at a 5% level of significance (p=0.027). In both surveys, White graduates were more likely to be employed compared to Black graduates. EATI Black graduates were more likely to be employed (57.8%) than their counterparts in the QLFS (54.8%); however, this result was not statistically significant. For the EATI JET survey, age group was not associated with employment status; however, this is likely because the sample size of 35+ year-olds was tiny. For the QLFS, age group was significantly associated with employment status, at a 5% level of significance (p=0.003), with graduates aged 35+ years being more likely to be employed (77.1%) compared to youth respondents (41.7%). EATI youth graduates were more likely to be employed (68.1%) than their counterparts in the QLFS (41.7%), and this difference was statistically significant (p<0.000). Overall, EATI graduates (65.9%) were slightly more likely to be employed than their counterparts in the QLFS (65.3%), but this was not statistically significant. The sample sizes per subcategories were tiny in both surveys, which may introduce bias, and thus these results should be treated with caution.

As in the first six months after graduation, the individuals who were employed who answered these questions (n=43) were predominantly working for private enterprises/farms (65%), with others working for government (14%) or on family farms (12%), and they were working for enterprises of varying sizes, from micro to medium. The largest share (35%) of graduates were working for medium enterprises, a

similar proportion (33%) were working for small enterprises, and 14% were working for microenterprises (see Tables 98 and 99 in Appendix D).

A higher proportion of employed graduates now indicated that their job was permanent (78%) as compared to temporary (16%), and they had a full-time open-ended contract (73%), whilst 12% had a part-time open-ended contract, and a further 6% had a fixed-term contract (see Tables 100 and 101 in Appendix D). .

4.5 Impact

This section reports on the **impact** of the programmes on graduates and **wider benefits** for families, communities and others.

4.5.1 Income and benefits

Graduates and dropouts who were employed and in a learnership/internship/apprenticeship were asked about the income and other benefits they received. Of those graduates who reported being employed (52) or in a learnership/internship /apprenticeship (23) in the six months after they graduated, just under half (29) reported their salary. Salaries ranged from a low of R9 618 to a high of R389 291, annually, after adjusting for inflation. Employed individuals (n=18) were earning an average of R141 451, whilst those in a learnership/internship/apprenticeship (n=11) earnt an average of R99 989, and the individual who discontinued their studies was earning R121 833 after adjusting for inflation (see Figure 8 and Table 102 in Appendix D).

Encouragingly, at the time of the survey data collection, salaries had increased to an average of R182 059 annually and ranged from a low of R4 489 to a high of R1 923,692 annually. They were higher on average for individuals who were employed (n=40; average=R192 291) than those in a learnership/internship /apprenticeship (n=5, average = R100 203), for whom the average salary had barely changed (see Figure 7 and Table 103 in Appendix D).

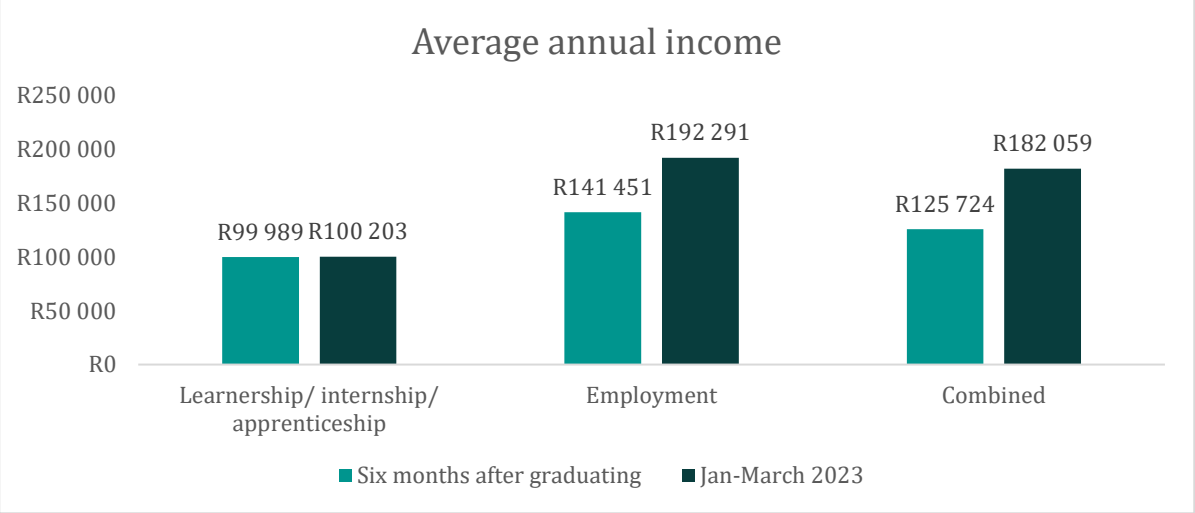

Figure 7: Average annual income six months after graduating and at the time of the survey

In addition to income, employed/engaged graduates received various other **benefits**. However, the largest share of those (n=56) who answered questions about their first job after graduating (39%) reported receiving no benefits in their first job/placement after EATI. At the time of the survey, of those who

answered the questions about benefits (n=72), more employed/engaged graduates reported receiving benefits (22% received none), with the most common benefit received being medical aid (29%), and 10% or more reported receiving a pension/provident fund (18%), use of a vehicle (15%), paid leave (15%), access to training (15%), free housing (13%), a housing allowance (13%), a transport allowance (13%), and farm produce (10%) (see Tables 104 and 105 in Appendix D).

4.5.2 Job satisfaction

By and large, employed graduates strongly agreed or agreed that they are working in the industry for which they trained (77%), making an important contribution to the agricultural sector through their current job (75%), and confirmed that their knowledge and skills are valued in the workplace (86%) and studies at EATI prepared them well for their current job (80%).

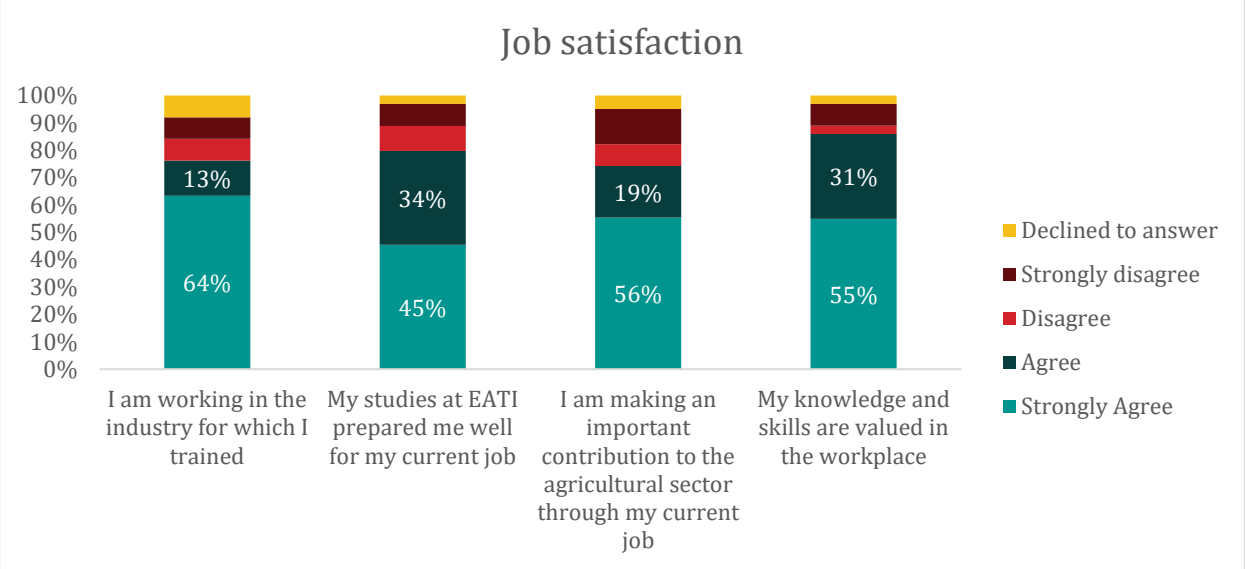

Figure 8: Agreement with statements relating to job satisfaction, n=64

4.5.3 Career progression

As indicated above, income and benefits have increased over time for graduates.

Individuals who were in the **same job with the same employer** at the time of the survey as in the six months after they graduated who answered questions about **development opportunities** (n=24) reported receiving a range of such, including new responsibilities (n=20), positive feedback from their supervisor (n=8), a pay rise (n=7), on-the-job training (n=7) and being sent for training (n=6). The largest share of individuals (n=14) who were in a new job with the same employer said they were moved sideways and were undertaking the same level of work in a different area (n=6). Whilst four had been promoted, one had been demoted (see Tables 107 and 108 in Appendix D).

FGD participants gave insight into their career journeys since graduation and expressed optimism that their career aspirations were on track.

> *I'm in the production side on the farm. Look, here's the structure of the company: you get the workers, the foreman, a junior production manager, you get the production managers and then you get the estate managers and the MDs. At the moment I am a production manager, and there is an estate manager, a post on top of me. So from*

here I am shooting straight to estate manager. So that is what is in my mind, so everything that I am doing, preparing myself to go higher, but even on this level where I am now there are a lot of challenges, and with these challenges then you start asking yourself do you really want to go higher because you see even the guys who are higher already in that position. Unfortunately, it's only one guy who is in the position of estate manager at a wine farm. So even if you listen to him and look at what he is doing, then you see that it is not easy; it is tough. That is why you need to be strong here before you can go up. So I am working on that, so maybe when we speak again then I will be estate manager., Then I won't even have time to speak to you guys because I will be busy with the farm stuff. (Graduate)

4.5.4 Impact on families and communities

Besides the individual impacts reported above, positive impacts in the form of spillover effects may be experienced by the EATI graduates' families and communities. As indicated in Section 4.1.3, many graduates have now attained a higher educational level than their parents.

The majority of graduates (60%) indicated that they contribute money to the household where they live. Unsurprisingly, this percentage was higher (72%) for graduates who were employed or in a learnership/ internship/apprenticeship (8/8) (see Tables 109 and 110 in Appendix D).

Additionally, close to half (42%) of the graduates indicated that, since graduating, they had assisted a friend of family member to get a job. This percentage was slightly higher (52%) for individuals who were employed) see Tables 111 and 112 in Appendix D).

Graduates from historically disadvantaged backgrounds expressed a desire to take and use the knowledge and skills they gained from studying at EATI to give back to and improve their communities:

The other thing that I gained is the management skills. I was so fortunate enough to do Extension. So when you are doing the Extension, then they actually teach you how to deal with people in different levels. So you deal with workers, you deal with managers, you deal with managers that think they know it all and they don't want to hear any other advices from the other people. So I learned that, so now when I deal with people that are underneath me or I deal with people that are my superiors, so then I have that way of interacting with all levels and that I learned from Elsenburg. I also learn myself because I am dealing with different people in a daily basis. That experience I will never forget, that I can now be able to deal with all levels. And when I start my project, then I will have everything in line, because that is what they learned you when you are studying your project. So we have everything in line and I will say ok, this is what I need, and this is how I am going to start and that is the end goal and that I learnt from Elsenburg. I am still applying that in my working environment now. (Graduate)

4.5.5 Other benefits

Other benefits of studying at EATI that were reported by FGD participants included social networks, which, as indicated in section 4.4, can be beneficial for seeking and securing employment.

Also, the friends I made there, the networking. I have no friends left that I made in high school, but at Elsenburg I still have all of my friends, networking with them still today. They are all in different types – one has a butchery now, one has a wine cellar, and many of them are farming. One didn't grow up on a farm. He is now working for the Citrus Research Institute. He makes new citrus trees, new cultivar developments. We are always coming together, telling our stories, so I wouldn't choose it differently. It was the best time. I miss it a lot. (Graduate)

4.6 Return on investment

This section reports on the ROI of completing the various HET and ASD programmes offered by EATI.

4.6.1 Cost of studying

EATI provided data pertaining to the cost of studying the various programmes offered over the period 2016–2021, which is presented in Table 13 below. The cost of studying has increased gradually each year. Notably, the annual cost of studying towards the three-year diploma – introduced in 2020 – is substantially more than for the one-year diplomas that were phased out in 2020.

Table 13: Estimated programme costs*

Programme	2016	2017	2018	2019	2020	2021
Learnership Programme	R 53,736.77	R 57,045.40	R 60,201.80	R 63,595.20	R 66,144.20	R 69,123.00
BAgric Year 1	R 49,949.00	R 56,000.00	R 59,000.00	R 62,000.00	R 65,000.00	R 66,500.00
BAgric Year 2	R 50,000.00	R 58,000.00	R 60,000.00	R 63,000.00	R 66,000.00	R 68,000.00
BAgric Year 3	R 51,200.00	R 58,000.00	R 61,000.00	R 64,339.00	R 67,000.00	R 69,000.00
Higher Certificate Year 1	R 49,949.00	R 56,000.00	R 59,000.00	R 62,000.00	**phased out in 2020**	
Higher Certificate Year 2	R 51,200.00	R 58,000.00	R 61,000.00	R 61,728.00		
DipAgric	R 15,318.00	R 16,174.00	R 17,106.00	R 18,016.00		
Equine Studies	R 68,258.00	R 76,255.00	R 80,491.00	R 85,302.00	R 88,442.00	R 72,819.00
Bridging in Cellar Technology^	R 5,883.00	R 6,212.00	R 7,806.00	R 8,221.00	**phased out in 2020**	
Diploma in Cellar Technology	R 15,318.00	R 21,460.00	R 22,683.00	R 23,888.58		
Diploma in Extension	R 15,318.00	R 16,174.00	R 17,106.00	R 18,010.00		
DipAgric Year 1	**Implemented in 2020**				R 63,500.00	R 66,000.00
DipAgric Year 2					R 63,500.00	R 66,000.00
DipAgric Year 3					R 20,100.00	R 20,800.00

Source: Data provided by EATI, 2022

* Estimated programme costs include: an application fee, an acceptance fee, a registration fee, a meals activation fee, meals, lodging (in a double room), an internet usage fee, a photocopy fee and the tuition fee.

^Bridging in Cellar Technology was a one-year course that Higher Certificate students could do before undertaking a one-year Diploma in Cellar Technology.

4.6.2 Return on investment

The ROI of investing in AET programmes offered by EATI was calculated using the NPV method, using a 5% discount rate over a 10-year period. Table 113 in Appendix D shows the inflow/outflow surveyed of cash in ZAR (South African rand) for each year, the discounting factor, the discounted cash flow, and the cumulative NPV. The inflow/outflow of cash represents the costs and benefits of pursuing a qualification. The rule of thumb in CBA is: if the NPV is positive, the investment is worthwhile and offers good value for money because the overall benefits outweigh the costs; whereas if it is negative, the investment is not viable because the overall benefits are outweighed by the costs.

The negative cumulative NPV in years 1–3 indicates that the cost outweighs the expected benefits of the of the BAgric. This is mainly because initially, students are studying and not earning an income. Once they graduate and start earning income, no study costs are incurred, and once these are recouped, the NPV becomes positive. From the fourth year onwards, the cumulative NPV value turned positive, ending with a total cumulative value of approximately ZAR 975 352.

The three-year DipAgric NPV results also show a negative ROI for the first three years whilst students are studying. Thereafter, the cumulative NPV value turned positive, ending with a total cumulative value of approximately ZAR 493 874.

The Higher Certificate results follow a similar trend. In the first two years, the cumulative NPV results are negative because the students are still studying. From the third year onwards, the NPV results become positive. At this point the investment has been recouped, meaning the payback period for this investment is just three years. At the end of the tenth year, the overall cumulative NPV for this cohort of students was estimated to be ZAR 1 067 716.

A payback period of two years is evident for the Diploma in Cellar Technology. At the end of the 10-year simulation, the cumulative NPV was estimated to be ZAR 807 144. In the case of the DipAgric, we see a similar trend. From the second year, the income earned quickly recoups the investment, leading to a positive cumulative NPV. Overall, the cumulative NPV was estimated to be ZAR 1 354 376.

Overall, what we see from these NPV analysis results is that all the programmes offered at EATI achieved a positive cumulative NPV. All the investments yielded net benefits that outweighed the investment cost. This means that investing in AET is good value for money. The programme offering the best return on investment was the one-year DipAgric (ZAR 1 354 376), followed by the Higher Certificate (ZAR 1 067 716), the BAgric 975 352, the Diploma in Cellar Technology (ZAR 807 144), and lastly the three-year DipAgric (ZAR 493 874). However, the per programme results should be treated with caution due to the relatively small sample size. The NPV results are synthesised and illustrated in Figure 9 below.

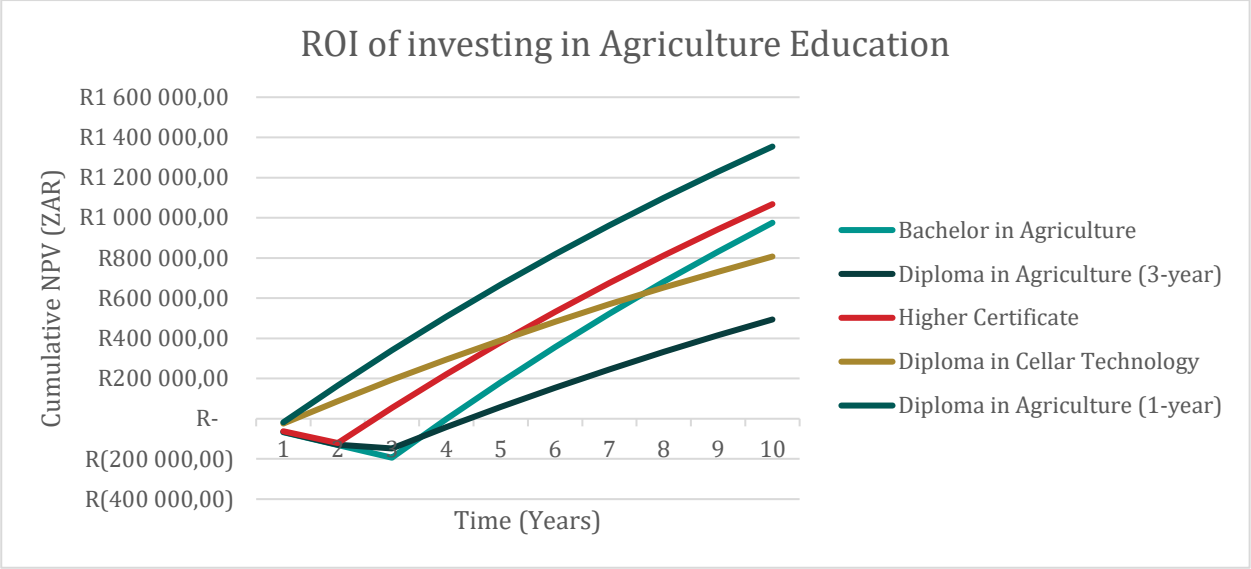

Figure 9: ROI of investing in AET

4.6.3 Socioeconomic impacts

Socioeconomic impacts and returns to investing in AET are complex in nature and not easy to decipher (see Figure 10 below). There are hidden dynamics, corresponding system feedback loops, and causal-effect relationships at play when it comes to the nexus between the agricultural sector and investments in AET. The qualitative system dynamics approach in the form of a causal loop diagram enables us to model and illustrate these relationships qualitatively. The causal loop diagram presented in Figure 10 below illustrates the socioeconomic impacts to investing in AET with reference to programmes offered at EATI and the agricultural sector. The system is characterised by six reinforcing (positive) feedback loops (i.e. R1 to R6) and three balancing (negative) feedback loops (i.e. B1 to B3).

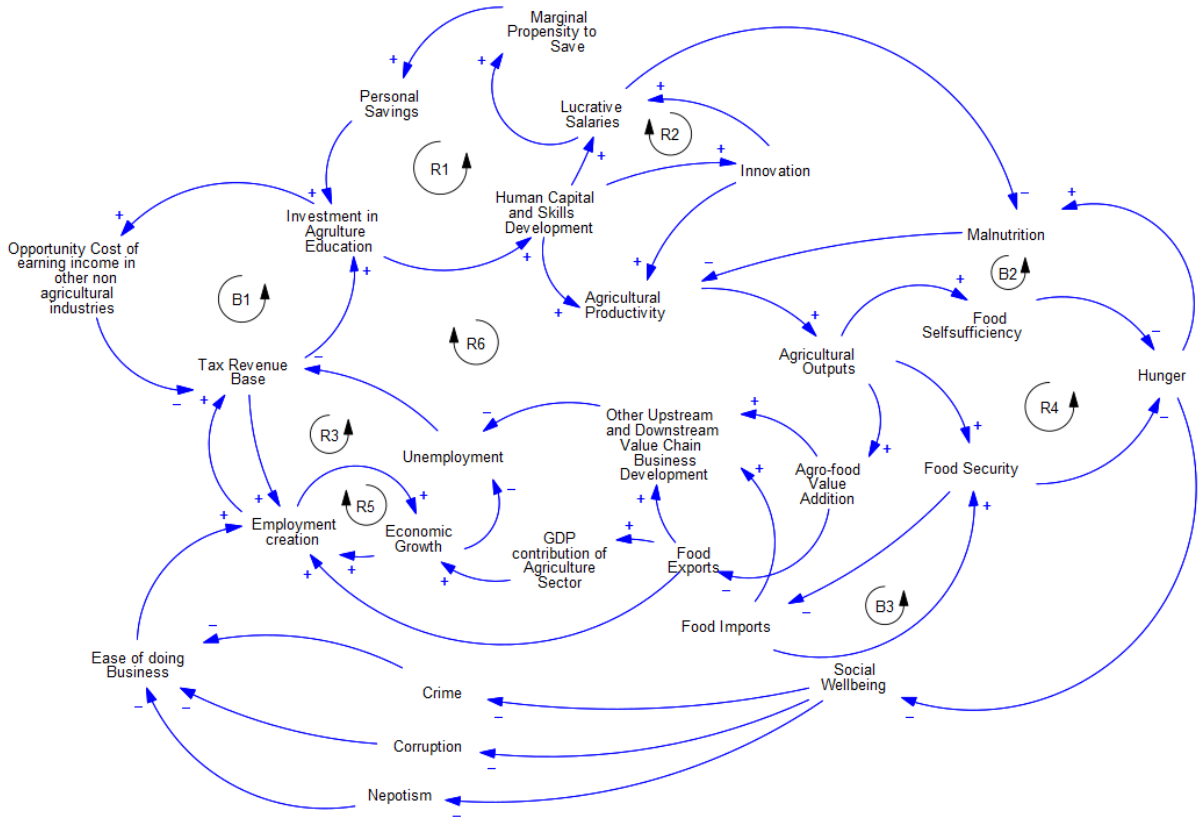

Figure 10: Qualitative System Dynamics Model showing the impacts of investing in AET in the WC agricultural sector

In the first reinforcing loop (i.e., R1), we see that investing in AET increases human capital and skills development in the agricultural sector of the Western Cape as well as nationally. Once human capital and skills are developed due to investments in AET, this will lead to the beneficiaries earning more lucrative salaries as compared to those who are unskilled. This will then increase the marginal propensity to save, which then leads to more personal savings, which can then be re-invested into further AET. Moving to the second reinforcing loop (i.e., R2), human capital and skills development also increases innovation, which also reinforces lucrative salaries. As for the third reinforcing loop (i.e., R3), employment creation in the agricultural economy is expected to lead to an increase in the economic growth, which leads to a decrease in unemployment, which has a positive influence on the tax revenue base. The fourth reinforcing loop (i.e., R4) shows that agricultural productivity leads to an increase in agricultural outputs, which lead to a corresponding increase in the food security, not only in the Western Cape, but nationally, which decreases hunger. Hunger increases the risk of malnutrition, which decreases productivity due to health conditions emanating from malnutrition. The fifth reinforcing loop illustrates that economic growth has a corresponding incremental causal effect towards employment creation. Finally, the sixth reinforcing loop, shows that agricultural outputs have an incremental effect on value addition in the agri-food sector, which leads to more food exports, leading to more upstream and downstream value chain business development, leading to more employment creation and decreasing unemployment.

What we see in the first balancing loop (i.e., B1) is that an investment in AET leads to an increase in the opportunity cost of earning income in other non-agricultural industries. This opportunity cost decreases the tax revenue base, which has an incremental effect on investment in AET, since the cost of AET is usually subsidised by government. The second balancing loop (i.e., B2) illustrates that food self-sufficiency is positively influenced by agricultural outputs and reduces hunger. Lastly, in the third balancing loop (i.e., B3) food security reduces the need for food imports, which have an incremental effect on the food security index of the Western Cape and the country.

Thus, as evidenced in the qualitative system dynamics model in the figure above, there are many diverse direct and indirect impacts of investing in AET.

5 Conclusion and Recommendations

5.1 Conclusion

5.1.1 Design and lessons for EATI from other AET models

The three South African institutions reviewed (Boland College, Stellenbosch University and the University of Pretoria) all offer their courses via a blended learning approach, and lecturers at Boland College receive training via a dedicated e-learning department. EATI does not have a dedicated information and communications technology department and relies on the WCDoA for digital support. The online learning modality at EATI, still in its infancy, gained traction in 2020 with the onset of the COVID-19 pandemic, and feedback from the staff indicated that the college is not yet ready for blended learning. Three graduate FGD participants (two BAgric, 2016 and 2017 and one DipAgric, 2021) indicated that their programmes did not include online learning, and one graduate (BAgric, 2021) said that blended learning began in 2021. Besides some of the conditions supporting online learning being poor, such as the online system still being in a state of development, insufficient computers on the campus, and load shedding negatively affecting connectivity, there are also attitudinal factors that negatively affect online learning, in that it was reported by staff respondents that some lecturers still resist the move towards hybrid learning.

Stellenbosch University offers more interdisciplinary programmes, for example, an undergraduate programme in Data Science, essential for the agricultural sector. Based on feedback from industry stakeholders, it is evident that the agricultural sector needs graduates who have skills broader than agricultural skills, and graduate FGD participants suggested that EATI expose their students to other specialisation fields within the agricultural sector.

Wageningen University & Research in the Netherlands has been rated as the best university in agriculture and forestry in the world (QS World University Rankings, 2022), and EATI can draw an aspirational lesson from this institute. One of its key strategies is forming partnerships with other agricultural stakeholders to enhance its multidisciplinary approach. The university collaborates with other educational institutions, business, government and civic organisations. Orange Agricultural College in Australia follows a similar approach and has been successful in having short courses subsidised via partnerships. According to a staff respondent, EATI offers a short course in collaboration with the wool industry. Such formal collaboration over time allows for industry to feed pertinent information into EATI's curricula regularly, something that is currently happening mainly at an individual lecturer level. Given that one of the expected outcomes of the WCDoA's ToC for addressing challenges in AET is relevant and up-to-date content (EATI having identified that 'the content that students receive is not relevant, up to [date] and focused' (EATI, n.d.), it was found that the review of the BAgric content at EATI is happening much later than scheduled. A lesson in regular reviews of and updating curricula can be learnt from Lentiz International in the Netherlands, which constantly updates its curricula and collaborates with other institutions to update and design curricula.

Additional activities mentioned in the ToC are hosting a skills summit or reference group for institutions and establishing an employer reference group that would assist in determining current and future industry needs and trends. However, the evaluation found no evidence that these activities had occurred.

5.1.2 Implementation

Most industry and HEI stakeholders were generally positive about the quality of education offered at EATI despite some comments regarding the lack of technological expertise and management and business skills amongst students. A characteristic of EATI education that is particularly valued by industry is its practical component, with some industry stakeholders and survey respondents suggesting an increase in practical work overall, but particularly in the BAgric programme. EATI staff also considered practical training an important component of EATI's offering, while the problem tree in the ToC identifies limitations by referring to 'dwindling staff capacity' and 'resource gaps', a 'lack of practical training venues' and some lecturers having 'insufficient sector experience' (WCDoA, n.d.). Despite these limitations, EATI is a well-established institution that enjoys a good reputation, and some industry stakeholders still prefer employing its graduates to those from other AET institutions.

Around half of EATI graduates are from the Western Cape and reside in the Western Cape after graduating, although EATI attracts students from all South African provinces and trains graduates who work in the Western Cape province and nationally. Industry stakeholders who were interviewed raised some concerns about EATI's graduates being able to participate in a developing and changing agricultural industry with the appropriate knowledge and skills. However, the majority of surveyed graduates thought they were well equipped. A total of 74% of graduates who were employed in the six months after completing studies at EATI said they were using the knowledge, and 66% said they were using the skills gained from studies at EATI in their workplaces, while 88% of those who were employed at the time of the survey confirmed that their knowledge and skills are valued in their workplaces.

Some respondents thought that future demands for graduates might be systems related, requiring the integration of knowledge from different areas, or enterprises that rely on technology. Understanding agricultural value chains was also mentioned as important for the future of agriculture and agricultural employment.

Two major challenges that EATI faces is the uncertainty of the college maintaining its status as an agricultural educational institution (identified in the problem tree of the ToC and mentioned by a staff respondent in an interview) and budgetary constraints. Many staff respondents lamented the lack of funding as a reason for non-implementation of particular initiatives, for example, amongst others, for excursions to places where new technology is tested and used in industry, for upgrades to laboratory equipment and other infrastructure and structured tutoring programmes.

5.1.3 Effectiveness and impact

The majority (60%) of surveyed graduates were employed or engaged in a learnership/internship/ apprenticeship at the start of 2023; very few graduates were self-employed. The majority of individuals who were working were working in agriculture, and they were employed in a wide range of agricultural sub-sectors and by diverse types of organisations, ranging in size from micro enterprises with less than 10 employees to medium size enterprises with 51-250 employees. In line with national employment trends, males and White graduates were more likely to be employed and less likely to be unemployed than females and graduates of colour. The highest employment rates were experienced by graduates with the one-year diploma in Cellar Technology and a BAgric.

Encouragingly, PSM found that EATI graduates were more likely to be employed than individuals with similar demographic characteristics with similar level agricultural qualifications in the Q4, 2022 QLFS, and

EATI youth graduates statistically significantly were more likely to be employed (68.1%) than their counterparts in the QLFS (41.7%).

Agriculture is an employment growth sector in the Western Cape. However, employment prospects were impacted by COVID-19. Graduates who participated in the FGDs reported finding it challenging to find jobs, and employment rates were lower and unemployment rates higher for individuals who graduated in 2020-2022 as compared to those who graduated in 2016–2019. Graduate employment rates were also lower than when JET surveyed HET graduates (2009-2014) in 2016 (JET, 2016). Despite this, salaries and employment benefits were found to have increased over time since graduation.

Graduating from EATI brings benefits for individuals, their families, agricultural enterprises and their communities. The majority of graduates (60%) contribute money to the household where they live and 42% had assisted a friend or family member to get a job, since they graduated.

All the programmes offered at EATI for which sufficient data was available (I.e. the BAgric, 3-Year DipAgric, Higher Certificate, One-year Diploma in Cellar Technology and one-year DipAgric) achieved a positive cumulative NPV. Thus, all the investments yielded net benefits that outweighed the investment cost, signifying that investing in AET is good value for money.

5.2 Recommendations

5.2.1 Programme-specific recommendations

The evaluation of EATI's HET programmes conducted by JET in 2016 (JET, 2016) revealed a misalignment between the HET programmes that offered Agricultural Extension as a specialisation and the educational level and qualifications required of Agricultural Extension Officers. This same misalignment was found in the current evaluation, and the recommendation remains the same: that EATI should explore the potential to offer an HET programme or liaise with other institutions (Stellenbosch University, in particular, that already delivers the BAgric) about graduates articulating into postgraduate courses that lead to a qualification as an Agricultural Extension Officer who is employable after graduating.

It was evident that the BAgric programme had not been reviewed for a number of years, except for annual changes at an individual lecturer/subject level. EATI should ensure that all programmes are reviewed on schedule and reviews should incorporate industry stakeholders and consider graduate feedback and employability.

Some staff respondents cited a ratio of 30:70 percent of theory to practical work in some of the programme offerings. Based on the feedback from respondents from the survey as well as the interviews, there was the request for greater practical exposure ad opportunities for work experience, especially from graduates who had been students during height of COVID-19. A review of curricula, as mentioned above, would establish the practical work gaps, and in addition, EATI should maximise and strengthen partner relationships to use them optimally for students to gain practical exposure, particularly where facilities are lacking at the college. Consider offering work experience and internships as part of all AET programmes; this can empower students to build their own relationships for future work experience and employment post studies.

5.2.2 Engagement with industry

Many industry stakeholders encouraged EATI to invite industry to address students, particularly on pertinent issues in the curriculum. A few staff respondents commented on the red tape involved in the current process of inviting guest speakers, and there is the distinct possibility of some lecturers not inviting guests. The college could consider reviewing the current protocol in regard to facilitating easier access for guest lecturers.

Engagement with industry happens mainly at the level of individual lecturers. EATI could consider standardising its practice of engaging with industry so that this does not just rely on the initiative of individual lecturers (or not). This is particularly important in regard to current and future agricultural sector needs and trends to align EATI's programme offerings accordingly. A formal structure that operates at a senior level of management, including clear communication channels and regular engagement events is recommended.

The South African and international institutions that were investigated as part of the literature review are considerably enriched by their engagement and partnerships, particularly with appropriate industry players. EATI could consider designing more short courses focused on important agricultural sector industry developments and trends – such as drone technology and climate change – in collaboration with industry.

5.2.3 Recruitment, marketing and enrolment

Although EATI employs a number of marketing strategies, the demographics of the student cohort does not appear to have changed greatly since the last time an evaluation was conducted (JET, 2016). In line with the ToC, besides visiting more non-agricultural schools (only a third of Black and Coloured survey participants had heard about EATI at their previously attended school), EATI should implement structured initiatives targeted at individuals from previously disadvantaged and non-traditional agricultural backgrounds.

It was reported during the presentation of evaluation findings to the evaluation steering committee, that individuals from previously disadvantaged and non-traditional agricultural backgrounds are less likely to accept an offer to study at EATI than white students from traditional agricultural backgrounds; it was beyond the scope of this study to verify that. Interestingly, the opposite was found with regards to drop-outs, who – based on analysis of EATI data - were more likely to be white and male. EATI could investigate the reasons why individuals from previously disadvantaged and non-traditional agricultural backgrounds turn down offers to study and use the findings to inform targeted interventions.

5.2.4 Student support

Evidence gathered during this evaluation showed that EATI has made some attempts to improve student support services since the last evaluation, particularly in the area of psychosocial support (JET, 2016). Psychosocial support is currently outsourced, and students are provided with a telephone number to access services, whilst BAgric students have access to the Stellenbosch University wellness programme. However, this type of support was identified as needing further development. It would be ideal for psychosocial support to be available on campus, given that around one third of students and graduates indicated that they have need of (i.e. had accessed) psychosocial support.

Academic support is provided at the initiative of individual lecturers and formal interventions occur when a need arises; currently there is no formal academic support programme. It is recommended that EATI proactively develops a structured academic support programme.

Graduates who were surveyed requested more structured career guidance during their studies at EATI. EATI could consider a formal structured programme that assists students with career options, particularly in relation to new jobs that are emerging in the agricultural sector as a result of 4IR technology, climate change and the green economy.

In the same vein, although graduates have been proactive about maintaining some form of contact amongst themselves via social media, EATI could consider creating a formal alumni association that is coordinated with the assistance of alumni. Through such a network graduates could be brought back to EATI to share their experiences and support students on how to navigate entering the job market or starting their own businesses. Having a strong alumni community will keep graduates connected to the institution and is also likely to improve response rates for future research and evaluation studies.

5.2.5 Data management, monitoring and evaluation system

The good practice of undertaking regular evaluation should be continued. There is however, a need to strengthen record keeping, data management and monitoring.

It was challenging to undertake this evaluation due to the requirements of POPIA for individuals to give explicit consent for their contact information to be shared. EATI should ensure that permission is sought from students, at the point of enrolling, to be contacted for research and evaluation purposes. In a similar vein, EATI should invest in a proper student record system that is accurately maintained and regularly updated[9]. This would make it possible to track applicant, student and graduate metrics, including offers, offered accepted, enrolment, throughput, dropout and certification rates, and for data to be applied strategically in the administration and operations of the EATI.

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[9] It was noted during the presentation of findings to EATI staff that such a system was put in place in 2022. However, this evaluation required access to historical data which was not on the system.

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