Effect of Open and Distance Learning Programmes on Inclusivity in Higher Education

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Abstract: Ensuring equitable access to higher education remains a persistent challenge in Sri Lanka, where limited intake capacity in conventional university programs restricts opportunities for many qualified learners. The Centre for Open and Distance Learning (CODL) at the University of Moratuwa, Sri Lanka provides a substantial opportunity for a wider cohort of students by offering the Bachelor of Information Technology (BIT) external degree, delivered in the Open and Distance Learning (ODL) mode. This study aims to investigate the extent to which the BIT program enhances inclusivity by expanding access to higher education and supporting diverse learner participation. A comparative analysis was conducted between students enrolled in the BIT external degree and those in the internal degree programmes. Student profiles were examined across multiple dimensions including age, gender, ethnicity, geographic distribution, and educational background. This analysis aimed at identifying how ODL broadens access beyond traditional student populations. Particular emphasis was placed on geographic and ethnic inclusivity by evaluating the representation of students, highlighting the program's role in reducing regional and ethnic disparities in higher education access. Beyond access, the study evaluated inclusivity in terms of participation and academic success. Retention rates and completion rates were analysed to assess sustained student engagement within the BIT programme. Academic performance indicators, including grade distributions and pass rates, were examined across different demographic groups to determine whether expanded access through ODL is accompanied by comparable learning outcomes. In addition, the study considered the role of programme flexibility in enabling participation among non-traditional learners, particularly working professionals and individuals with family or other commitments. The findings of this paper indicate that the ODL mode attracts a more diverse student population, who may otherwise lack access to higher education. Furthermore, the results suggest that this expanded access does not significantly compromise academic performance, demonstrating that inclusivity can be achieved alongside quality. The learnings from the external degree programme conducted in the ODL mode provide a scalable and practical model for institutions seeking to enhance inclusivity in large-scale education systems.

Keywords: Open and Distance Learning; Inclusive Higher Education; Information Technology Education; External Degree Programme; Widening Participation; Sri Lanka

1. Introduction

1.1 Higher Education Access and Inclusivity

Equitable access to higher education remains a challenge in Sri Lanka, where qualified students compete for limited places in state university programmes. In technology-related disciplines, access may be further shaped by programme-specific entry requirements, particularly prior preparation in mathematics or science. Consequently, learners seeking IT education may face barriers arising from both limited intake capacity and conventional entry structures. Inclusivity extends beyond admission. An inclusive higher education pathway should attract learners from varied geographic, ethnic, gender, age and educational backgrounds, while enabling meaningful academic progression. Open and distance learning (ODL) is significant in this context because it can widen participation by reducing dependence on continuous campus attendance and providing flexible routes into higher education. Studies in Sri Lanka similarly emphasise that inclusive online and distance learning requires both access and meaningful learner engagement (Yang et al., 2022).

1.2 The BIT External Degree as an ODL Pathway

The Bachelor of Information Technology (BIT) external degree programme, offered by the Centre for Open and Distance Learning (CODL) of the University of Moratuwa, provides an ODL-based route into IT higher education. The programme is structured across three academic years, with progressive certification: Diploma after Year 1, Higher Diploma after Year 2 and the BIT degree after Year 3. Its admission route is open to students who have obtained three simple passes in the G.C.E. Advanced Level (A/L) examination in any stream, together with a

credit pass in G.C.E. Ordinary Level (O/L) Mathematics. This structure makes the BIT programme a suitable case for examining inclusivity. Unlike several internal computing-related routes whose entry conditions are linked to specific A/L mathematics or physics related preparation, BIT creates an opportunity for students from a wider range of educational backgrounds to enter IT higher education.

1.3 Aim and Contribution of the Study

This study analyses the 23S2 BIT intake, enrolled in July 2024, comprising 719 students. Inclusivity is examined through age, gender, ethnicity, geographical residence and prior A/L stream. Since the cohort was in Semester 4 at the time of analysis, final degree or Higher Diploma completion could not be evaluated. Instead, achievement of the Diploma-level milestone, defined as completion of all Year 1 requirements, is used as an indicator of early academic progression.

The study first examines diversity at enrolment and then considers whether it remains visible among the 157 students who had achieved the Diploma-level milestone, supported by selected foundational-module outcomes. The comparison with internal degree programmes is contextual: the BIT cohort is analysed directly, while conventional internal pathways are considered through official admission requirements and related evidence.

The study addresses the following questions:

- What demographic, geographic and educational-background diversity is evident among BIT students?
- How does the BIT entry pathway widen access relative to conventional internal computing-related routes?
- Is diversity visible among students achieving the Diploma-level milestone?
- Do selected academic outcomes indicate meaningful early progression among these students?

Through this analysis, the paper examines BIT as an ODL-based pathway for widening participation in IT higher education while supporting early academic progress.

2. Background and Related Work

2.1 Inclusive Higher Education Through ODL

Inclusive higher education aims to provide meaningful opportunities for learners whose participation may be constrained by conventional entry pathways, geographical location, age or personal obligations. ODL is relevant in this context because it can reduce dependence on continuous physical attendance and provide alternative routes for learners whose circumstances make conventional campus-based participation difficult. In this sense, ODL has been associated with widened opportunity and social inclusion in higher education (Tait, 2013; Butcher and Rose-Adams, 2015).

Inclusivity, however, should not be assessed only by the diversity of students who enrol. It should also consider whether learners from varied backgrounds remain represented as they progress academically. Building on this perspective, the present study examines diversity among students entering an ODL-based IT programme and among those achieving its first formal academic milestone. Sri Lanka also has an established history of using ODL to expand higher education opportunities beyond conventional campus-based provision (Jayatilleke and Kulasekera, 2020).

Recent international studies on inclusive online and distance higher education emphasises that widening participation should be understood as more than expanding enrolment. Inclusive ODL environments must also support participation, engagement and progression, particularly for learners whose access to conventional higher education may be shaped by location, prior educational opportunity, employment, caring responsibilities or other personal circumstances. Cathy Stone's work on online and distance learner success emphasises that flexibility can widen opportunity, but student progression depends on sustained engagement, institutional support and course design (Stone, 2019).

2.2 Conventional Computing-Related Entry Pathways in Sri Lanka

Admission to Sri Lankan state universities is competitive and programme-specific. Internal Computer Science programmes require mathematics, physics or related A/L preparation, while Computer Science and Engineering at the University of Moratuwa is offered through the Engineering route. The internal BSc Honours in Information Technology permits eligibility from different A/L streams, but requires at least a credit pass in Higher

Mathematics, Combined Mathematics, Mathematics or Physics. The BIT external degree is not a replacement for these internal programmes. Rather, internal pathways provide a contextual benchmark for examining access to computing-related higher education. BIT complements these routes by enabling participation from students with a broader range of prior educational backgrounds.

3. Methodology

3.1 Research Design and Comparative Approach

This study adopts a comparative case-study approach to examine the contribution of the BIT external degree programme to inclusive IT higher education. The primary empirical analysis is based on student data from one BIT cohort offered through CODL, University of Moratuwa. This analysis is compared with conventional internal computing-related degree pathways through their published admission structures and subject-based entry requirements. Equivalent individual-level demographic and academic records from internal programmes were not available for the present study. Therefore, all comparisons with internal programmes in this paper should be understood as structural comparisons of access pathways, based on published admission requirements, rather than direct empirical comparisons of student profiles or academic outcomes across external and internal cohorts.

Accordingly, the comparison focuses on how the BIT external degree differs from conventional internal pathways in the breadth of educational backgrounds from which students can enter IT higher education, while analysing diversity and early progression within the BIT cohort directly. Internal Computer Science and Information Technology pathways commonly require mathematics or physics related A/L preparation, whereas the BIT external degree admits applicants with three simple passes in any A/L stream together with a credit pass in O/L Mathematics. This design enables examination of whether an ODL-based external programme provides an expanded route into IT higher education for learners whose educational background, geographic location or personal circumstances may limit participation through conventional pathways.

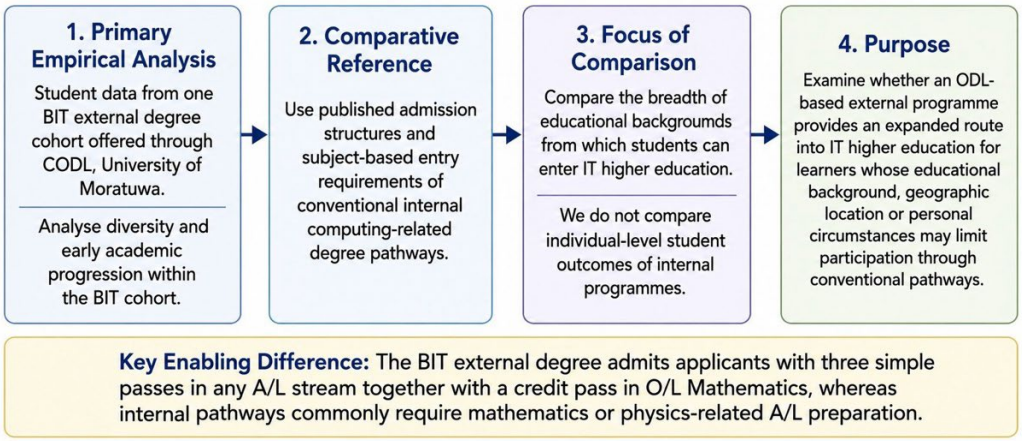


Figure 1: Comparative case-study approach used to examine inclusive access through the BIT external degree programme.

3.2 Dataset and Study Cohort

The dataset relates to the 23S2 intake of the BIT external degree programme, enrolled in July 2024. Following the removal of identifiers, records for 719 students were analysed. The dataset included demographic, geographical, educational background and early academic progression variables, as summarised in Table 1.

Table 1: Description of the study cohort and dataset

Programme | Delivery institution	Bachelor of Information Technology (BIT) external degree programme | Centre for Open and Distance Learning (CODL), University of Moratuwa
Study cohort | Enrolment period	23S2 intake | July 2024
Records analysed	719 students
Demographic variables	Age at enrolment, gender and ethnicity

Geographic variable	District and province
Educational background variables	A/L stream and O/L Mathematics grade
Early academic progression variables	Grades in Mathematics & Statistics for IT and Fundamentals of Programming
Progression variable	Achievement of the Diploma-level milestone

The BIT degree is structured across three academic years and six semesters, with a defined academic milestone associated with each year of study. These milestones and their relevance to the present analysis are shown in Table 2.

Table 2: BIT programme structure and progression indicator used in the study

Programme Stage	Academic Period	Academic Milestone	Status of the 23S2 Cohort at the Time of Analysis	Use in this Study
Year 1	Semesters 1–2	Diploma-level milestone	Eligible to achieve	Used as the indicator of early academic progression
Year 2	Semesters 3–4	Higher Diploma	Cohort was still in Semester 4	Not used as a completion outcome
Year 3	Semesters 5–6	BIT Degree	Cohort had not reached this stage	Not used as a completion outcome

At the time of analysis, the 23S2 cohort was in Semester 4 and was therefore not yet eligible to complete the Higher Diploma or the BIT degree. Accordingly, achievement of the Diploma-level milestone, defined as completion of all Year 1 subjects, was used as an indicator of successful early academic progression. Of the 719 students in the cohort, 157 students had achieved this milestone.

3.3 Dimensions of Analysis

Inclusivity was examined through age, gender, ethnicity, geographical location and prior educational background. Age was grouped into five categories: below 20, 20–24, 25–29, 30–39, and 40 years and above. Ethnicity was analysed using the categories Sinhala, Tamil and Muslim. Geographical reach was analysed by district and province, with participation from outside the Western Province used as an additional indicator because the University of Moratuwa is located within that province. Educational-background diversity was analysed using students' A/L streams. Early progression was examined through the demographic and geographical profile of students achieving the Diploma-level milestone. Academic achievement among these students was summarised using grades in two foundational modules: Mathematics & Statistics for IT and Fundamentals of Programming.

3.4 Data Analysis and Ethical Considerations

Descriptive statistics, primarily frequencies and percentages, were used to analyse three dimensions of inclusivity: diversity at enrolment, diversity among students achieving the Diploma-level milestone, and selected academic achievement indicators among milestone achievers. Detailed demographic comparisons of Diploma-level milestone-achievement rates are reserved for a separate focused study. All findings are reported in aggregated form, with student identifiers excluded. Ethnic and geographical data are used to describe representation and reach, not to make judgements about particular communities. The analysis identifies patterns of participation and early progression, but does not establish the reasons for enrolment or academic outcomes.

4. Inclusivity of Access in the BIT External Degree Programme

The findings are presented in two stages. First, the analysis examines inclusivity of access by considering the diversity of the full BIT cohort in relation to prior educational background, geographical location, gender, ethnicity and age. Second, the paper considers whether this diversity remains visible among students who achieved the Diploma-level milestone, supported by selected academic achievement indicators. This structure enables the study to distinguish between widened access and visible early progression, while avoiding claims about final programme completion.

4.1 Diversity of Prior Educational Background

A key indication of inclusivity in the BIT cohort is the diversity of students' prior A/L streams. Of the 719 students analysed, only 155 students (21.6%) entered from the Physical Science stream, while the remaining students came from Arts, Technology, Commerce, Bio Science and Common streams.

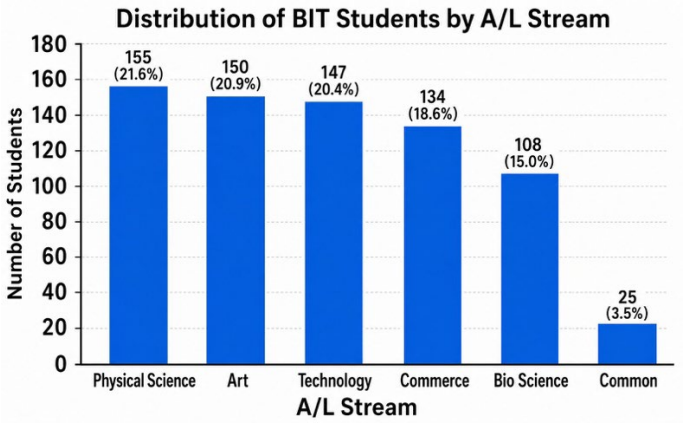


Figure 2: Distribution of BIT students by prior educational background, 23S2 cohort (N = 719).

Overall, 564 students (78.4%) entered from streams other than Physical Science. This finding is significant because it demonstrates that BIT participation is not concentrated among students from a conventional mathematics and physical science-oriented background. This contrasts with the published admission structures of several internal computing-related entry pathways, where eligibility depends on specified mathematics, physics or related subject preparation at A/L. By permitting entry from any A/L stream, the BIT external degree creates an alternative route into IT higher education for students from a wider range of prior educational backgrounds. Thus, the programme contributes to inclusivity by widening access beyond the educational pathways more commonly associated with internal computing-related programmes.

4.2 Geographical Reach

Geographical representation provides the strongest evidence of inclusive access within the BIT cohort. Students were represented from all nine provinces and 25 districts of Sri Lanka. Although the Western Province accounted for the largest share, it represented only 232 students (32.3%) of the cohort.

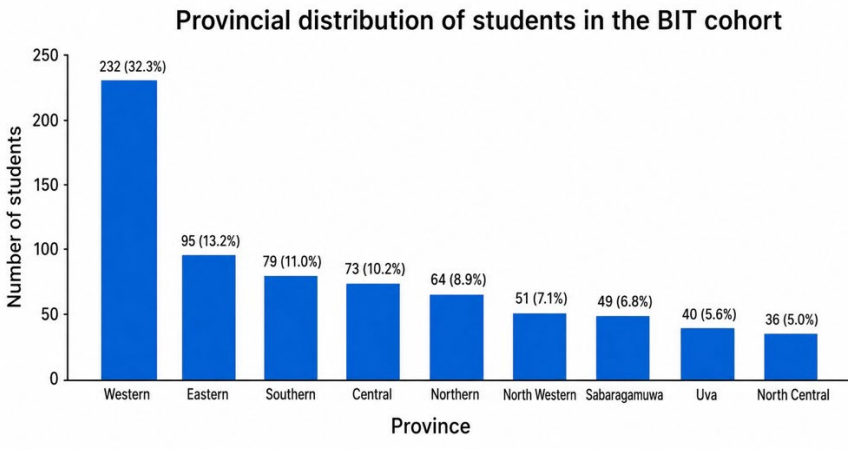


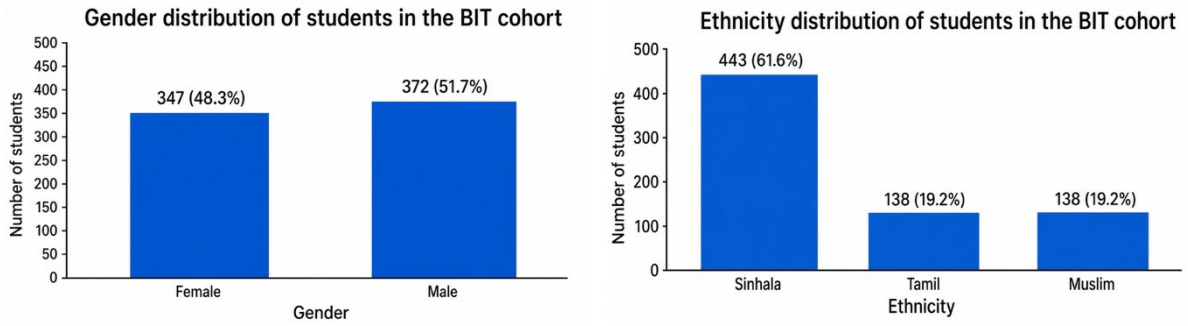
Figure 3: Distribution of BIT students by province of residence, 23S2 cohort (N = 719)

Within the cohort, 487 students (67.7%) resided outside the Western Province. This demonstrates that participation extends well beyond the province in which the University of Moratuwa is located. The district distribution further supports this finding. While Colombo was the most represented district, accounting for 123 students (17.1%), the remaining students were distributed across 24 other districts covering every province of Sri Lanka. This national distribution illustrates the potential of ODL to enable participation in IT higher education without requiring students to be located near the delivering institution.

These findings do not imply that all geographical or personal barriers have been removed. Although ODL reduces the need for continuous campus-based participation, students living at greater distances from the institution or managing other personal obligations may still experience challenges in sustaining study. Nevertheless, the BIT cohort demonstrates substantial national reach and provides strong evidence of geographically inclusive access.

4.3 Gender and Ethnic Representation

The gender distribution of the cohort was close to balanced. Of the 719 students, 372 were male and 347 were female, representing 51.7% and 48.3% respectively.



Figures 4 & 5: Gender and ethnic representation among BIT students, 23S2 cohort (N = 719)

This distribution is notable within an IT-related degree pathway. Gender participation patterns across fields of higher education in Sri Lanka have previously been identified as an important equity concern (Withanage, 2021). While the study does not include equivalent internal programme-level gender data, the substantial participation of both female and male students indicates that the ODL-based external pathway attracts learners across gender groups. The finding should be interpreted as evidence of representation, rather than as proof that gender-related barriers have been eliminated.

The cohort also included students from all three recorded ethnic categories. Sinhala students represented 61.6% of enrolment, while Tamil and Muslim students each represented 19.2%. Together, Tamil and Muslim students accounted for 38.4% of the cohort. This multi-ethnic participation, combined with representation from every province, demonstrates that access to the BIT programme extends across different communities and regions.

4.4 Age Representation

The cohort was predominantly composed of younger learners, with 576 students (80.1%) aged between 20 and 24 years at the beginning of BIT study. Nevertheless, 122 students (17.0%) were aged 25 years or above, including 52 students (7.2%) aged 30 years or above.

Age provides supporting rather than central evidence of inclusivity. The distribution does not indicate broad balance across age categories, since most students were within a conventional undergraduate-age range. However, the participation of students aged 25 years and above indicates that the BIT pathway also accommodates a meaningful group of adult learners.

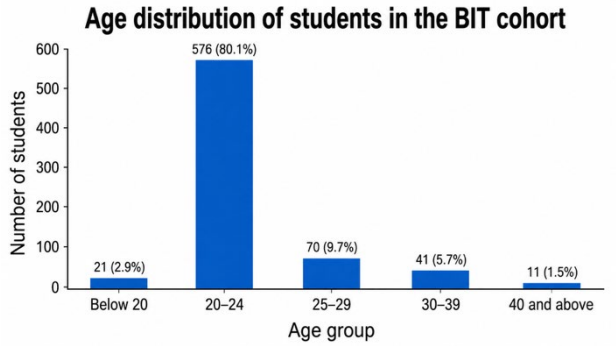


Figure 6: Age distribution of BIT students at enrolment, 23S2 cohort (N = 719)

5. Inclusive Early Progression and Academic Achievement

Having established the diversity of access within the full BIT cohort, this section considers whether inclusivity is also visible in early academic progression. The analysis does not compare achievement rates across demographic groups; rather, it examines whether students from varied backgrounds are represented among those achieving the first formal academic milestone of the programme.

5.1 Diploma-Level Milestone Achievement

As the 23S2 cohort was in Semester 4 at the time of analysis, Higher Diploma and full degree completion could not yet be assessed. Accordingly, this study uses achievement of the Diploma-level milestone, defined as completion of all Year 1 subjects, as an indicator of early academic progression. At the time of analysis, 157 of the 719 students (21.8%) had achieved this milestone. The 21.8% achievement rate should be interpreted as an interim early-progression indicator rather than a final measure of cohort completion. It represents students who had completed all Year 1 requirements either within the allocated first two semesters or after completing outstanding Year 1 subject requirements during Semester 3. Since the cohort was still active, more students may complete the remaining Year 1 requirements in later semesters and subsequently become eligible for the Diploma-level certificate. Therefore, the Diploma-level milestone is used to identify students who had achieved early completion of Year 1 requirements by the time of analysis, rather than to classify the remaining students as unsuccessful.

5.2 Diversity Among Diploma-Level Milestone Achievers

Diversity observed at enrolment remained evident among milestone achievers. Of the 157 students reaching the Diploma-level milestone, 87 were female (55.4%) and 70 were male (44.6%).

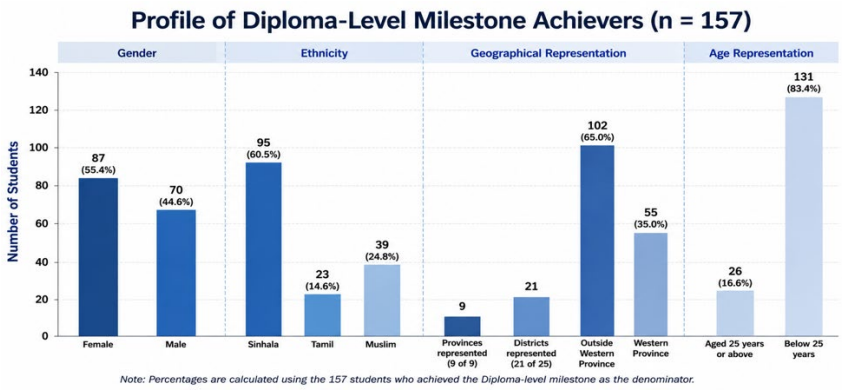


Figure 7: Profile of students achieving the Diploma-level milestone at the time of analysis (n = 157)

All three recorded ethnic groups were represented: 95 Sinhala, 39 Muslim and 23 Tamil students. Geographical representation was also sustained, with milestone achievers drawn from all nine provinces and 21 districts. Of these students, 102 (65.0%) resided outside the Western Province. Adult learners were represented to a lesser extent, with 26 students (16.6%) aged 25 years or above.

These results provide preliminary evidence that demographic and geographical diversity in the BIT programme is not limited to enrolment, but is also visible among students achieving early academic progression.

5.3 Selected Academic Achievement Indicator

Academic achievement among milestone achievers was examined through two foundational modules: Mathematics & Statistics for IT and Fundamentals of Programming. In these modules, 120 students (76.4%) and 121 students (77.1%), respectively, obtained grades within the A or B ranges. In addition, 33 milestone achievers (21.0%) had obtained C or D grades in O/L Mathematics. This suggests that early academic progression in the BIT programme was not restricted only to students entering with the strongest prior mathematics background.

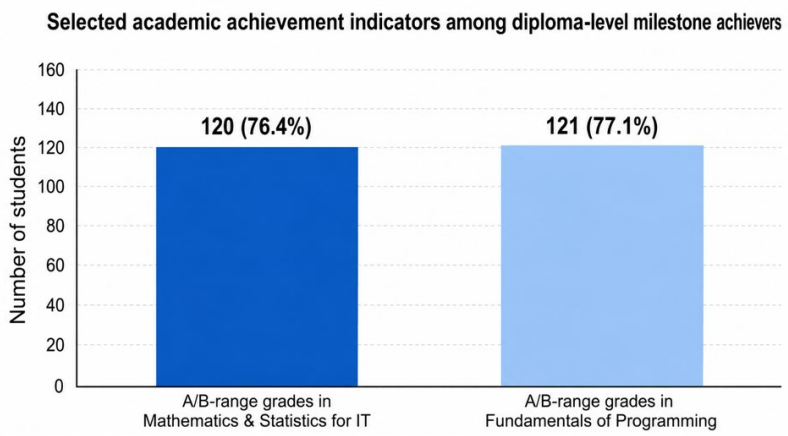


Figure 8: Selected academic achievement indicators among Diploma-level milestone achievers (n = 157)

5.4 Representation Summary

Table 3: Diversity at enrolment and among Diploma-level milestone achievers.

Dimension	Full Cohort, N = 719	Diploma-Level Milestone Achievers, n = 157	Interpretation
Gender	Female: 347, 48.3% Male: 372, 51.7%	Female: 87, 55.4% Male: 70, 44.6%	Both genders were substantially represented at enrolment and among milestone achievers.
Ethnicity	Sinhala: 443, 61.6% Tamil: 138, 19.2% Muslim: 138, 19.2%	Sinhala: 95, 60.5% Tamil: 23, 14.6% Muslim: 39, 24.8%	All recorded ethnic groups were represented among students achieving early progression.
Province	9 provinces represented	9 provinces represented	National representation remained visible among milestone achievers.
District	25 districts represented	21 districts represented	District-level diversity remained visible among milestone achievers.
Residence outside Western Province	487, 67.7%	102, 65.0%	Early progression was visible among students outside the institution's province.
Age 25 and above	122, 17.0%	26, 16.6%	Adult learners remained represented among milestone achievers.
A/L stream	6 streams represented	6 streams represented	Students from all recorded A/L streams achieved the Diploma-level milestone.

Table 3 shows that the diversity observed at enrolment was also visible among students achieving the Diploma-level milestone. Both female and male students, all recorded ethnic groups, students from all provinces, students from outside the Western Province, adult learners and students from all recorded A/L streams were represented among milestone achievers. This does not measure group-specific achievement rates, but it demonstrates that early progression was not limited to a single demographic, geographical or educational-background category.

6. Discussion

6.1 Broadening Access to IT Higher Education

The findings indicate that the BIT external degree widens access to IT higher education, particularly through the diversity of students' prior educational backgrounds. More than three-quarters of the cohort entered from A/L streams other than Physical Science, including Arts, Commerce, Technology and Bio Science. In contrast to internal computing-related pathways that commonly require mathematics or physics related A/L preparation, BIT enables entry from any A/L stream subject to its O/L Mathematics requirement. The programme therefore complements conventional internal provision by creating an IT education pathway for a broader academic population. This interpretation is limited to differences in entry structures and access pathways and it does not imply that the present study compares academic outcomes between BIT students and internal-degree students.

6.2 National Reach and Diverse Participation

Geographical reach provides the strongest evidence of inclusivity in the programme. Students were represented from all nine provinces and 25 districts, while 67.6% of those with valid residence data lived outside the Western Province. This demonstrates the relevance of ODL in extending access beyond learners located near the university. The same geographic spread remained visible among students achieving the Diploma-level milestone. Milestone achievers represented all nine provinces and 21 districts, with 65.0% residing outside the Western Province. This suggests that national reach is evident not only at enrolment, but also among students achieving early academic progression.

6.3 Gender and Ethnic Representation

The BIT cohort also demonstrated broad participation across gender and ethnicity. Female students represented 48.3% of enrolment, while male students represented 51.7%, indicating near-balanced gender participation in an IT-related degree pathway. Female and male students were also both substantially represented among Diploma-level milestone achievers. Students from all three recorded ethnic groups were represented in the cohort, with Tamil and Muslim students together accounting for 38.4% of enrolment. Furthermore, Sinhala, Tamil and Muslim students were all represented among those achieving the Diploma-level milestone. These findings indicate that participation and early progression in BIT extend across multiple recorded ethnic communities.

6.4 Beyond Enrolment: From Access to Early Progression

Inclusivity should be reflected not only in enrolment, but also in students' ability to make academic progress. As the cohort had not yet reached eligibility for full degree completion, the Diploma-level milestone provides an appropriate early indicator. Diversity remained present among milestone achievers, while more than three-quarters achieved grades in the A or B ranges in both selected foundational modules. These results provide initial evidence that wider access through BIT is accompanied by meaningful early progression. The importance of supporting successful progression in ODL has also been identified in studies involving Sri Lankan open and distance higher education provision (Zuhairi, Karthikeyan and Priyadarshana, 2020).

The analytical summary of enrolment and milestone-achiever profiles strengthens the paper's inclusivity argument. Diversity was not only evident at entry; it also remained visible among students achieving the first formal academic milestone. This is important because inclusive access alone does not necessarily imply inclusive progression. In the present cohort, students from varied gender, ethnic, geographical, age and educational-background categories were represented among those who achieved the Diploma-level milestone. However, the paper does not interpret these patterns as group-specific achievement rates, as detailed demographic comparisons are reserved for a separate focused study.

6.5 Implications for ODL Provision

The BIT experience suggests that ODL can complement conventional internal higher education by widening entry routes, supporting nationally distributed participation and enabling early progression among diverse learners. For institutions seeking scalable approaches to inclusive technology education, the findings highlight the value of flexible admission pathways together with continued monitoring of student progression and academic achievement.

7. Limitations and Future Research

This study examines an active cohort and therefore assesses enrolment diversity and Diploma-level early progression rather than final degree completion. Its comparison with internal degree programmes is contextual, based on published admission conditions rather than equivalent student-level data. In addition, the dataset does not capture personal circumstances that may shape access and progression, such as employment, family responsibilities, disability or reasons for selecting ODL. Future research should follow the cohort through Higher Diploma and degree completion, examine Diploma-level milestone achievement across demographic groups, incorporate students' experiences of access and progression, and conduct direct comparisons with internal degree cohorts where comparable data become available.

8. Conclusion

This study examined inclusivity in the BIT external degree programme offered through ODL by CODL, University of Moratuwa, using data from the 719 students of the 23S2 intake. The programme demonstrated strong geographical and educational-background diversity: 78.4% of students entered from A/L streams other than Physical Science, learners represented all nine provinces and 25 districts, and more than two-thirds of the students lived outside the Western Province. Near-balanced gender participation and representation from all recorded ethnic groups further demonstrate broad participation within the programme.

Inclusivity was also visible in early progression. Although the cohort had not yet reached eligibility for final degree completion, 157 students had achieved the Diploma-level milestone by completing all Year 1 requirements. These students represented both genders, all recorded ethnic groups and every province, while selected foundational-module outcomes provide preliminary evidence of meaningful early academic progression. The comparison with internal pathways is contextual rather than student-level. Nevertheless, the findings indicate that the BIT external degree complements conventional provision by extending access to IT higher education for learners from broader educational backgrounds and geographically distributed communities.

Ethics Declaration

This study used anonymised institutional administrative data analysed at aggregate level. No personally identifiable student information is reported, and the analysis involved no direct interaction with participants or intervention in their learning. Ethical clearance was not required for this descriptive analysis under the applicable institutional requirements. Permission to use the anonymised programme data was obtained through the relevant institutional authority.

AI Declaration

Generative AI tools were used to assist with language refinement, structural organisation and editorial review of the manuscript. All research decisions, data interpretation, verification of results, selection of references and final approval of the manuscript remain the responsibility of the authors. No AI tool was used to generate, alter or fabricate the underlying institutional dataset or reported numerical findings.

References

Butcher, J. and Rose-Adams, J. (2015) 'Part-time learners in open and distance learning: Revisiting the critical importance of choice, flexibility and employability', Open Learning: The Journal of Open, Distance and e-Learning, 30(2), pp. 127–137. doi:10.1080/02680513.2015.1055719.

Jayatilleke, B.G. and Kulasekera, G.U. (2020) 'Forty years of distance education: Challenges and implications at the Open University of Sri Lanka', Open Praxis, 12(3), pp. 311–327. doi:10.5944/openpraxis.12.3.1122.

Stone, C. (2019) 'Online learning in Australian higher education: Opportunities, challenges and transformations', *Student Success*, 10(2), pp. 1–11. doi:10.5204/ssj.v10i2.1299.

Tait, A. (2013) 'Distance and e-learning, social justice, and development: The relevance of capability approaches to the mission of open universities', The International Review of Research in Open and Distributed Learning, 14(4), pp. 1–18. doi:10.19173/irrodl.v14i4.1526.

Withanage, D.P. (2021) 'Gender equality in education in Sri Lanka', *Sri Lanka Journal of Educational Research*, 19(1), pp. 48–69.

Yang, D., Tang, Y.M., Hayashi, R., Ra, S. and Lim, C.P. (2022) 'Supporting inclusive online higher education in developing countries: Lessons learnt from Sri Lanka's university closure', Education Sciences, 12(7), article 494. doi:10.3390/educsci12070494.

Zuhairi, A., Karthikeyan, N. and Priyadarshana, S.T. (2020) 'Supporting students to succeed in open and distance learning in the Open University of Sri Lanka and Universitas Terbuka Indonesia', Asian Association of Open Universities Journal, 15(1), pp. 13–35. doi:10.1108/AAOUJ-09-2019-0038.