Navigating the Leap: Understanding First-year Computing Students' Journey into Higher Education.

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Abstract.

This study aims to investigate the transition experiences of first-year computing students, focusing on factors that may inhibit their engagement and contribute to issues around retention and ultimately lead to non-progression. By examining the experiences of both traditional and non-traditional students from diverse backgrounds, this research seeks to understand the challenges faced by students in navigating higher education. A qualitative descriptive design was adopted. Insight into students' experience were sought through focus group sessions with students midway through their first semester of their first year of studies. Data was analysed using reflexive thematic analysis. Four themes emerged; Early student engagement and peer dynamics, Maths struggles and finding support, Impact of Administrative and In-Class Communication, and Engagement and Interaction in the Learning Environment. The study highlights the importance of addressing educational inequality and implementing appropriate structures and supports to ensure successful student transitions and outcomes.

Keywords: Engagement; First-year computing students; Retention; Transition experience.

1. Introduction.

A primary focus of this study is to investigate the transition experience (academic, social and identity adjustments students make when moving from secondary to higher education or returning to formal learning) of students in their first year of computing studies. This focus is particularly relevant as Computing students continue to experience high levels of non-progression. Within this context, the study explores how different student groups navigate the transition into higher education. As access to higher education widens, non-traditional students are entering third level in growing numbers. The research examines the academic and social adjustments of both traditional and non-traditional Computing students, identifying barriers to engagement that impact progression and examining how communication, academic support, and classroom interaction shape early experiences. While existing research on progression has frequently considered higher education more broadly, there has been limited focus on the specific experiences of Computing students. This paper addresses that gap by situating retention and transition explicitly within the Computing discipline and examining how student background intersects with the particular challenges of Computing education. Our approach is twofold: (1) to examine the early transition experiences of first-year Computing students at SETU, and (2) to explore how these experiences differ for traditional and non-traditional students. In doing so, we highlight both the discipline-specific challenges and the broader access and inclusion issues that shape the diverse student body in Computing.

Over the past several years student retention and non-progression have been a central focus in the education and policy-making communities (Dheeraj & Schumacker, 2015; Higher Education Authority, 2018). First-year students are the cohort most likely to discontinue their higher education studies (Mooney et al., 2010) highlighting the particular importance of retention efforts in first year. Recent Higher Education Authority (HEA) figures indicate that 15% of first-year students did not progress to second year in 2021/22, with non-progression particularly high among males, students from disadvantaged backgrounds, and those enrolled on Level 6 and 7 programmes. First-year students face a range of challenges as they transition from the structured environment of secondary school to the more autonomous one at third level. While non-progression is a challenge across all disciplines, it is particularly pronounced in Computing. National data from the HEA consistently show that Computing and ICT programmes experience higher than average first-year attrition rates (Higher Education Authority, n.d., 2024). Related figures in Table 1 have been extracted from an '*Analysis of Non-Progression among Higher*

Education New Entrants in Ireland, 2016/17 to 2021/22' (Higher Education Authority, 2024) and the Non-Progression and Completion in Irish Higher Education HEA dashboard (Higher Education Authority, n.d.).

Table 1. Non-progression among higher education new entrants.

Category	2017/18	2018/19	2019/20	2020/21	2021/22
Level 7					
National non-progression	25.5%	23.6%	18.5%	25.0%	31.5%
SETU non-progression	35%	27%	25%	26%	33%
ICT SETU non-progression	30%	24%	30%	28%	35%
Level 8					
National non-progression	10.8%	9.6%	7.5%	10.7%	13.5%
SETU non-progression	15%	14%	12%	15%	15%
ICT SETU non-progression	23%	16%	30%	33%	21%

In light of these national patterns, this study focuses on the Department of Computing and Mathematics at South East Technological University (SETU). Nationally, ICT non-progression rates are above the overall higher education average, and SETU reflects this trend, with its ICT programmes showing consistently higher non-progression rates over the past five years (Table 1). SETU therefore provides an important context in which to explore the transition experiences of first-year Computing students and the factors influencing their engagement and progression.

However, retention is a complex and multifaceted issue. The student body has become increasingly diverse due to policies that promote widening participation and access to higher education. Within this landscape, traditional and non-traditional students often have differing educational pathways, levels of preparedness, and personal responsibilities. Non-traditional students, typically aged 23 or over and entering higher education after time away from formal education, may also juggle employment, family, and financial responsibilities that shape their academic experience (Choo et al., 2019; National Center for Education Statistics, 1997).

Traditionally in Ireland, the Institute of Technology (IoT) sector has had higher participation from non-traditional students than the university sector, serving as an important access route for diverse learners (Houghton, 2020). Although many IoTs have since been reclassified as Technological Universities (TUs), their widening-access role remains largely unchanged. Some of the

literature cited in this study predates this transition, but the institutions discussed now sit within the TU sector. South East Technological University (SETU, formerly Waterford Institute of Technology and Carlow Institute of Technology until 2022) continues to have a significant non-traditional student representation with an average of 40% of students over the past 5 years being non-traditional students (Higher Education Authority, n.d.). In particular, SETU has large representation of mature students and first-generation students from low-income families.

Given this diversity, understanding the transition experiences of Computing students requires attention to both discipline-specific challenges and the broader structural barriers faced by students from non-traditional or disadvantaged backgrounds. These intersecting factors influence students' early academic and social adjustment, their sense of belonging, and ultimately their likelihood of progression.

Against this backdrop, the present study investigates how first-year Computing students at SETU navigate the transition into higher education, and how these experiences differ for traditional and non-traditional learners. The goal is to identify barriers to engagement that impact progression and to understand how communication, academic support, and classroom interaction shape early experiences of Computing education. In doing so, this work contributes to a more nuanced understanding of retention and transition within a discipline that remains critical for national skills needs but continues to face challenges in student progression.

2. Method.

This qualitative research study focuses on exploring student perspectives of their first-year experience at third level, specifically with a view to understanding factors that might influence student progression. Qualitative descriptive studies offer a comprehensive summary of an event in the everyday terms of those events. A qualitative descriptive approach was used as this is thought to be particularly useful through the provision of rich, straightforward and factual explanations for different perspectives that provide invaluable insight into the student experience (Maxwell, 1992; Sandelowski, 2000). Focus groups were adopted in the qualitative design approach. Focus groups create open lines of communication and allow participants to interact and discuss issues with each other to produce data that would be difficult to gather through other approaches (Casey & Krueger, 2009). Moderators play a role in facilitating focus groups and ensure that the conversation remains on track while encouraging the participation of all those present. In order to understand and represent students' experiences, reflexive thematic analysis

of the focus group data was conducted using the model described by Braun and Clarke (Braun & Clarke, 2022) to develop, analyse and interpret patterns across the qualitative data set. Reflexive thematic analysis emphasises the role of the researcher in the generation of themes where the subjectivity of the research is a primary tool for the reflexive thematic analysis and a valuable source to draw upon. This method was selected for its flexibility and its suitability in capturing both shared meanings and nuanced variations in students' accounts. It enabled a flexible yet systematic examination of how traditional and non-traditional students make sense of their transition into higher education during the critical early weeks of their first semester.

2.1 Data collection.

After the first six weeks of their first term of study (week 6 of 12) first-year students who consented to participate in the project were invited to participate in focus groups at lunch time sessions that did not clash with their timetable. Focus groups were conducted by two lecturers (one female; one male) from the department who had not been previously involved in teaching the study cohort. Students were given sandwiches and drinks at the beginning of each focus group and a €5 canteen voucher as a gesture of thanks for their participation. Of the 147 first-year students who opted in to the project, many were reluctant to engage in the focus groups. Students were emailed invitations however some scheduled focus groups had no participants. Students enrolled on the National Framework of Qualifications (NQF (National Framework of Qualifications, n.d.)) level 7 courses were less willing to engage than those enrolled on the NQF level 8 courses. Students were personally contacted (pre or post lectures) and once again invited to participate. More students were recruited in this manner however there was still a reluctance of level 7 students to engage with the focus groups. During the recruitment stage a number of students requested to bring a friend along with them, which was permitted as the focus group aimed to be an informal discussion around the students experience in first year. Data was collected over the course of 4 focus groups, each comprising of 5 to 7 participants. Focus group participants demographics are summarised in Table 2.

Table 2. Focus group student breakdown.

Focus group	Non-traditional students	Traditional students
1	3	4
2	2	3
3	2	3
4	3	3

In order to encourage student participant comfort, all focus groups began with asking the students '*how the first 6 weeks of term were going'*. Subsequently, several areas were targeted in the discussion relating to what worked well, what was not working well, what could be done differently and what could be improved and how (Appendix A). A flexible approach was used in order to allow participants to identify salient topics and talk openly (Silverman, 2013). This helped to maintain focus on the important experiences from their first-year studies. Focus groups lasted between 1h 15min and 1h 30min.

2.2. Data analysis.

Data was analysed using reflexive thematic analysis (Braun & Clarke, 2022). Immersion in the data took place by both authors who listened to the recordings numerous times.

Data was coded by the lead author and reviewed by the second author. Major themes were then generated from identified codes. These themes were discussed, refined, and reviewed before final write-up. Rigour was maintained by adhering to the principles outlined by Lincoln and Guba (Lincoln & Guba, 1985). Credibility was enhanced by researchers participating in an intense focus group training course before leading the focus groups. An audit trail was maintained to track decisions.

2.3. Ethics.

Ethical approval was granted by SETU's Research Ethics Committee. All first-year students were contacted via email and alerted to the project and an information sheet on the study was provided. Consent forms were completed prior to participating in the focus groups. All data was stored according to General Data Protection Regulation guidelines. Data from the focus groups was transcribed by the research team. Once transcription was complete, recordings were destroyed. Anonymised data was stored on a password-protected, encrypted laptop.

3. Results.

The four themes that emerged from the data are summarised in Table 3. Extracts from participants transcripts are provided to illustrate the themes.

Table 3. Summary of focus group findings.

Theme 1 Early student engagement and peer dynamics
Theme 2 Maths struggles and finding support
Theme 3 Impact of Administrative and In-Class Communication
Theme 4 Engagement and Interaction in the Learning Environment

3.1 Early student engagement and peer dynamics.

Student participants reported on their own transition process and their perception of the transition process of other students in their course groups over the first half of term. Students' general feelings toward their early '*social and cultural*' experiences in their first year of studies were very positive. Participants agreed that the induction experience provided by student support services was positive, with academic advice, mental health resources, and general guidance all playing a key role. The '*warm and welcoming*' community highlighted a supportive environment which helped make the transition process feel easier. After six weeks students were still adapting to their new learner identity and to bedding with their student peer groups. Traditional student participants felt positive about the new lack of structure ('*Not asking for toilet*', '*wearing your own clothes and no one cares what you look like'*, '*treated like a person'*, '*likeminded people*') and the increased level of independence in their lives in comparison to their second level experience while some also expressed adapting to living away from home for the first time. They spoke about their perceived lack of support in secondary school.

> *"There was no support in secondary school, it was so stressful so this is a really positive change. There is far more independence ...and lots of support*."

Traditional student participants agreed that the change to third level was a positive one.

> *"It's a lot better than secondary school, a different approach. Even the way the teachers teach, it's all more precise. We know why we do what we do."*

However, they also expressed difficulty adapting to the expectation of increased learner independence.

> *"I came straight from secondary school. I find lecturers different from teachers.... lecturers are saying you don't need to be spoon fed so they don't have to answer questions and refuse to answer any questions, because this is third level."*

Non-traditional students noted the increased difficulty in juggling various aspects of life ('*hard to manage college and family*', '*difficult balance when you have bills to pay*'), however overall, they reported a positive transition experience.

> *"I came back to school after 20 years so it is scary and sometimes I wonder why I am doing this. It is overwhelming and kind of runs the wrong way but overall I'm positive about my experience here*."

Student participants reported some negative feelings around peer relationships due to the lack of engagement and poor class attendance they were witnessing from some of their peers in their class groups. They expressed feelings of frustration noting attendance issues over the first few weeks of term and said they found it difficult witnessing peers losing motivation followed by their drop off. A feeling of unfairness was also evident, as students attending classes and engaging with the first few weeks of the semester, felt they were putting in effort while they observed less commitment from some of their peers. One non-traditional student noted.

> *"They would turn up and expect you to show them everything and do everything for them and I just think well you should come in like."*

Non-traditional students expressed belief that their own positive engagement habits had been formed by many of their experiences prior to arriving at third level. They noted their own sense of different levels of engagement between '*mature students*' (non-traditional students) and those coming '*straight in from second level*' (traditional students). A second non-traditional student remarked.

> *"They just can't be bothered. I come every day and I live at home."*

When student participants were questioned on their understanding of the reasons behind the behaviour of some of their peers, one participant went on to say.

> *"There's one of my friends and he moved away from home, and he just comes in when he feels like it as he doesn't have his mam telling him to do. And there are others living at home and they couldn't be bothered. They are not interested. They don't have the motivation."*

When probed further about possible reasons for lack of engagement, student participants did not express having a clear understanding of why some students decided not to engage with their third-level experience, however they had a very clear picture of what helped form their own positive engagement habits.

> *"I need this degree to get a good job. You miss one day and then you fall behind so much if you miss one tiny thing."*

3.2 Maths struggles and finding support.

Both traditional and non-traditional students expressed positive feelings around the beginning of their third-level journey despite their own starting points being markedly different. One traditional student noted

> *"No assumptions of prior learning, (the lecturer) just assumes that you don't know. It follows on quite nicely from secondary school, but it starts up at a nice level and it doesn't assume that you know a lot. You don't need anything coming into it and I really appreciate it."*

While a non-traditional student noted a similar feeling towards the beginning of their learning journey.

> *"I was pleasantly surprised to see that everyone was starting at the same level. And everything was explained from a base level. That's really helpful. The transition was actually much better because of that."*

When conversations focused on academic and in-class topics, student participants agreed that mathematics was the subject causing most concern as it was the subject causing the most difficulty. Levels of difficulty were most prevalent for those nontraditional learners who had not had any experience with the subject in the past number of years.

> *"I came in from further education so it's been a year since I even looked at Maths ...It's tough. So much in it I get lost. A lot to cover, but I suppose that is my issue."*

Another non-traditional student reported

> *"I generally need more time....You know, I've been out of college so I'm trying to remember stuff. I need more time."*

Traditional students noted a mix of feelings towards maths, with some students enjoying the subject more than they had done previously in second level.

> *"I hated maths in school it was my least favourite subject.... I like it here though"*

While other students noted the change to and expectation of more independent learning expectation in comparison to what they experienced in a second level setting.

"When I go home and study .... I get confused easily."

The Computing and Mathematics Learning Centre is a support service available to all students from week one of term. When questioned about the use of the Computing and Maths Learning Centre by those who felt they needed extra support, in the first six weeks of semester approximately half of the students attending focus groups had engaged with the centre, with most NQF level 8 students who participated in the focus groups having used the centre at least once and many having used it consistently over the six weeks. Students that had used the centre described the support as invaluable. 'It's a no brainer' one remarked, capturing the general sentiment. The centres accessibility for help was really appreciated. One student noted

"If you don't understand something practical you can always get help in the maths learning centre. It's great."

A second student similarly observed

"You can easily get help from the maths learning centre and they help you a lot."

Non-traditional students especially valued the support, with one explaining how it bridged gaps in their academic journey.

"Purely because I am mature, I haven't done maths for a long time, it is challenging. I'm very thankful for the maths learning centre. It is a crutch for me."

Most students were aware of the centre and the services that were offered there. There was less use of the centre among NQF level 7 students, with one focus group of all level 7 students reporting no use of the centre among student participants. When asked why they hadn't used the centre's services, responses varied based on students' perceived needs. One student noted.

"I need extra resources but so far I am getting them myself with YouTube etc."

While a second student remarked

"I haven't gone yet but I might start going now as I feel like I need that extra bit of help."

It was clear that the need to use the centre was present, however there was a reluctance among some students, in particular NQF level 7 students to engage, despite the need for extra support. When questioned on this reluctance, one participant suggested it was a possibly due to a lack of familiarity with the centre or those that provided support there. Some students noted if there was an established relationship between students and the centre tutors, it may encourage more use of the centre.

> *"If you guys were there I'm pretty sure at least half of the class will be there, because they are not saying it but I could see that they are having the same issues, especially some of them who haven't done stuff like that. There is so much information being thrown to them that they are blanking out."*

3.3 Impact of administrative and in-class communication.

Discussions around administrative and in-class communications were central in focus group discussions. Unclear communication around class schedule processes and timetables caused frustration in the early weeks as student participants tried to navigate through their new landscape. Within the class setting, student participants reported that the establishment of clear communication by lecturers early on lead to positive transitioning experiences.

3.3.1 Administrative communications.

In the first six weeks of term traditional student participants reported difficulties around administrative communications. At times student participants found communication unclear and this created uncertainty around the processes they had to follow. One student noted

> "[one lecturer said] *'oh the assignment is online', without going into any detail and then there is a date wrong and it was changed without any communication ...they don't tell us, where as in school you were told everything"*

At times, when communication was not clear both traditional and non-traditional student participants reported that this had caused difficulty in their first six weeks of term.

It was noted that good communication was essential for making the transition as smooth as possible and to avoid creating any barriers to engaging with their studies in the first few weeks. Students also reported occasional disruptions to scheduled classes, noting that communication around unforeseen timetable changes could sometimes be unclear. Participants expressed that more timely updates would help reduce uncertainty when unexpected changes occur.

> *"....no one knew what was going on"*

Evidence of a lack of a standardised approach to dealing with issues such as class cancellations became apparent when the level of communication around such issues differed across student groups attending the same lecture.

> *"All of my class showed up and none of (the other class) showed up. I find that weird."*

Without prompt, students believed that an easy fix for such issues should be easy to put in place.

> *"We had no lecturer for the first few weeks which was stressful ...we don't find out (officially) we just know that (they are) not there. So better communication between students and staff (would solve that problem)."*

3.3.2 In-class communication.

Alongside student participants reporting issues around administrative communication, in-class communication was a central talking point in focus group discussions. During the initial six weeks, student participants developed a very clear understanding of communication that functioned well within classroom environments.

> *"A few lecturers ...their delivery is awful ...poor delivery ...and then you have a few that are brilliant."*

Participants described the process of navigating through diverse communication styles used by their lecturers and recognising interactions that help increase engagement. Student participants noted a number of approaches that worked well for them.

> *"The lecturer goes through a topic. First writes it down, then we write it down and then explains it and then does several examples. I'll be honest, it is by far the best one.*
> *(Our lecturer) explains things clearly at a good pace with details and (tells us) what to look out for."*

Student participants also reported on what they believed did not work well within the classroom environment and noted what they felt made the learning experience more difficult. At times, basic communication within the class setting caused extra hurdles and resulted in feelings of stress and frustration. Among the issues contributing negatively to their experience were fundamental issues that student participants thought could be easily resolved.

> *"Bad writing on the board - it is very distracting ...it makes me prone to making errors in (my) notes."*

> *"The quality of markers are important with presentations on the board"*

Issues were also reported due to the unclear presentation of lecture content and the insufficient responsiveness to questions posed by students.

> *"The lecturer I have goes through notes, gets confused and doesn't know what is going on."*

Some student participants also recalled their frustration around the absence of procedures around addressing student questions in a classroom setting.

> *"I put my hand up in a practical and then they went around to every single person and came to me last, so I was sitting for a half an hour and getting stressed"*

When the lecturer effectively communicated the module goals with the students, it helped to align the students' efforts with the course objectives, helping them to approach their studies

more clearly. This proactive approach to communication seemed to help build positive student-lecturer relationships and also contributed to a more positive learning environment.

> *"Our lecturer tells us from the very start, if you cant finish the exam you will get marks if you get to a certain point and that is great."*

> *"Doesn't emphasise the right answer, just how to get there. The focus is on the process"*

3.4 Engagement and interaction in the learning environment.

Student participants experienced positive engagement with their studies due to the active interaction of lecturers during class sessions emphasising the strategies their lecturers used in creating a positive learning environment.

> *"Our lecturer writes it on the board and does not let us move on until we have explained it all back to them. I really like the lectures for that reason. It is very interactive."*

> *"The effort [they make] is really appreciated ...they look out for details we might ask, they are pre-emptive and very prepared."*

Interactions involved not only lecture delivery but also engagement in discussions, answering questions, and providing feedback and structure.

> *"(Our lecturer) interacts with our questions ...this takes the pressure off...."*

It was clear from the student participants that limited interaction and engagement from a lecturer with class groups had a negative impact on student engagement. This lack of interaction encompassed various aspects, such as minimal participation in discussions, limited opportunities for collaborative activities, and insufficient feedback. As a result, students reported feeling disengaged and less motivated to actively participate in the learning process.

> *"No interaction. Just talking and writing. So boring."*

The students also reported on a positive classroom atmosphere reflecting the lecturer's accessibility, warmth, and willingness to engage in communication.

> *"Some lecturers are friendly and approachable and it makes some difference"*

Student participants felt that they would benefit from more discussion or increased engagement between the student and lecturer, and noted that even though this was spoken about in certain classes, there was a lack of structured follow through in this action

> *"They say ask questions, but then when you ask a question, they seem to panic for a second ...and rush off and find the answer and it comes out all jumbled."*

Participants found more enjoyment in modules where they actively engaged and openly discussed the material.

> *"They make the environment more interesting. We can engage more and we can express questions and the lecturer will actually answer every question whether or not it is in the book."*

Dynamic exchanges helped foster a sense of involvement and enthusiasm among students.

> *"I find the modules I like are the ones where the lecturer is actually open to a discussion...making people talk to suggest things. I really like that"*

Participants expressed frustration when the lecturer moved on without leaving time for students to digest and interact with the content as it was covered. One student participant noted

> *"We can ask questions, it's just usually that there doesn't seem to be a right time. Because anytime I'll be thinking or asking a question and they will say something else, so it doesn't feel like we are fully able to ask a question"*

At times they felt the lecturer did not give space and time to engage with their questions fully.

> *"It would be good if the lecturer stopped and considered the question before rushing off into something else."*

Students reported variability in the level of interactivity across different teaching sessions. Some students described highly interactive sessions that supported deeper engagement, while others described more lecture centred approaches that they found less effective.

> *"Some days I could do that class - reading from the slides is just not engaging enough. We watched a video and them we started to debate it and we were shut down"*

Another student continued to say

> *"[The lecturer] just want to look at PowerPoint.... no engagement in the class and not looking for a logical response...but we just can't learn experiences from a book "*

However, a student participant from another teaching session expressed a different experience of the module

> *"Our lecturer stuff with us off the books but relevant to what we need and I find it engaging."*

In line the desire for increased interaction and engagement in a class setting, when prompted on what changes could be made to increase engagement, student participants requested more practicals and less lectures as they experienced more satisfaction from practicals due to a more active learning environment.

> *"I learn more in the practical ...I don't like the lectures. When I go home, I'm kind of like, I don't even remember what it is, whereas when I do it myself, I remember. "*

Another student participant went on to suggest a reordering of lectures and tutorials might help benefit the learning process

> *"it's hard to pick things up in lectures. If you are doing it out and then have the lectures as a recap that makes more sense."*

4. Discussion.

This section synthesises key findings from first year computing students transition experiences, structured around four themes; Early student engagement and peer dynamics, Maths struggles and finding support, Impact of Administrative and In-Class Communication, and Engagement and Interaction in the Learning Environment. The analysis connects these findings to existing literature of tertiary transitions and compares also compares them with parallel insights from a second-year cohort (Hennessy & Murphy, 2023). Transition among different student groups was a key focal point of discussion among participants, who shared insights into their own experiences and perceptions of their peers' transition experience during the initial six weeks of the semester.

Overall, students conveyed positive sentiments regarding their early social and cultural experiences in their first year of studies. They emphasised the welcoming and supportive atmosphere during the induction period, noting that the student support services played a crucial role in easing the transition process. However, despite this positivity, many students, both traditional and non-traditional learners, acknowledged ongoing challenges in adjusting to their new learner identity and the increased independence it demanded. Traditional students highlighted their freedom and independence in comparison to their secondary school experience, while also acknowledging the need to adjust to living away from home for many for the first time. They appreciated the support available during their first six weeks in contrast to what they perceived as a lack of support in secondary school. However, some traditional students expressed difficulty in adapting to the expectation of increased learner independence, particularly in their new academic settings. Non-traditional students noted the added difficulty of balancing college with other life responsibilities, such as family obligations and financial pressures. Participants also recognised a difference at times, between their levels of engagement in their academic journey, particularly regarding attendance and participation in-class. It was clear that issues around peer

disengagement impacted negatively on peer relationships and on the learning environment in general. This sense of frustration expressed by students who witnessed their peers' lack of motivation and inconsistent attendance reflected a sense of unfairness, as they perceived themselves to be investing effort while observing others' lack of commitment was more pronounced among nontraditional students, who often maintained higher levels of engagement due to their prior life experiences. While participants struggled to understand the reasons behind their peers' disengagement, they recognised the importance of personal motivations in driving positive engagement habits. For some, the desire to obtain a degree for future career prospects serves as a strong motivator, emphasising the significance of academic success in achieving their goals. In all cases, it was acknowledged that some extra time to '*bed in*' may have been beneficial; for non-traditional students to give them time to refamiliarise themselves with a formal learning environment setting and all that that entails, for traditional students to give them more time to adapt for their independence.

The shift to tertiary education has been well acknowledged as a period in life of considerable change (Huon & Sankey, 2002). Transitioning from the role of '*pupil*' to '*independent learner*' in third level involves '*a significant change in a student's life, self-concept and learning*' (Fleming & Finnegan, 2011). More recent studies also acknowledge the shift from a '*homogenic, second cycle, third-level progression route*' to a more broader pattern of participation and the increased risks involved (Kearns, 2014). With the increasing presence of non-traditional students Hussy and Smith (Hussey & Smith, 2010) identify that greater diversity of students means greater diversity in the way they make these transitions, where '*some will have to make much larger changes than those of the traditional students; others may not have the skills and confidence to negotiate the transitions as easily and quickly*'.

Academic issues were a second focal point of discussions among participants. Both traditional and non-traditional students appreciated the absence of assumptions around prior knowledge alongside the clear foundational explanations provided, which facilitated their transition into university-level learning. However, discussions also highlighted the challenges students faced with mathematics during their transition, particularly for non-traditional learners, some of whom had been away from formal education for some time. Many participants expressed difficulty in keeping up with the pace of mathematics content, citing a lack of recent experience with the subject as a primary barrier. Non-traditional students expressed the need for more time to grasp concepts. They emphasised the importance of additional explanations and resources to support their learning process, highlighting the role of the Computing and Mathematics Learning Centre

as a valuable resource for extra help. Traditional students shared mixed experiences with mathematics, with some participants expressing a newfound appreciation for the subject due to positive teaching experiences at university level. However, others struggled with the transition to more independent learning expectations, especially when faced with complex mathematical concepts. While there was an awareness of support services like the Mathematics Learning Centre, not all students utilised them to the same extent, in particular there were no focus group participants from NQF level 7 who used the service. Reasons for underutilisation across the groups was not always clear. Some students felt confident in their ability to self-study or to rely on alternative resources like online tutorials. For others, there seemed to be a reluctance to use the supports and it was unclear as to why this was the case as they expressed a need for more help. One student alluded to possible unfamiliarity with the centre and those providing the support or perceived stigma of using the centre. The importance of support in the transition stages is well acknowledged (Mac an Bhaird et al., 2009) as is the underutilisation of such supports among certain student cohorts (Mac an Bhaird et al., 2013). Once again, due to the increasing diversity of students needs and also students' ability to reach out for help, this underscores the importance of providing accessible and tailored support for students. Innovative thinking is also needed around engaging those students who are most reluctant.

Focus group discussions revealed issues with administrative and in-class communications as a third focal point. Students struggled early on with unclear information around class schedules and processes, leading to frustration and uncertainty. In the classroom, effective communication established by lecturers was crucial for a smooth transition. Students appreciated lecturers with clear delivery, structured teaching methods and clarified expectations, while poor communication, such as bad handwriting and unclear presentation of content and insufficient responsiveness to students' questions, added stress. These communication shortcomings hindered students' ability to adjust and engage fully with their studies whereas it was clear that effective communication helped align student efforts with course objectives, fostering positive relationships and a better learning environment.

The fourth focal point of discussions revolved around lecturer engagement and interactive learning environments. Students reported higher engagement and satisfaction when lecturers actively interacted during class sessions. Effective interactions included discussions, answering questions, and providing detailed feedback, which ensured students understood the material fully before moving on. In contrast, limited interaction from lecturers led to disengagement and reduced motivation. Students found monotonous lecture delivery without discussions or

collaborative activities boring and uninteresting. The classroom atmosphere, influenced by the lecturer's approachability and willingness to engage, was crucial. Friendly and approachable lecturers made a positive difference, though inconsistency in providing interactive opportunities was noted. Students preferred modules that encouraged active participation and discussions, finding these more enjoyable and engaging. They expressed frustration when unable to ask questions or when questions were not adequately addressed. Practical sessions were favoured over lectures for their active learning environment. Students suggested reordering lectures and practicals, with practicals first followed by lectures as recaps, to enhance understanding and retention. The third and fourth focal points from the focus group discussions highlight the crucial role of effective communication and engagement in the third-level experience. Clear and consistent communication from university administration and lecturers helps students navigate their academic environment more easily, reducing confusion and stress, particularly during the initial transition period. In the classroom, engagement and interactive teaching methods significantly enhance the learning experience.

Effective communication and engagement are widely recognised as key factors in enhancing academic outcomes and student satisfaction. Research indicates that active learning strategies, including discussions, group activities, and real-time feedback, enhance students' understanding and retention of material (Freeman et al., 2014). They help break the monotony of traditional lectures and make complex concepts more understandable (Times Higher Education, 2023). Additionally, studies show that lecturers who create an interactive environment by encouraging questions and emphasising the learning process, rather than solely delivering content, help students feel more engaged and motivated (Times Higher Education, 2023). A supportive and interactive classroom atmosphere can enhance student participation and foster a sense of community, which is crucial for maintaining student interest and motivation throughout their studies.

This study is part of a series of focus groups carried out in SETU (Waterford campus). These have been undertaken with a view to understanding the experience of students in their undergraduate studies in the Department of Computing and Mathematics. The findings in this study align with those from a focus group study of second-year students, where similar themes emerged (Hennessy & Murphy, 2023). The previous study focused on second-year students reflecting on their first-year experiences, while this study examines first-year students' experiences midway through their first semester. Despite the different stages of their academic journeys similar themes emerged. Both focus group studies emphasise the importance of effective communication and engagement in the successful transition of first-year undergraduate

computing students to higher education. They highlight the challenges faced by both traditional and non-traditional students and the importance of positive student-lecturer relationships, with effective communication, clear explanations, and active engagement to create an environment that fosters student learning and overall satisfaction. Interactive learning environments, including practical sessions and active learning strategies, are preferred over traditional lectures for better understanding and retention of material. Both discussions stress the need for tailored support services and the significance of peer engagement in creating a positive learning atmosphere. Overall, these elements are crucial in enhancing student engagement and ensuring a smooth transition to tertiary education.

5. Conclusion.

This study provides valuable insights into the transition experience of first-year undergraduate computing students as they navigate their initial weeks of tertiary education. The findings underscore the significance of several key factors in facilitating a smooth transition and fostering student engagement and satisfaction. These findings align with previous studies and highlight the importance of tailored support services and positive student-lecturer relationships in facilitating successful transitions to higher education for both traditional and non-traditional students. The consistency of these themes across different stages of students' academic journeys highlights the ongoing need for effective communication, engagement, and support. In conclusion, creating a student- centred environment is paramount in ensuring the smooth transition and academic success of first-year undergraduate computing students in their tertiary education journey. Fostering a welcoming induction period, providing robust academic support, ensuring clear communication, and promoting interactive teaching methods can enhance student engagement, satisfaction, and overall success, ultimately contributing to a more positive and productive higher education experience. This holistic approach will not only support students in their initial transition but also lay a strong foundation for their continued academic and personal development throughout their university journey.

Competing interests

No competing interests were disclosed.

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7. Appendix: Focus group open questions including probing questions.

The following figure presents the open-ended and probing questions used during the focus groups.

7.1 Sample of open questions for first-year student focus group.

1. What is your view of the systems put in place to help you successfully complete your first-year studies?

2. What is working well for you?

3. What is not working well for you?

4. Is there anything you would like the system to do differently?

5. What could be improved about the system?

6. How do you think these improvements could be made?

7.1.1 Probing questions

Elaboration probe:

- Why exactly do you feel that way?
- Can you tell me more about…….
- Why is that important to you?

Detail orientated probe:

- When did that happen?
- Who else was involved?

Clarification Probe:

- You said that……. what do you mean by that?
- What impact do you think……..has on……..?

Silent Probe:

- Remain silent and wait for the participant to continue, perhaps nodding

Echo probe:

- use a simple reflection “you said that…..” and ask “what happened next?”

Uh-huh probe:

saying “yes I see” or “uh-huh’’