Peer Programming and Mentoring at Munster Technological University

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This case study outlines the development and implementation of a pilot student mentoring programme aimed to promote knowledge sharing, transition support and peer mentoring for first year Computing students to increase student engagement and community-building.

Introduction and Context

Computing courses at third level have one of the highest student drop-out rates (Patterson, 2014) and the courses offered by the Department of Computing on the Kerry campus of MTU was no exception. In general, students entering computing courses have little experience of computer programming, and for such students programming can be a difficult concept to understand.

Allied to this, there is another reason that students drop out of college, namely, they feel that they don't fit in. Transition to third level can be difficult and sometimes can become a lonely experience for many students, (Gibney, et al., 2011).

Taking these two factors into consideration, it was proposed to pilot a student mentoring programme in the first semester for first year students. The programme aimed to promote shared knowledge, student-to-student engagement and transition supports. Second year computing students, who had just experienced first year themselves would assist newly registered first year students with their programming skills, while also sharing their experiences of challenges and achievements as first year students. These sessions would be facilitated in a relaxed friendly environment, where attendance would be optional for the first year student. The first pilot of this project ran in semester one of the academic year 2016/2017.

Research and Development

In the first iteration of the project, ten second year students were selected as mentors, based on their performance in the Programming module. The students were invited to participate on a voluntary basis. All student volunteers met prior to the commencement of the programme and were provided with guidelines that helped them to consider how to carry out the mentor role and to consider what advice they would give the incoming first year students. Each mentor was assigned between eight and ten first year students.

One of the key factors leading to the successful delivery of the programme, was that no lecturer was in attendance during the mentoring session so that students could communicate freely but in a safe environment. The sessions were overseen by a lecturer in line with MTU P&P (MTU, 2023) and wellbeing practices. The sessions were run in a standard Computer Laboratory, for the duration of one hour per week from week two to eleven of the semester. Feedback forms were provided to both mentors and students at the end of the pilot. The feedback from both was very positive with both groups requesting to run the program in semester two also.

At the end of the academic year, the mentors met with the lecturer who oversees the programme and the Head of Department. The mentors openly discussed their experience, what was gained, what was liked/disliked within the programme and methods which might improve it going forward. Through this process the delivery has been modified and changes implemented since its inception.

One of the main modifications based on the feedback received, was the ratio of mentors to first year students. A ratio of 1 mentor to 10 students has proven to be optimal. It is also worth noting that mentors are not assigned to any specific student(s) but are available to any student who wishes to attend.

Student mentors' efforts must be appropriately acknowledged. At the end of each academic year, the Registrar along with the Head of Department meets with the students and certificates are awarded to each mentor for their contribution to the programme and to the Department. The Peer Mentoring Programme has been added to the new MTU Edge (University, 2023) programme so that mentors can add this activity to their award profile. EDGE is a new graduate development framework for MTU students in recognition of their extra-curricular and co-curricular involvement and achievements during their time at MTU. Prior to this, peer mentoring was acknowledged as part of the volunteer hours for the President's Civic awards.

Actions Taken During Project

Action	Brief Description
Action A	The selection of mentors must be a visible process. Students are invited to participate based on the number of mentors required and their programming grades (top-down approach).
Action B	A mentoring guide has been developed for mentors to outline the aims of the programme and what will be required of them.
Action C	The programme lead meets all mentors at the start of the year and explains what is required and why. What their role is and what they can learn from the process.
Action D	Attendance is taken at each session. Mentors can email the programme lead at any time if they have any concerns.
Action E	Mentors sit down with the programme lead and the Head of Department at the end of the academic year to openly discuss the programme, their experience, and their feedback.
Action F	If mentors complete eight sessions per semester, they are awarded a certificate of participation.
Action G	The mentor's voluntarism is counted towards university rewards and acknowledgement. Edge (Munster Technological University, 2023) programme (gold award activity).

Reflections on Engagement

The programme has now been running for seven years. Many changes, based on feedback from mentors, students and from programme lead observation have been implemented. Amongst these are:

- One of the first issues was the problem of assigning mentors to a particular group of students. One mentor may be overwhelmed by students while another mentor may have no students attend. Now mentors are not assigned to specific students, this facilitates relationship building between student and mentor and leads to a shared workload among the mentors.

- The ratio of mentors to student has been modified and it has been determined that a ratio of 1:10 works best. This ensures that the mentors are not overwhelmed and that mentors are not rushing or trying to meet too many students. This allows for relaxed conversation and relationship building to take place.

- Timetable concerns were an issue as both first year and second year students must be timetabled for this activity and must be incorporated early in the semester planning process.

- Sourcing mentors initially was an issue. However, now students are aware of the benefits of participation as a mentor, particularly as part of their curriculum vitae. The selection of mentors had to become a clearly defined process. Students are now invited to participate based on the number of mentors required and their programming grades using a top-down approach.

Feedback from mature first year students is always positive. They enjoy building relationships with their peers and are keen to take any advice given on board. They really appreciate the extra support provided by the programme.

Having students who avail of the programme to support them in first year and then progressing on to becoming mentors in second year, is the real evidence that the programme works. There have been many such students over the years, such as Deirdre Lee, who has talked about her experience on both sides of the programme in the following section.

Every year feedback from the mentors is that they are surprised by how much they got from the experience. They initially felt that they would only be giving but were surprised by how much they learned about themselves and how their confidence grew during the programme. This is evident in the feedback given below.

Over the last seven years it has been clear that the success of peer-to-peer programmes is dependent on the strong support and partnership between management, academic staff, and students. By annually reviewing the experience and a commitment to continuous improvements by all involved, the programme has gone from strength to strength. The success of the programme has led to requests from other departments for assistance in setting up similar initiatives.

Supporting Evidence

Feedback from Mentors

"*Mentoring others was more rewarding than I expected. Through guiding first-year students, I was able to reinforce my own understanding of programming, which led to a noticeable improvement in my own programming skills. Perhaps most rewarding of all, I found great satisfaction in aiding students who were initially struggling and seeing their progress throughout the year. A big thank you to Claire Horgan for overseeing the program*."

River James (Mentor 2021)

"*The experience of being a peer mentor was very rewarding. I was able to build relationships with students from second year which I feel was very important. It was also very beneficial being a part of a co-learning space where I was able to share my own experiences of what I had learned so far as well as get information from the other students that participated. Overall, a great experience.*"

Deirdre Lee (Mentor 2022)

"*Being a mentor in the Peer Programming programme was an absolute blast! I learned a lot about myself during the sessions. My explanation skills, which weren't the best before, got a major boost. It was awesome to see my peers grasp programming concepts It was a fantastic experience that brought me personal growth and a lot of fun.*"

Alan Ligman (Mentor 2023)

Feedback from Students

"As part of the peer mentor programme I was able to ask questions in a non – judgemental environment, questions that would have come up as I was doing class work, or I had not considered during class. I found it a very beneficial both in providing a space for students to work together as well as helping form relationships with peers."

Deirdre Lee (1st year 2021)

"Peer Programming gave me a space where I gained insight, friendships and solutions to coding related problems which helped me progress in my course."

Laura Lonney (1st year 2022)

"I really enjoyed the peer programming classes, which were led by the 2nd year students. They were helpful and easy to talk to. The students in charge of the classes have been a real help with understanding code."

Kieran Duggan (1st year 2023)

Image 1: Mentors from 2021/22 receiving their certificates from Dr. Brendan O'Donnall VP for Academic affairs and Registrar and Mr Paul Collins the Head of the Computing Department.

Image 2: Mentors from 2022/23 receiving their certificates from Dr. Brendan O'Donnall VP for Academic affairs and Registrar and Mr Paul Collins the Head of the Computing Department.

References

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