

Large Scale Student Evaluation of Mathematics Learning Support

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Irish Mathematics Learning Support Network (IMLSN)

- Survey analysis in collaboration with Olivia Fitzmaurice (University of Limerick), Eabhnat Ní Fhloinn (Dublin City University) and Ciarán O'Sullivan (Institute of Technology, Tallaght).
- IMLSN created in 2009
<http://supportcentre.maths.nuim.ie/mathsnetwork/>

Methodology

- An evaluation of students' opinions on MLS with a view to establishing evidence for the benefits of MLS on an institutional, national and international basis.
- A pilot questionnaire was created (based on existing questionnaires), distributed and reviewed in 2009-10.
- The finalized questionnaire was circulated to all individuals and institutions involved in the provision of MLS in Higher Education Institutions (HEIs) in Ireland, e.g. there are 7 universities and 13 Institutes of Technology (IOTs) in the Republic of Ireland.
- Questionnaires were returned from 9 (5 & 4) HEIs. They were distributed during the 2nd semester of 2010-11 to 1st year service maths students.

The Questionnaire

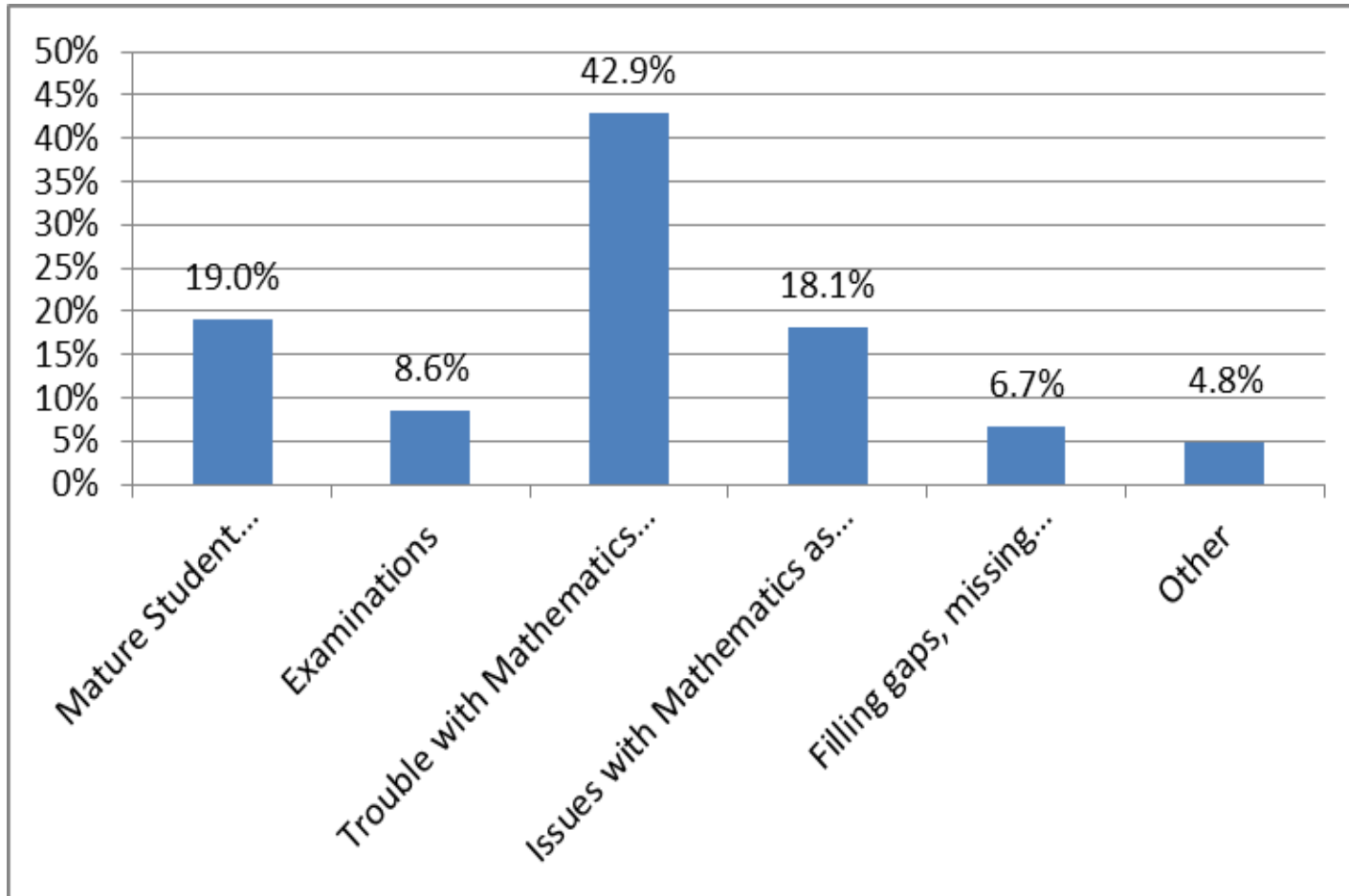
Results

- 1633 completed questionnaires.
- 587 (36.1%) had availed of MLS, 1046 (63.9%) had not, of these 1046, 500 said that they did not need it.
- Results inputted into SPSS, Grounded Theory used to analyse Qualitative Data.
- Full analysis of data has been completed. A report is currently being compiled and edited. It will be launched before the end of this calendar year.
- For this presentation we will focus on a couple of distinct areas of the survey.

Adult Learners.

- 221 (13.5%) of 1633 respondents indicated that they were Adult Learners, 73% were male and 91% were full time.
- There was a statistically significant association (chi-square test, $p < 0.001$) demonstrating that Adult Learners were more likely to seek MLS than traditional age learners.
- 81% rated drop-in centres as quite or extremely worthwhile, 90% of 50 who attended support tutorials rated them as quite or extremely worthwhile, 65% of 115 said it has a positive impact on their performance in exams

Why students first sought MLS?



- 105 responses from Adult Learners.

Adult Learners.

- 25 (20% of respondents) said they considered dropping out of their studies for mathematics-related reasons, and 17 of these said that MLS had been a factor in them not dropping out.
 - *‘Greatly. It has given me the confidence to turn maths as my worst subject into one of my best’.*
 - *‘Encouraged me to trust that my worries were normal and that practice would improve me’.*
- 8 left comments stating that they never considered dropping out *because* of the mathematics support that was available to them.
 - *‘Never felt the need because of the support provided’.*
 - *‘No, but did worry about failing maths before using these facilities’.*

Adult non-users

- When asked why they did not use MLS, 43.5% of 85 respondents said that they did not need help with Maths, 11.8% said they had never heard of it, and 29.4% said that the times did not suit, just 4.7% (4) said they were afraid or embarrassed.
- When asked what would encourage them to avail of MLS, 39% of comments said if they needed it, 26.8% commented if there were more open hours or more staff, and 24.4% mentioned more publicity and information.

Student Perception of Impact

1. *Did you ever consider dropping out of your course/college because of mathematical difficulties?*
 - 573 responses, 125 (21.8%) had considered dropping out.
 - 8.8% had done Higher Level (HL), 81.6% Ordinary Level (OL). There was a statistically significant association ($p < .001$) between level and considering dropping out.
2. *If yes, has mathematics support influenced your decision not to drop out?*
 - 110 (of 125) answered, 69 (62.7%) students felt MLS had influenced their decision not to drop out.
 - *Encouraged me to trust that my worries were normal and that practice would improve me*

1. Rate (on a 5 point scale) how MLS has improved your confidence in mathematics, from not at all helpful to extremely helpful.
 - Of 541 responses, 56.01% responded helpful or extremely helpful.
 - *I know that if I don't understand something in class that I can always go there.*
2. Rate how MLS has impacted upon your mathematical performance in tests or examinations.
 - Of 528 responses, 56.25% felt that MLS had an impact or a large impact on their performance.
 - *It has helped no end and the only problem is I'd like to be able to make more use of it.*
3. Rate how MLS has helped you cope with the mathematical demands of your courses.
 - Of 532 responses, 64.85% felt that MLS had been of some help or of huge help to them.
 - *Huge help in completing assignments and my understanding of maths.*

Student non-engagement

1. Why did students not engage with MLS?

- 1472 responses from 1041 non-attendees.

Q16 response options	Do not need help	Times do not suit	Did not know where it was	Hate Maths	Embarrassed or afraid to go	Never heard of the MLC	Other Reason
No. of responses	501	295	186	151	119	87	133
As a % of respondents	48.83%	28.81%	18.16%	14.75%	11.62%	8.5%	12.99%

Responses by Second Level Grade

- 522 responses from 396 HL and 903 responses from 602 OL students.
- Chi-Square test ($p < 0.001$) shows a significant relationship between LC level and answers given. There was also a significant relationship between LC grades and answers given.

Q16 response options	Do not need help	Never heard of the MLC	Did not know where it was	Times do not suit	Embarrassed or afraid to go	Hate Maths	Other Reason
No. of HL responses	274	20	55	71	29	22	51
As a % of HL respondents	69.19%	5.05%	13.89%	17.93%	7.32%	5.56%	12.88%
No. of OL responses	205	65	130	211	88	125	79
As a % of OL respondents	34.05%	10.8%	21.59%	35.05%	14.62%	20.76%	13.12%

If and when they changed level.

- Students were asked if and when they dropped LC Level.
- There was a statistically significant (Monte Carlo test, $p=0.005$) relationship between when students dropped down to OL and the answers they gave; in general, the later they made the change, the less likely they were to say that they required help.

When changed from HL to OL	Before Christmas in 5 th year	Before the end of 5 th year	Before Christmas in 6 th year	After mocks in 6 th year
% who said they did not need help	30.8%	28.3%	32%	59.1%

What would encourage students to avail of MLS?

- There were 665 responses from students whose LC grade was known.
- 269 HL, 90 OL (A) and 306 (OL \leq B1).
- The majority of replies fell into two main categories: 1) If they needed help; and 2) Comments on MLS structures.
- The results were statistically significant (Chi-Square test, $p < 0.001$) showing that the stronger the mathematical background of the student, the more likely that their response would fall into the first category; the weaker the student, the more likely they were to fall into the second category.

Would go if they needed help.

1. 126 (46.8%) of the 269 responses from HL students: *'If I begin to struggle with my course I'll probably look for help then'*.
 2. 32 (35.6%) of the 90 responses from OL A students: *'If I needed the MLSC's services that is encouragement enough for me'*.
 3. 97 (31.7%) of the 306 responses from the OL<=B1 students: *'If I was failing desperately and could not understand the notes'*.
- Comments given were consistent with comments in Q16.

Comments on MLS Structures.

- There were 269 responses from HL, 90 from OL A, and 306 from OL<=B1 in this category.
- Three main subcategories emerged from analysis.
 1. Referring to the need for further information: 42% (HL), 55.5% (OL A), 61.8% (OL <=B1). *More information available because I don't actually know what they do.*
 2. Referring to the open hours: 9.3% (HL), 11.1% (OL A), 15% (OL <=B1). *More hours in place so I could go when it suited my timetable.*
 3. Referring to specific services: 9.7% (HL), 8.9 % (OL A), 12.7% (OL <=B1). *If they did a time for a certain year, for instance, Semester two maths for marketing management at 3pm today*

Conclusions

- What do the results tell us?
- Was the project worth it?
- What would we do different?
- Any questions?
- Go raibh maith agaibh uilig.
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