Mathematics Learning Support across a multi-campus institution: Virtual Drop-in

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Dublin Institute of Technology, Institute of Technology Tallaght, Institute of Technology Blanchardstown

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Setting the Scene

› Three Institutes intending to form the Technological University for Dublin:
  - The Dublin Institute of Technology (DIT) ~ 20,000 students
  - The Institute of Technology Blanchardstown (ITB) ~ 4000 students
  - The Institute of Technology Tallaght (ITTD) ~ 4000 students

› It is important that Mathematics Learning Support (MLS) provision evolves in a manner that best suits the needs of the students across the three Institutes
Outline of study

› Audit of existing and historical MLS provision

› Survey of staff and students across the three Institutes
  – Staff who teach Mathematical/Statistical modules
  – Students who have engaged with MLS

› Prototype of virtual drop-in service
Survey
Survey Questions

› In your opinion, what are the three main topics that students would require MLS for?

› Please indicate your preference for how this MLS would be delivered?
  – 5 point scale from exclusively online to exclusively in person

› Topic responses were organised into 5 categories
  – Basic Algebra (e.g. logarithms, indices), Calculus, Preliminaries (e.g. fractions, basic numeracy, percentages), Probability and Statistics and an Other category
Overall Staff Results (45 responses)

Overall Topics

No of times selected

<table>
<thead>
<tr>
<th>Topic</th>
<th>No of times selected</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic Algebra</td>
<td>40</td>
</tr>
<tr>
<td>Calculus</td>
<td>20</td>
</tr>
<tr>
<td>Preliminaries</td>
<td>20</td>
</tr>
<tr>
<td>Probability and Statistics</td>
<td>10</td>
</tr>
<tr>
<td>Others</td>
<td>10</td>
</tr>
</tbody>
</table>

Overall Staff Preferences

% of respondents

<table>
<thead>
<tr>
<th>Method</th>
<th>% of respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exclusively Online</td>
<td>10</td>
</tr>
<tr>
<td>Mostly Online</td>
<td>20</td>
</tr>
<tr>
<td>Equal Online and In Person</td>
<td>30</td>
</tr>
<tr>
<td>Mostly in Person</td>
<td>60</td>
</tr>
<tr>
<td>Exclusively in person</td>
<td>10</td>
</tr>
</tbody>
</table>
Staff Responses Per Institutes

Topics by Institution

<table>
<thead>
<tr>
<th>Topic</th>
<th>DIT</th>
<th>ITB</th>
<th>ITTD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic Algebra</td>
<td>15</td>
<td>5</td>
<td>10</td>
</tr>
<tr>
<td>Calculus</td>
<td>10</td>
<td>10</td>
<td>8</td>
</tr>
<tr>
<td>Preliminaries</td>
<td>7</td>
<td>7</td>
<td>5</td>
</tr>
<tr>
<td>Probability and Statistics</td>
<td>3</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Others</td>
<td>2</td>
<td>1</td>
<td>4</td>
</tr>
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Preference by Institution

<table>
<thead>
<tr>
<th>Preference</th>
<th>DIT</th>
<th>ITB</th>
<th>ITTD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exclusively Online</td>
<td>10</td>
<td>10</td>
<td>5</td>
</tr>
<tr>
<td>Mostly Online</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Equal Online and In Person</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Mostly in Person</td>
<td>80</td>
<td>70</td>
<td>80</td>
</tr>
<tr>
<td>Exclusively in person</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
</tbody>
</table>
Student Overall Responses (115 responses)

Overall Student Topics

- Calculus: 70 times selected
- Basic Algebra: 20 times selected
- Preliminaries: 10 times selected
- Probability and Statistics: 30 times selected
- Others: 40 times selected

Overall Student Preferences

- Mostly in Person: 50% of respondents
- Exclusively in person: 10% of respondents
- Mostly Online: 10% of respondents
- Exclusively Online: 5% of respondents
- Equal Online and In Person: 25% of respondents
Student Responses per Institute

Student Topics by Institution

Student Preferences by Institution
Comparison of staff and student responses

<table>
<thead>
<tr>
<th></th>
<th>Algebra</th>
<th>Calculus</th>
<th>Preliminaries</th>
<th>Probability and Statistics</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Staff</strong></td>
<td>34%</td>
<td>22%</td>
<td>19%</td>
<td>12%</td>
<td>13%</td>
</tr>
<tr>
<td><strong>Students</strong></td>
<td>13%</td>
<td>37%</td>
<td>7%</td>
<td>16%</td>
<td>26%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Exclusively Online</th>
<th>Mostly Online</th>
<th>Equal Mix</th>
<th>Mostly in Person</th>
<th>Exclusively in Person</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Staff</strong></td>
<td>0%</td>
<td>9%</td>
<td>20%</td>
<td>66%</td>
<td>5%</td>
</tr>
<tr>
<td><strong>Students</strong></td>
<td>4%</td>
<td>9%</td>
<td>18%</td>
<td>50%</td>
<td>19%</td>
</tr>
</tbody>
</table>
Conclusions of Survey

› Majority of staff and students would like to see MLS provided primarily in person

› Strong preference that some portion of the MLS provision is offered online
Conclusions of Survey

› Among both staff and students in ITB, there appears to be a greater preference for the online provision of MLS than in the other two Institutes

› There is also some variation in the topic choices between the three Institutes; this should be reflected in the provision of MLS
Prototype
Technology

› Received seed funding from the DIT Learning Teaching and Technology Centre to purchase 3 tablets

› Wacom Intuos Tablets
Technology

› Adobe Connect Video Conferencing Technology
Prototyping Details

› Initial trial involving staff members

› Second trial involved 5 students from IT Tallaght and a staff member from DIT

› Third trial involved 2 ITB students and a staff member from IT Tallaght
  - Each student posed a question on the shared whiteboard
  - Lasted approximately 45 minutes
  - Feedback from each student
Feedback

› Overall Impression

‘I was very impressed, I think it's a great way to help students with Maths questions. Aside from the slow internet feed I think it has great potential and I'm definitely keen to see it up and running.’

‘It has potential but I feel unless it becomes more streamlined I could see students becoming more frustrated than helped. The interface seems clunky and un-intuitive’

‘Great idea, software was a little clunky and internet connection or lack of was a hindrance, But can easily be taught and overcome’
Feedback

› **Advantages**
  › ‘It will help people learn or ask questions easier who are shy or ashamed to do so in class’
  › ‘Whereas the virtual drop-in gives a larger scope of time and geographical location.’

› **Disadvantages**
  › ‘If the lecturer on virtual drop-in uses different techniques to solve questions as opposed to classroom lecturer, it may be confusing and take longer to help solve a problem’
  › ‘may get overloaded with students who don’t bother going to class as they see this system as a substitute for class attendance’
Feedback

› Suggestions for Improvement

› ‘Use external microphone and speakers or headphones to eliminate the echo effect’.
› ‘Use a speed scanner to scan the Example questions or problem sheets faster to save time writing it on the pad’.
› ‘Web cam/Web cast with the cameras facing whiteboards on ether side of the link’
› ‘A platform for posting question and receiving answers in a timely fashion’
Thank You
Questions?