

MEI Insights 5:

Revising the Format

by **Stephen Lee and Phil Chaffe**

Introduction

Mathematics in Education and Industry (MEI) is an independent charity, committed to improving mathematics education. It works to support curriculum development and professional development for teachers, and to have a positive influence on national mathematics education policy. MEI, through its national Further Mathematics Support Programme (FMSP) also engages directly with students through A level tuition, enrichment and revision. This, the fifth article in the MEI Insights series, will consider how the provision for student A level revision has changed over recent years, from almost always being physical days, to now being principally online.

A Level Revision

Once the material from an A level unit has been taught to students it is usual practice for students to engage in some revision prior to examination. In some instances there will only be revision by the students themselves, but it is also likely that the classroom teacher will engage the students in some collective revision. This may be a single lesson, a series of lessons, or a complete day of revision within the school/college. However, many schools/colleges engage with external providers and materials.

The FMSP has been providing A level revision events and materials for a number of years now and the development of this provision along with benefits and disadvantages to it, will be discussed in this article.

The prominence of ‘physical’ A level revision events

Prior to 2010 revision events provided by the FMSP were generally run as ‘physical’ days. The days would normally cover one A level unit and last either half a day or a full day. They would be hosted at a university and students (and some teachers), mainly from the surrounding area, would attend. There was usually a charge for an event, which could be up to £25 per student depending on the local situation and arrangements, i.e. if a lunch was provided, etc.

The vast majority of students and teachers who attended such days indicated that they were excellent in terms of the content, the program structure and the quality of the presenters. Students benefited in several ways including: seeing an overview of a complete module in a half day/full day event, seeing the material presented by someone other than their usual classroom teacher and they also

had the benefit of visiting a university. This last point is one that has many positives in itself – several universities that hosted events would give a tour of the university over lunch time, or have a short session about the university and courses available from a lecturer or admissions tutor. Thus students were able to ‘sample’ a university in a less formal way than say an interview day, etc.

In an academic year the FMSP would generally hold over 100 of these revision events across the country. Attendances varied from small numbers for higher applied units, i.e. Mechanics 3/Statistics 4, up to 300–400 for a Core 1 or Core 2 event. Events such as Core 1 or Core 2 although not Further Mathematics units, were used as a mechanism to highlight to students the possibilities to study an AS level in Further Mathematics in Year 13.

The transition to online A level revision events

Over time the FMSP started to develop the use of online classroom technologies in its approach to teaching and learning (as well as in teacher professional development). Further discussion of tuition and professional development will not be presented here, but details can be seen in Lee (2014).

As well as continuing ‘physical’ revision events the FMSP started to offer online events during December/January and May/June each year to coincide with the winter and summer examination series. They were free to attend by students (and teachers) of FMSP registered schools/colleges* (*Note: It does not cost to register with the FMSP at: www.furthermaths.org.uk/register.)

The events were usually around two hours in length and were also recorded so they could be replayed at a later point in time. Session leaders would cover key points and model solutions to examination questions, emphasizing key mathematical and examination techniques. The number of students in a session would vary tremendously depending on the module, from a handful to a few hundred. Interaction by students was via the use of a whiteboard, polling and instant messaging. Instant messaging did make an important contribution to the sense of a live session and frequently allowed misconceptions held by students to be seen. The session leader could then use this to increase the overall impact of the sessions.

Considering online revision sessions, compared to physical ones, then some advantages include:

- Sessions take place outside the school day, so students do not need to miss valuable contact time with their teachers, including in other subjects they are studying.
- Courses are accessible to students across the country providing opportunities to participate in revision of modules that might not be readily available locally.
- There are no attendance, travel or teacher supply costs (teachers usually attend physical events with their students).
- Material from a whole module could be reviewed in a short, typically 2 hour, session.

Some disadvantages include:

- Some students are deterred by the lack of face-to-face contact and limited interaction.
- Some students could get worried by using a technology that they are unfamiliar with.
- The sessions were short and quite intensive.

The Online Era of A Level Revision Events

To meet the national demand for physical revision days the FMSP needed to host ‘duplicated’ events across the country, i.e. there would be several Further Pure 1 (the compulsory module for AS Further Mathematics) revision events. Online it was more efficient to schedule one event for each unit – though there would be a different event for each of the awarding bodies, i.e. AQA FP1, Edexcel FP1, MEI FP1, ORC FP1 and WJEC FP1. At ‘physical’ revision events the need to cover material from a variety of awarding boards also often led to a compromise in the content covered or difficulties in splitting up groups of students who studied the different specifications. Online events can be more easily focused to the needs of students studying for a particular specification.

In 2010/11 there were 40 online revision ‘events’ available. These were attended live by over a thousand students. The recordings were viewed over 5000 times. By academic year 2011/12 there were 70 online sessions covering modules from all awarding bodies and they were attended by several thousand students, with over 8000 additional viewings of the recordings of the sessions. In 2011/12 there were still 50–60 physical events held, but this was much reduced on the number held in the previous few years.

Student feedback

At the end of an online session students (and teachers who may also have attended) were asked to complete an online feedback form. For the 2011/12 academic year there were 717 responses with 695 of those being from students and the rest being from teachers. Slightly fewer responses (565) were received in 2012/13.

A breakdown of survey responses by the examination board they were studying can be seen in Table 1.

Table 1

Examination Board	Response %	
	2011/12	2012/13
AQA	20.4%	17.7%
Edexcel	32.4%	37.9%
MEI	20.4%	20.9%
OCR	23.4%	19.3%
Unknown	3.3%	4.2%
Total	719	565

A good spread of responses was seen across all specifications, with not much variation across the two years.

The respondents were asked to rate the online revision session on three aspects:

1. The course content.
2. Quality of delivery.
3. Online classroom as a platform for delivering the session.

Results in Table 2 indicate that the vast majority of respondents thought that the three aspects of interest were either Excellent or Good – 95.7% for the course content, 92.1% for the quality of delivery and 92% for the online classroom, in 2011/12. Similar percentages were also found in the 2012/13 responses (93.9%, 90.4% and 90.5%, respectively). Relatively few found any of these aspects to be poor.

When asked if they would recommend the online session they attended to another student then 96% of the collective 1263 responses seen across the two years said Yes! Of the collective responses to the question ‘Do you feel better prepared for your examination after this revision session?’ then 93% said Yes.

As is often the case with technology there can sometimes be issues, often outside the control of the organizer, i.e. with an internet connection, and 12% of respondents mentioned they had suffered from some kind of issue accessing the online classroom. Though this might be considered quite high, as can be seen by the overall feedback, students (and teachers) still valued the sessions and found them to be of excellent quality.

The Present and Future – Recorded A Level Revision Sessions

In 2013 a thorough review of the provision of revision was undertaken. What emerged is that for there to be live online revision sessions, for the many modules, across

Table 2

	Course Content		Quality of delivery		Online classroom	
	2011/12	2012/13	2011/12	2012/13	2011/12	2012/13
Excellent	52.0%	50.7%	51.5%	52.0%	48.2%	43.1%
Good	43.7%	43.2%	40.6%	38.4%	43.8%	47.4%
Adequate	4.2%	5.3%	6.4%	8.6%	6.6%	8.0%
Poor	0.1%	0.7%	1.4%	1.1%	1.4%	1.4%
<i>Total</i>	716	562	714	560	713	561

multiple specifications, involved a massive amount of time and organization. This included to schedule the events, organize the sessions and to make the registration links available to the students so they attended at the correct time. Ultimately it was felt that the ‘live’ nature of the events, and all which that brought, did not carry enough benefit over a session not being live. What followed was a transition towards providing a comprehensive ‘non-live’ provision of revision.

As well as the many administrative benefits to non-live revision events it also provided opportunity to revise the ‘whole-module’ approach that was previously used in the live events. It was evident from feedback that many students didn’t necessarily need expert revision of **all** topics, more so of **some** topics. Therefore, the non-live revision sessions would instead be topic-based and much shorter in nature. This meant that the videos on specific topics could potentially be used in the classroom as a learning aid at other times of the year. It also meant that the videos would almost certainly be viewed not only by students studying for A levels, but learners in general who searched for specific topics.

A YouTube Channel, ‘FMSP Revision Videos’, was set up to host the videos. During 2013/14 and 2014/15 these videos on the YouTube Channel had over 225,000 individual views and over 1500 subscribers to the Channel. There are approaching 300 videos currently available, with half being topic-based videos and the other half being specific exam question walkthroughs. Eight of the videos have had over 3000 views each, with these being (most popular first):

- MEI S1 - Hypothesis testing
- Edexcel FP1 - Complex numbers
- Edexcel D2 - Game theory
- Edexcel FP3 - Vectors and Matrices
- Edexcel D2 - Dynamic Programming
- Edexcel FP2 - Complex Numbers
- OCR S1 - Probability
- Edexcel D2 - Transportation Problems

It is obvious that these popular videos do not contain any Core modules. A primary goal of the FMSP is with

respect to Further Mathematics and as such only the Further Pure and Applied modules have had videos produced at present. Though note the FMSP does also have wider aims to support mathematics, which can be seen at: www.furthermaths.org.uk/fmsp

In Conclusion

It is important that educators look to keep pace with technology, making good and appropriate use of suitable technologies. That’s not just using technology for the sake of technology, but using it to enhance and develop methods to support students and teachers with their educational needs. From its inception the FMSP has acted to meet demand for providing schools/colleges with high quality A level revision events. Having begun solely with ‘physical’ events it then developed live online events as an alternative. Continually reviewing the provision meant that in recent years it was determined that moving to recordings that are topic-based could make the revision materials even more accessible. This has clearly been seen to be the case with a tenfold increase in the numbers who have viewed the videos to those that attended and viewed the live online sessions previously.

Links

- FMSP revision advice and materials can be seen at: www.furthermaths.org.uk/revision
- The FMSP Revision Videos YouTube Channel can be seen at: <http://bit.ly/FMSPRevisionVideos16>

Reference

Lee, S. 2014 ‘From the Physical Classroom to the Online Classroom – Providing Tuition, Revision and Professional Development in 16–19 Education’, *Proceedings of British Congress on Mathematics Education*, <http://www.bsrlm.org.uk/BCME8/BCME8-31.pdf>

Keywords: A level; Online; Revision; Technology.

Authors MEI, Monckton House, Epsom Centre, White Horse Business Park, Trowbridge, Wiltshire BA14 0XG.