



# Studio-Based Block Delivery: A Case Study of New Model Institute for Technology & Engineering

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PRACTICE-BASED  
PAPER

## ABSTRACT

New Model Institute for Technology & Engineering (NMITE) is a new provider established to be a disruptor in engineering higher education. Its distinctive pedagogical approach utilises block delivery of industry-linked and challenge-led engineering programmes, delivered in an intensive, studio-based environment. This reflection discusses the benefits and challenges of studio-based block delivery adopted by NMITE and recommends strategies for effective implementation of block delivery, based on our teaching experience at NMITE, informal students' feedback, and discussions with academic staff. Our overall reflection is that block delivery approach is very effective to drive high attainment in students, and to facilitate a more immersive and engaged learning experience. We also believe that the benefits of block delivery have been greatly maximised by our studio-based approach.

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## INTRODUCTION

New Model Institute for Technology & Engineering (NMITE) is a new higher education institution which started teaching in 2021, offering an Integrated Master's Degree in Integrated Engineering (MEng). NMITE was established to be a disruptor in higher education in several ways. These include addressing existing skills gaps by designing challenge-led, industry-linked course modules, providing an accelerated route, and widen access to engineering education by removing the traditional entry requirement of mathematics at A-Level. Currently, NMITE's MEng is an accelerated programme which utilises block delivery where students are on campus from 9:00 am to 5:00 pm on weekdays. NMITE has also launched a Foundation Year and fast-track as well as unaccelerated versions of MEng and BEng (Bachelor's Degree in Integrated Engineering) programmes from September 2023. Modules are 4 to 8 weeks long module block, and the assessments are also held within this period. Our current student size is roughly 25 students per cohort but we are growing rapidly.

In this short reflection paper, we reflect on the benefits and risks we have encountered so far in block delivery, in the context of our studio-based model. We also propose several implementation strategies to make block delivery more effective, based on our experiences and informal students' feedback. It is noteworthy that our block delivery is studio-based. This means that students are based in a single, flat classroom space for the full duration of their module and can remain and work there even when the tutor is not present. Most equipment students need to learn is provided in the studio ahead of the start of the module, and we do not have the traditional delineation between lectures, seminars, and lab classes, with the durations of those activities determined by a centrally set timetable. This removes the distraction for students having to leave a classroom and find another study area, e.g., a library, and the fragmentation that this causes in the working day. In addition to providing a fixed workstation throughout the module and enhancing the workflow, studio environment also mimics office work desk environment, and so supports NMITE's mission of developing work-ready engineers.

## BENEFITS AND RISKS

### BENEFITS

The main advantages we have found are related to focus, flexibility, and student engagement and attainment. Students have reported that they can focus better on block delivery as they can exclusively concentrate on one module at a time. In conventional programmes, where students switch between different modules during a given term period, they may need to process large information on relatively more unrelated topics which can lead to cognitive overload. One way to minimize the chances of cognitive overloading is to focus on one task at a time (MasterClass 2023) and block delivery is better suited to provide this. Our experience is consistent with the findings of other universities that have also implemented block delivery (Buck & Tyrrell 2022; Ghapanchi 2022). In addition to students, teaching staff have reported higher focus during block delivery compared to conventional delivery, perhaps because of relative ease of time management. This could be because of our studio-based block delivery rather than block delivery alone.

Tutors have also reported greater satisfaction in studio-based block delivery since they have more flexibility in time management because they can readjust their lesson plan schedule based on immediate student feedback. More time can be spent on learning tasks that students find difficult by reducing the time spent on other relatively less difficult. Therefore, rapid and almost real time response can be made to address students' feedback and needs which makes studio-based block delivery more agile. Since students can devote their time solely on one module throughout the module block and report their daily progress to the tutors, monitoring progress and provision of feedback is enhanced.

It has been reported that block delivery promotes active rather than passive learning (Morris 2022) and our experience is consistent with this. Here, we use the term active learning to imply students' efforts to actively construct their learning by thinking and reflecting on what they are doing (Brame n.d.). We have found that students' participation and interaction increase as they have higher contact time with tutors and get to meet the tutors almost daily throughout

## RISKS

Since students need to learn module contents in a relatively short timeframe in block delivery, there is a risk of some students falling behind early on and getting demotivated. If students lag in learning during the first few days, it can have a knock-on effect for the rest of the module causing frustration and stress. Our studio-based approach somewhat mitigates this problem as studio environment fosters higher peer support with students learning together, in same space each day. Most assessments are team works and we encourage students to work together to foster peer support and we believe the studio environment facilitates this.

There is need, in a studio-based, block delivery approach, for academic staff to be attuned to students' workload and the time available for learning. In a traditional environment, where students take multiple modules in parallel, and have less contact time, tutors set direction and students are left to manage their time. Some flexibility arises where students can balance workload across modules: in a particular week, they may spend more time on one module and less time on another. Such balancing is not possible within a block delivery structure.

Missing a day or two, particularly in the first few days of a module, can lead to students struggling to catch-up due to the intense nature of accelerated block delivery. Therefore, strategies need to be devised for students who miss class, and personalised learning approaches can be helpful. Additionally, careful planning is also needed for assessment scheduling as consecutive assessments held in successive days due to time constraint can overwhelm some students. Since there is a lack of sufficient literature in studio approach to block delivery (Chau et al. 2022), we have primarily relied on our reflection rather than published literature. However, issues similar to what we have pointed out has been documented (ibid.).

## CURRICULUM DELIVERY ENHANCEMENT

Based on our experience thus far, we have developed several strategies for effective delivery and risk mitigation. These strategies may be broadly relevant to other contexts although they are specifically developed for our MEng programme.

In general, our experience is that of the total learning and teaching time, allocation of roughly 20% for direct instruction, 40% for directed independent learning and 40% for unsupervised independent learning works effectively, although the exact breakdown would be module and level-specific. The benefit of allocating more time for independent learning is that it greatly facilitates personalised learning where students can learn at their own pace and get individual tutor support on an as needed basis. This also allows tutors to spend more time with students who need additional support, whereas students needing less support can spend time on unsupervised independent learning. Personalised learning can greatly mitigate the risks of students being overwhelmed by having to learn complex topics in a relatively short duration. Another advantage of personalised learning is that it provides students who are absent for a few days to catch-up. The above strategies rely on our studio-based model, and we encourage colleagues working in more traditional environments to consider how they can achieve similar benefits.

It is noteworthy that students are expected to engage in learning activities only between 9 am to 5 pm on weekdays, to mimic a work environment. We encourage this focus, in order that students have better quality evening and weekend downtime. Our reflection is that students appreciate this approach as it encourages them to intensely focus between 9 am to 5 pm on weekdays, while getting a quality off-time.

We have also found that spreading assessments throughout the module block rather than stacking them successively in the last week of module delivery improves students' performance whilst reducing the risks of potential cognitive stress. It is noteworthy that NMITE does not have traditional closed-book examinations, but there are typically three assessments per module where at least one assessment is driven by a community or industrial challenge. The exact spread of assessments is module specific but reasonably spread-out assessments seem to

improve student achievements. Furthermore, it is also necessary to ensure that students are well rested between modules so that they do not start a new module mentally exhausted.

We agree with the recommendation from Victoria University (Ghapanchi, 2022) that students should be cautioned about the workload and the importance of working intensively from the first day for effective block delivery. NMITE therefore has a dedicated Academic Skills Knowhow Centre which helps students with workload and time management, and our studio environment removes distraction thereby promoting time management. No teaching is scheduled between 9 am and 10 am and also between 1 pm and 2 pm. Students utilise this time to either access support from the Academic Skills Knowhow Centre or work independently. Our impression is that students find this helpful based on the significant number of students seeking support from Academic Skills Knowhow Centre. The support includes mathematics support, writing support, and workload and time management support.

If the modules within the course are not scheduled properly, there can also be a risk of lower retention of module contents due to shorter timeframe. Therefore, careful planning is needed such that modules are scheduled in an order where subsequent modules utilise concepts and knowledge of previous module as far as practical, and thus help students to integrate their learning over time.

## CONCLUSIONS

Overall, our reflection is that block delivery is an efficient learning and teaching approach for engineering education. We also believe that the benefits of block delivery are greatly enhanced by our studio-based design. It helps students remain focussed on learning objectives and improves their engagement in coursework. However, proper planning is needed to mitigate potential cognitive overloading, and other barriers that negatively affect students' learning.

It may be noteworthy that our reflection is based on newly started studio-based engineering programmes at NMITE where we are aiming to limit a given class size to 25 students. By limiting the class size, we are maximising the benefits of studio-based learning and facilitating students-tutors engagement. We believe that our delivery approach can be upscaled for larger class size, but this will be more resource intensive than conventional delivery.

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## COMPETING INTERESTS

The authors have no competing interests to declare.

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