

“IT’S PART-TIME - BUT STILL NOT AS WE KNOW IT!” - ANOTHER EVALUATION OF A FLEXIBLE LEARNING MENG

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ABSTRACT

This paper reports on the evaluation of the effectiveness of delivery of a flexible learning MEng (Hons) Engineering course at Bournemouth University (BU) and its integration with level 3, 4 & 5 courses delivered at a local Further Education College. The research aims to improve the delivery of the MEng programme by better understanding the effectiveness of operation over the 3 academic cycles now operated for this programme. The course was developed as part of an HESTEM National Programme project and provides an opportunity for engineers to take higher education qualifications while remaining in full time employment. The evaluation takes the perspective of both academics and students. The underlying pedagogy of the programme has been based on the Constructivist approach to learning delivered via blended learning. The paper evaluates how the use of both staff/student and student/student online forums, were modified and how the face to face tutorials on campus became the important mode of delivery. The paper discusses the challenges students’ and academics found in moving from a ‘day-release’ mode of learning to a virtual environment and from Further to Higher Education and explores the now integrated nature of the programme.

Keywords: flexible learning; engineering; MEng; virtual learning environment; online learning

1 INTRODUCTION

This paper reports on the evaluation of the effectiveness of delivery of a flexible learning MEng (Hons) Engineering course at Bournemouth University (BU) with the aim to improve the delivery of the programme by better understanding the effectiveness of operation over 3 academic cycles and its integration with level 3,4 & 5 courses to form an integrated programme. The paper develops the work reported by Humphries-Smith & Benjamin in EPDE13[1]. The evaluation takes the perspective of both academics and students and fits with both the topics of design education in practice and collaboration in design education. The course was originally developed as part of a Higher Education Science, Technology, Engineering and Mathematics (HESTEM) National Programme project and provides an opportunity for engineers to take higher education qualifications while remaining in full time employment. The programme is accredited for Incorporated and Chartered Engineering academic requirements through the Institution of Engineering Designers (IED). The cohorts have all progressed from part time, day release Foundation degree Science (FdSc)’s or Engineering (FdEng)’s at a Further Education College (FEC) to take units at level 6 (Bachelors) and level 7 (Masters).

Since the development was originally reported in Humphries-Smith & Benjamin[1] the student cohort has grown as indicated in Table 1 below with students and employers both seeing the progression as a natural route now, rather than only coming to study the Higher National Certificate (HNC).

Table 1. Students Numbers by cohort

	HNC yr1/level 4	HNC yr2/level 4	FdEng level 5	BEng yr1/level 6	BEng yr2/level 6	MEng level 7
12/13	37	20	9	16	-	-
13/14	23	35	17	10	16	3
14/15	50	24	28	17	10	1
15/16	54	47	30	20	16	0

2 LITERATURE REVIEW

As part of the ongoing development of the programme further research has been looked at in relation to the transition from Further Education to Higher Education (HE) and latest developments in part time HE.

2.1 Pedagogy

As set out in Humphries-Smith & Benjamin [1] the development of online units for the MEng programme was based on the Constructivist approach to learning manifested through the Mayes Conceptualisation Cycle and uses online learning materials delivered via a Virtual Learning Environment (VLE).

This leads to a set of pedagogical principles for the programme [2]:

- Learning should take place in authentic and real-world environments;
- Learning should involve social negotiation and mediation;
- Content and skills should be made relevant to the learner;
- Content and skills should be understood within the framework of the learner's prior knowledge;
- Students should be assessed formatively, serving to inform future learning experiences;
- Students should be encouraged to become self-regulatory, self-mediated, and self-aware;
- Tutors serve primarily as guides and facilitators of learning, not instructors;
- Tutors should provide for and encourage multiple perspectives and representations of content.

A student engages with three 20 credit (10ECTS) units per academic year, studying one 20 credit unit (200 hours of study) at a time, each of which is studied over a 10 week period, including assessment. As described in Humphries-Smith & Benjamin [1] “An initial 1 day face-to-face introduction on campus starts each unit, and is followed by two further half day face-to-face sessions again on campus. The materials are delivered via the VLE using various media, such as notes, powerpoint presentations with synchronized audio, podcasts, tutorial questions as well as discussion activities mediated through discussion forums.” (p210) – this paper re-examines how the constructivist approach has developed.

2.2 Current Developments in Part Time Higher Education

Since 2013 the UK Government has shown greater interest in part time higher education provision and commissioned a review by Prof Eric Thomas on part time higher education [4] which, along with the Maguire Report [5], point out that part time students numbers are reducing in the UK. Both reports also suggest that one important requirement for part time students is to offer flexible learning and Thomas (p36) points out the rise of apprenticeships will also require “progression to part-time higher education provision linked to developing the knowledge and competence they require in their current and future job roles will be fundamental”.

2.2 Transition from Further Education (FE) to Higher Education (HE)

Voake et al [3, p11] look at this transition, however, primarily not from the perspective of part time students. Some points that are made are relevant such as “The teacher comments suggest that FE students are generally not taught to be independent thinkers. This is largely due to the strong result-driven culture faced by teachers who find it difficult to strike a balance between examination results and helping students to prepare for university.” Lea & Simmons [6, p39] in the QAA report also examine the difference between HE in FE and HE in HE and suggest “for example, encouraging students to work independently, but within a supportive learning environment. In some cases local students were being encouraged to progress to universities”.

3 METHODOLOGY

The evaluation repeated the methods of the previous study with semi-structured interviews with academics delivering the units and focus groups with all cohorts of students engaged upon the programme. Additionally questionnaires were used with the cohort who have most recently completed the BEng cycle. This was of particular interest as of a cohort of 12, 11 students choose to take the BEng award and not continue to the MEng award.

The use of focus groups, questionnaires and interviews enabled a more exploratory approach which resulted in rich data. Group sizes varied from 11 to 22, with a total of 61 students involved, 3 graduates

completed the questionnaire, and interviews were conducted with 4 out of a total of 6 tutors who lead the units delivered in flexible learning mode. To ensure consistency between the data collected the same researcher facilitated all the group discussions and tutor interviews.

4 ANALYSIS OF DATA

This analysis considers data within 2 main areas. The first area examines the effectiveness of the MEng course delivered using flexible learning, and the second explores the effectiveness of the collaboration in an integrated programme, between BU and the local FEC.

4.1.1 Constructivist learning

The data collected indicate that the Flexible Learning mode of delivery of this integrated programme, continue to broadly meet the pedagogical principles required for effective learning.

To progress to the BEng and MEng levels students must be in full-time engineering employment. Therefore the first requirement of learning in an authentic and real world environment can be met providing the material studied is relevant to the work the students do in their companies. This was confirmed by comments such as 'it is very relevant to the work world'. One student commented that even the Business Development unit, which was initially thought to be irrelevant, when applied to their company gave them

'an appreciation of what the top guys do in their day to day job, defining the strategy of the company and how they generate that'

When asked about the requirement that learning should involve social negotiation and mediation a number of responses were offered. These included

'only when we are here', 'relying on the on-line communication', 'discussions are quite impersonal', 'after writing it down I ended up phoning up and had a chat'

A further observation was made that unit assignments that are individually tailored militate against social interaction. This echoes the earlier comment about these tailored assignments tending to reduce the use of the discussion forums.

Another principle is that learning should be within the framework of prior knowledge. This goes to the very essence of an integrated programme, which should provide students a 'joined up' education, with each level of study building on the previous levels. This was confirmed by a student who acknowledged that what they were learning was 'definitely building'.

One principle that appeared to not be met as well as it might was that of formative assessment. Although the students testified to some formative assessment it was by no means universal, and some students said they 'prefer to spend time on graded assessments rather than formative'. One to one supervision via a supervision journal and the use of staged summative assessments help to provide on-going feedback on assessment tasks in some units.

On the principle of student becoming self-regulatory, self-mediated and self-aware it was observed that

'If everyone has got this far and we have all managed the hand-ins we have all got that pretty much sorted'

Although such a comment does not cover the full breadth of the principle, it does indicate that the students are able to be autonomous learners, with all that that entails.

The nature of on-line learning constrains tutors to act more as facilitators rather than instructors. The students supported this when they said 'that tutors point us in the right direction and guide the learning.' Additionally, they pointed out that tutors try to get them 'to interpret it yourself – that's how you learn' but added that confirmation is always encouraging. It was also suggested that this is subject-dependent, for instance a unit involving learning CAD is very practical and needs a more blended approach of facilitation and instruction.

The requirement for the provision of content being available in multiple perspectives and representations was found to be present, with a variety of material delivered in the form of presentations, videos, and papers. It was commented that the use of an on-line VLE tended to restrict the flexibility in offering alternative perspectives as it has to be set up in advance. Tutors cannot quickly or easily respond to a student who is 'not getting it'. Additionally it was pointed out that the units are short therefore opportunity to deliver content in different ways is limited. However the face-to-face sessions offer some flexibility.

4.1.2 Face-to-face sessions

This study has reaffirmed the value of the face-to-face sessions run both on the first day of each unit and then twice during each unit. Current students repeated many of the comments made in the previous study, highlighting the need to get to know their peers and tutors, to align themselves with the 'tutor's expectations' and getting feedback on work to improve their performance.

In addition the students acknowledged the value of doing presentations in these sessions, especially at the start of the level, as a good way to 'introduce yourself to the group'. These sessions were felt to be important in making them 'feel more comfortable using the discussions boards' and for providing '2 way immediate communication'

One student who travels for 4 hours to attend these sessions pointed out that 'they need to be well structured to ensure good contact with all students'. Another commented that the sessions are 'valuable but can be frustrating'. There was a constant call for more sessions but also an appreciation that if they want substantially more face-to-face contact then they need to do a full-time course.

4.1.3 Discussion forums

The value of the discussion forums was illustrated by one student who commented that they are essential for distance learning – if there was no forums then 'you have got nothing'. Another observed that the on-line environment is the 'whole hub of everyone's information in and out'.

However it was admitted that the forums were not overly subscribed and that they were mainly used to ask about such things as formatting documents etc. The reason for this was suggested to spring from a number of factors. These included that the forums were not appropriate for units where the assignment task was tailored to the individual and therefore each student was doing something different, the inconsistent response of tutors to student postings and some apparent usability and reliability issues when the 'platform was slightly glitchy'.

One reason for the inconsistent use by tutors in responding to students postings was suggested as being due to staff being experienced in full-time education and having most of their teaching time in this mode of study. The inclusion of a unit delivered in flexible learning mode is therefore 'like a thing on the side' and checking and responding to an on-line forum is not their main focus. The need to 'prioritize a bit more time to' the on-line aspect of flexible learning was suggested as a remedy.

The tendency of on-line discussion forums to dehumanize social interaction was again observed in this study and it was suggested that the inclusion of photographs and personal profiles would help to mitigate this effect. Most students are used to 'networking' via such media as Facebook and Snapchat etc and one student extolled the virtue of team working software which allows for much easier sharing of material and documents as well as effective communication. It was suggested that the adoption of such systems could in part answer the request for more face-to-face time.

4.1.4 Tutor Reflections

Having completed 2 full cycles of the BEng level some units have now run 4 times. It was a little surprising to find that very few structural changes had been made during this period. One tutor, in response to student feedback, added extra applied examples and adjusted the assessment to better suit the learning needs of the students. It was evident that the more mature standing of the students and their focus on their work made them want more applicability in what they were learning, rather than more theoretical content. Another tutor commented that with increasing numbers he would have to review what he does in his face to face sessions as it would be impractical with larger numbers. Beyond this the structure originally adopted for the mode of delivery has remained unchanged to date.

All tutors commented that the face to face sessions were invaluable in establishing relationships with the students, offering feedback, often immediate, and responding to the needs of the learners.

It was evident from tutor responses that the use of the discussion forums varies widely between units. One tutor, who has a common assignment for all students, commented that the forums were used extensively with students engaging in discussion. The tutor's strategy was to only add to the discussion if something posted was wrong or the discussion was heading in the wrong direction. Another tutor whose assessment is tailored to the individual students witnessed to very little use of the discussion forums. Interestingly another tutor whose assessment is tailored said that the discussion forum was widely used by students. Exploring this discrepancy revealed that this tutor was very proactive in his use of the forum by posting up questions and comments for discussion.

When asked what impact delivering their unit has had on them, a tutor testified to having more opportunity to establish and exploit relationships with industry. Another tutor said they had benefited from having to adapt their teaching to the needs of mature students in full time engineering employment, and their tendency to require and respond with immediate action and applicability. Without exception the tutors said delivering flexible learning was a positive and beneficial experience.

4.2.1 Development of an Integrated Programme

The breadth of this study was extended to include all levels of study within the integrated programme, enabling exploration of the impact the integration and what it offers both students and their employers. When asked for the reason for joining the programme the overwhelming response was career advancement and an increased salary. Surprisingly there was little evidence that obtaining professional status was a major driver among most students. This suggests that there is a lack of awareness concerning the importance of professional status in career advancement and/or companies do not greatly value professional status among their staff.

Having a 'well mapped out' progression path with 'everything in place', resulting in knowing where the future lies was important to the students. Conversely not all have planned careers, as evidenced by one student who admitted that 'I didn't plan to get this far' but had just signed up for an HNC. Clearly the integrated programme had encouraged this student to progress further than intended.

Other advantages of an integrated programme were highlighted. These included that being modular a student could take a break from studying if necessary, and that each level offered a recognised qualification.

Many of these benefits equally apply to their employers, not least knowing the cost implication for companies sponsoring their employees over a number of years. However one student suggested that the success of the programme may in time cause problems with companies not wanting their employees to join the programme as this could apply too much pressure on staffing and finance, resulting in the companies refusing to offer sponsorship.

When exploring the reasons for possibly stopping progressing to a higher level the students revealed that the timescale was daunting – 7 years from HNC to MEng. Other reasons given were their companies not wanting them to progress due to lack of funding or business need; and personal work load and commitments.

4.2.2 Progression from traditional part time day release study

One of the key considerations when developing and delivering an integrated programme is the progression between stages, especially when it spans Institutions as well as styles and modes of study. Clarity in what is expected and managing expectations have been shown to be effective strategies to 'smooth out' any possible difficulties arising from this progression. The use of previous students who have made the progression successfully to both formally and informally brief those about to make the transition was commented on. Students explained how information from previous students about what to expect, what style of support offered by tutors, the type of assessment tasks and the 'vagueness' that often confronted them in being expected to find their own way through to a solution, made the progression easier.

In addition, the value of relatively small changes made to some units in the FdEng was appreciated. One student commented 'What we did last year transitioned nicely'. They were referring to an exercise added to one of the FdEng units which involved writing a research paper. This was done to introduce the students to the more 'academic' writing required at University, whereas up until then they have presented their work mainly in the form of industrial reports. Writing a research paper was said to have been 'frustrating' for them but it was appreciated as effective preparation for the next level of study at University. This analysis was supported by the distinct difference noted by the programme leader, between the feedback from the first cohort to make the progression compared to the subsequent years. The negative comments made by the first cohort have not been repeated.

When current students were asked about their experience of this progression they highlighted the need for effective time management, with Flexible Learning requiring the students to 'pace it out', rather than the day release structure dictating when things needed doing. One student commented that they definitely need to input more of their own time. Other reflections included a more mature and professional feel to 'attending' a University, and a 'breathe of fresh air' with a new atmosphere, new people and new ideas, after spending 5 years studying at the same FE college.

5 CONCLUSIONS

The original study concluded that the introduction of this programme had been highly successful. With increasing student numbers, a structure that has required little modification and a generally high satisfaction among both staff and students, this study has indicated that that success has continued. In addition to this, increasing student numbers appear to indicate that companies value this provision. The study has shown that the face to face sessions were vital in establishing a community of learning and provide essential opportunities for feedback and issue resolution. The use of the discussion forums appeared to be linked to the nature of the assessment, but there was clear evidence that if tutors were proactive in their use of the forums then they can be effective in maintaining and developing those communities regardless of the nature of the assessment. When making the transition from day release to flexible learning, students have to make adjustments to how they work and how they relate to tutors. It also became evident that tutors need to make adjustments to facilitate a different mode of study, as well as in the way they work and in their appreciation of the likely needs of students in full time employment.

Delivering an integrated programme across 2 different institutions presented a series of challenges. Not least among these was the provision of a smooth transition between levels. When this transition required a change of institution as well as mode of study, extra care was needed in managing the expectations of students. It was found that the use of the testimony of students who have successfully made the transition was effective in allaying fears and inspiring confidence. Also the fact that one member of staff taught on both sides of the transition assisted in this end. It may well be that the integrated nature of this programme has also provided a widening participation pathway for people to gain higher education qualifications who would otherwise not have expected to do so.

The surprising lack of interest in gaining professional status may go some way to explaining why so few students who have completed the BEng level decide to continue to the MEng level.

As a result of this study the following recommendations have been made:

- Further research into the place of professional status and its value, and the awareness of both companies and staff
- Encourage tutors to be proactive in the use of the discussion forums to enhance the community of learning
- Review the use of the face-to-face sessions and the develop best practice to maximize their effectiveness in promoting social negotiation and mediation in learning
- Explore and develop the use of networking technology to enhance the learning experience
- To investigate the value of the MEng Integrated Programme, to both individuals and companies and determine if it provides a widening participation pathway.

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