

IAEA Conference Paper Submission

Evaluating the Quality of Assessment

Creating the Military eLearning Culture: Evaluating Assessment Techniques

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ABSTRACT

The Ministry of Defence, in partnership with BT, has implemented a collection of web-based services that support distributed eLearning across the whole of Defence. The service, the largest of its kind in Europe, is known as the Defence Learning Portal and has a potential user base of 300,000.

This revolution in distributed learning drives the requirement for a change in assessment. This paper evaluated a British Army eLearning package, Military Knowledge 2, and its forms of assessment. The package employs on-demand assessment using formative and summative assessment techniques. At present multiple choice and open-ended questions are the main form of eAssessment. In most cases, a question refers to a particular Lesson, but there are also some questions that encompass a whole section. These questions are more complex and attract a higher score.

eLearning is new to the British Military and encompasses a cultural shift as well as a technological change. This paper explores the assessment techniques employed and how these can be improved with the emerging technology and its implication for the whole of Defence. The evaluation is also considered against the cultural change required to make Military Knowledge 2 an effective learning and assessment tool in the British Army.

ABOUT THE AUTHOR

Lieutenant Sarah Buck is an Engineering Training Manager within the Royal Navy. Her role is to advise and consult on the use of eLearning across Defence in the UK, in particular the use of eLearning via the Defence Learning Portal and to research, collate and disseminate best practice. Lieutenant Sarah Buck holds a Bachelor of Science Degree, the Post Graduate Certificate of Education, a Post Graduate Diploma in Training Management and Consultancy and is a member of the Institute of Physics. Her particular areas of interest are the 'learning culture' in Defence associated with eLearning and eAssessment.

Creating the Military eLearning Culture: Evaluating Assessment Techniques

Introduction

The UK Ministry of Defence (MoD) is the single largest supplier of training and education in the UK and one of the largest in Europe¹. In 1999 work started on the Defence Training Review (DTR). The DTR also responded to the wider UK government agenda for modernising lifelong learning and it recognised the potential for eLearning to deliver benefits for Defence training and education through the exploitation of existing and emerging technologies. The MoD has embraced eLearning with the largest programme of its kind in Europe. It has been launched under the banner of the Defence Learning Portal (DLP), a project with the overriding vision to provide coherence to the Defence-wide exploitation of eLearning as an efficient and effective training medium. The project is run from the Defence Centre of Training Support, based at RAF Halton, on behalf of the Director General Training and Education. The DLP project emerged from the Defence Training Review that recommended the acquisition of a single coherent and cost-effective system for delivering eLearning to Defence.

The DLP project is planned to grow incrementally over a ten-year period with military eLearning courseware being added to the system as it is developed. It is envisaged that Military Knowledge 2 will be added to the system later in the year. This means it will be available to Junior Army Officers over the MoD intranet and the World Wide Web, hopefully making it more accessible.

Aim

The aim of this paper is to report the initial findings into research carried out to explore the early experiences and practicalities of eLearning implementation in the British Army. It discusses the future of the package and in particular its assessment procedures.

Military Knowledge 2

Military Knowledge 2 (MK2) is part of the result of a detailed study² into the way Army Officers are trained after they have completed basic training at the Royal Military Academy Sandhurst. The report identified the education and training that officers would require at various stages of their careers. Officers are expected to undertake MK1 in their first appointment as a Troop Commander. This then allows them to have the underpinning knowledge to take and pass the Junior Officer Tactical Awareness Course (JOTAC). After this the officers embark on MK2, which prepares them for Intermediate Command and Staff Course (Land) (ICSC(L)) and in subsequent staff appointments on completion of ICSC(L). The Officer Career structure is shown in Figure 1. Defence Writing (DW) is fundamental to any military officer and is therefore a running theme throughout a junior officer's career.

MK2 was put together to encompass the many different staff appointments that junior Army Officers may be appointed to early in their careers. It is designed to give an overview and awareness of Project Management, the Civil Service and Campaign

¹ Mackain-Bremner and Scott, Military Simulation and Training Issue 1/2006.

² Review of Officers Career Courses, May 2002. MoD Publication

Planning since junior officers often cover these jobs. It is also designed to give students a guide as to where they may find more information on a subject should it be required. The package itself covers 60 hours of learning and consists of formative and summative assessment.

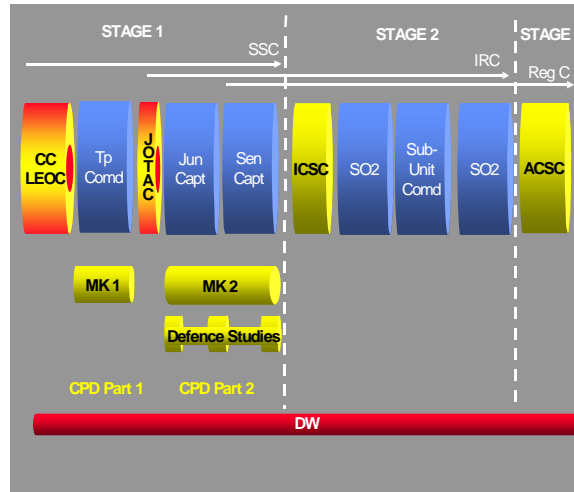


Figure 1. British Army Officer Career Structure up to Advanced Command and Staff Course (ACSC) from ROCC Report 2002.

The MK2 Course is divided into 3 Parts, A, B and C. Each consists of 2 or more Modules, which are divided into Sections and each Section contains a number of Lessons.

Each element of MK2 includes an Introduction and a Summary. There are Formative assessments throughout the lessons. A Formative assessment at the end of each Module is also built into the package so that students can identify how they are progressing through the course. A Summative assessment is designed to test an understanding of all the course content. As of March 2006, there were a total of 1557 students registered on the course and 45 students had completed the course and passed.

Military Knowledge 2 Summative Assessment Review

Analysis of the Internal Validation of the package by the students has been carried out and using the results the following recurring themes have been identified as areas of weakness, which may be creating a negative experience of MK2 assessment. It is these themes that will be discussed in this paper to highlight the problems associated with eLearning in Defence and its assessment practices.

1. Negative Marking/Inflexible Marking

“If a question is worth say 2 marks and I get one answer wrong, instead of getting one mark, you get none!!!”

Many students enrolled on the programme feel this frustration. It is a problem with the inflexible computer based marking and lack of consistency in the marking policy between questions. This is a legacy problem in that during the MK2 design stage,

negative marking was considered as an option for the assessments. For good reason records show that this option was rejected, however, a legacy of negative marking remains in the wording of some questions and scripts. Although there has never been a negative marking regime, some students still believe that they will be deducted marks for incorrect answers. This perception is re-enforced by the existence of a few 'rogue' questions in the formative tests that were programmed to mark negatively. This perception must be altered soon, so that the students do not feel victimised if they fail the Summative assessment and so that they can spread the word of a fair and just assessment.

2. Relevance of Assessment

Many students and the author question the need for committing large volumes of text to memory, whereas in practice they would use manuals or the Internet to find the answer. The students feel they are being tested on learning questions that detracts from the learning experience offered by the course.

"The questions are too restrictive – requiring exact repetition as opposed to ensuring students have an understanding of the concepts."

This type of assessment is focussing on learning questions rather than the information contained in the lesson. Research showed that there are inherent difficulties in using computer-based assessment. To make the question relevant future content reviews must focus on succinct, imaginative and challenging questions that test the assimilation of material in relation to the specified Learning Outcomes. Development work must be carried out to improve the style and technique of the question in order to remove the accusation of ambiguity.

3. Time

The MK2 Study Guide contained a break down of all the lessons and awarded an estimated time to each lesson and each part. The subject of time generated the most response from the students as they have busy jobs to undertake at the same time.

"two weeks to complete all modules is totally unrealistic bearing in mind the demands of being an SO3".

"The initial estimate of how long the course will take...is just plain wrong and will lead to a lot of bad feeling about the course."

These two quotes from MK students clearly identify the problem. The course is too long and not what expected. The stated lesson timing is confusing for the students despite a message to clarify the meaning of these times on the MK website. It has been highlighted by the research that the Chain of Command use the lower end of timings when detailing time for student study. The MK team have to consider whether these timings are realistic and whether the Chain of Command has been misinformed as to the commitment required by a student to pass the summative assessments. Students are finding it increasingly difficult to get time off to study, especially when they take longer than expected. Many end up completing their work out of hours in order to make up the time they had off to study. This is not conducive with embedding a eLearning culture as the student's workload is increasing.

4. Lack of Summative Assessment Feedback

The lack of feedback on completion of the Summative assessment is a continuing issue for the MK team. The main reason for not supplying feedback previously was one of security and question bank depletion. If feedback was provided on completion of assessment the students would very quickly build up a bank of likely questions, that would ultimately undermine the assessment and reinforce the tendency toward rote learning of answers. The rationale behind this is that when the question bank was devised only ten questions were set for each Learning Outcome. A way around this though has been found. After the student has been awarded their pass or fail they can telephone the helpdesk and request feedback on their performance in the assessment. The helpdesk will discuss each question that was incorrect and explain why the student did not pass that particular question. This is also a good way of quality checking the marking system to ensure the students fail of a question is not due to a spelling mistake. However, the feedback must be requested and is not provided automatically to ensure security over the questions.

5. Question Style

“The ambiguity of some of the questions in the assessment and those questions which had not been mentioned in the lesson contents...added to the difficulties of completing a computer based assessment.”

Ambiguous questions tend to be the norm in MK2 assessment. At present there is a conflict between ‘hard’ subject matter and ‘hard’ question style. The most common style of hard question in MK2 is missing text entry, however this type of question often covers ‘easy’ material. Missing word questions are often ambiguous and rely solely on rote learning of unimportant passages of text. In addition to this, the omitted word is often too close to other options in drop down lists; one extreme example of this is where ‘that’ and ‘which’ were options. The extreme example above was testing the student’s grammar and not knowledge of the subject.

The ongoing debate between factual recall and demonstrating understanding of the MK subject matter pre-dates the distance-learning programme. However, the issue remains pertinent and more often than not the questions require a student to display rote learning ability above a true understanding of the subject. This is also evident in many eLearning courses and not just MK2. On-line assessment naturally lends itself to factual recall and a small element of this is required to meet Learning Outcomes, however, where possible questions should be scenario based and test the real understanding rather than information retention.

6. Learning Style

People learn in different ways and this is what makes us all individuals. The age group undertaking MK2 at present are fairly new to eLearning. Many would not have undertaken an eLearning course before (or not for this amount of time) and therefore the whole process is new.

“I am a book or a lecture man, not a computer geek. I found at times my head spinning from looking at the screen for protracted periods.”

Although computers are used more and more these days, sitting for hours on end receiving information from a screen is difficult. Where students have been brought together for a week of study, they were seated in front of the screen for seven hours a day. This is not beneficial for the student or their perception of eLearning. The

students need to be taught how to manage their time at a screen to optimise their learning ability. Other feedback has highlighted a lack of interaction between the student and the courseware. A review of the content and advances in technology may be able to increase the interactivity in the future.

7. Mistakes/Inaccuracies

“Some of the content in the lessons does not match the answers in the assessments. There are obviously some inaccuracies either in the assessment or the lessons.”

There are a number of inaccuracies that have been highlighted by this research and others. This has caused irritation amongst the students and mentors. The assessments were produced under significant time/resource constraints and the lack of experience in producing eAssessment impacted on the development of questions. Without the relevant expertise, question authors who are completely unaware of the impact can make a number of fundamental mistakes. It is also unfortunate that mistakes are easier to spot when an assessment is being taken rather than when it is being authored.

The MK team are now instigating the same review process for questions as they do for lesson content i.e. the ALPHA, BETA and GOLD quality control system. Questions will now be reviewed at the same time as the lesson content to ensure parity between them. Unfortunately, the perceived validity of the assessment in the eyes of the students will impact significantly on the students overall attitude towards the course. Due to this the team are now working to develop practices that produce realistic, fair and mentally stimulating assessments.

8. Connectivity

Rosenberg (2001) states that ‘Without access nothing else matters – you can not move forward until people can actually get to your programs.’ The research for this paper has identified problems with access to the course through lack of Information and Communications Technology (ICT). Physical access to the course requires access to the Internet, the appropriate browser version and plug-ins to launch the content.

“The course is under resourced. I have had to borrow IT in order to complete it and have been using civilian access to the Internet at expense to myself... I have had study interrupted with power outages...”

The implementation of MK2 means that the Chain of Command is often inundated with requests for more IT and therefore more money. This may be one of the reasons that COs do not like eLearning, the increase in cost associated with it at the beginning.

The technical problems will hopefully alleviate themselves later in the year when MK2 will migrate to DII(F), a new defence wide ICT platform that, in concert with learning centres, will give the element of choice that underpins the workplace learning culture. The introduction of a Defence-wide LMS known as the Defence Learning Portal (DLP) has also ensured a consolidated approach to ensuring Defence ICT systems are enabled with the correct browser versions and plug-ins. It is unfortunate that students have already experienced technical problems with eLearning and this may lead them to have a sceptical view of how eLearning is being implemented in Defence.

CONCLUSIONS

Future assessment techniques

Technological advances have changed the way that training is being undertaken in the British Military; this should be reflected in the way that the military conducts its assessment.

The issue for training in the military is not if eAssessment will play a major role, but when, what and how will the military employ it. eAssessment, as discussed in the Nesta Futurelab Series (2004), can take a number of forms, including automating administrative procedures; digitising paper-based systems, and online testing – which extends from banal multiple choice tests to interactive assessments of problem-solving skills. Many of the problems highlighted in this paper are due to a lack of understanding of assessment processes and a lack of imagination. The questions were put together hastily by people with no expertise in writing questions. This has meant that the students have had to compete with inaccurate questions, negative marking systems, poor question styles and lack of feedback. Coupled with this there is the ongoing problem of embedding eLearning itself. Poor support and recognition from the Chain of Command has not identified eLearning as a positive choice for MK2, combined with connectivity issues and a new learning style the issue of whether eLearning is a success in the British Army is still under debate.

Further works

eLearning across UK Defence is still in its infancy. This paper has explored the assessment techniques utilised by one of Defence's largest pieces of eLearning and it has tried to assess its ability to embed itself into Army culture. It is assumed that the perceptions and experiences of those involved in MK2 and its assessments will shape the future of eLearning across Defence. Not only in terms of style, format and quality of content but also in the manner that MK2 is integrated into the workplace as a form of learning.

Further work is required into the effectiveness of MK2, especially the assessment process. This work should include the idea of mobile learning and assessment, possibly through the procurement of PDAs for all undertaking the training. This would allow better access to the course at any time of day and anywhere. It would also show a commitment to the students that the Army was behind the project and supporting them with their learning. Better evaluation of the course and its assessment will be available later in the year when more students will be enrolled on the course. The biggest test of effectiveness though will be seen when the first group of MK 2 students undertake ICSC(L). MK2 is designed to supply knowledge to the student prior to attending ICSC(L). The first course with MK2 students starts in September 2006, the full extent of its success and effectiveness is expected mid 2007.

Embedding the culture

“In essence, technology needs to become as interwoven in institutional strategic planning and educational delivery as it is in society – to become an integral part of teaching and learning throughout the student's life-long learning environment.” (Schreiber and Berge, 1998).

With the implementation of the DLP, UK Defence now has an ideal opportunity to exploit Schreiber and Berge's recommendation. However, this must be balanced with the warning from Rosenberg (2005) who said:

"when great technology meets poor culture, the culture wins everytime."

The experience of the British Army's junior officers as key stakeholders in future workplace learning, will influence the transformation, or not, of the British Army into an organisation where workplace learning is accepted and encouraged. At present research has indicated that the experiences of MK students are currently overshadowed by the technical problems with delivery of the courseware and the attitudes of senior officers (Charles and Crome, 2005).

The attitude of the Chain of Command (senior officers) still causes a barrier to the creation of a workplace learning culture. Charles and Crome (2005) research identified one commanding officer that considered that eLearning should be carried out during leave. This demonstrates that education and training is not being encouraged or is even expected as part of the daily working routine. The DTR report of 2001 identified the recognition by the Chain of Command for learning as a fully supported workplace activity as fundamental to its success. If the Chain of Command is not uniformly fulfilling its 'responsibility to ensure subordinates are both supported and encouraged to participate in learning' the organisation cannot claim to have a workplace learning culture. Better connectivity and content may serve as a way of increasing support from the Chain of Command.

There needs to be a coherent management buy in to the courseware and full support needs to be given to the students. If not the students will form one of two attitudes to the management of their soldiers and officers who undertake eLearning in the future when they are Commanding Officers. They will either recall their own MK experience, which required a great deal of effort on their part and therefore support their soldiers and officers or they may remain sceptical, hindering future eLearning initiatives. Unfortunately, the latter choice means that eLearning will never be fully implemented into the British Army.

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