Security management training takes to the web.

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ABSTRACT
Rises in the incidence of global terrorism have underscored the need for high quality professional education in security risk and security technology. As a result, the demand is high for Security Science courses in the national and international contexts. Edith Cowan University delivers professional education for the protection of assets at international and national domains. This paper describes the philosophy and pedagogy informing the design and development of Security Science online units, and provides examples of the interactive activities from the Physical Security unit. Learning materials developed for this course have unique attributes as they were specifically designed to provide simulations and interactivity in the learning process. The Physical Security unit are used to illustrate the development of the online learning strategies and interactive activities.

RESUMO
O aumento da incidência do terrorismo global, tem trazido a necessidade para educação profissional, de alta qualidade, sobre riscos de segurança e tecnologias de segurança. Como resultado, existe uma grande demanda para cursos sobre as Ciências da Segurança nos contextos nacional e internacional. A Universidade Edith Cowan oferece educação profissional para a proteção de bens a níveis nacional e internacional.
Este artigo descreve a filosofia e a pedagogia informando o design e desenvolvimento das várias unidades do curso online da Ciência da Segurança, e fornece exemplos de atividades interativas incorporadas à unidade de "Segurança Física". Os materiais de aprendizagem desenvolvidos para este curso têm atributos únicos, vez que foram especificamente desenhados para prover simulações e interatividade ao processo de aprendizagem. A unidade de Segurança Física é usada para ilustrar o processo de desenvolvimento das estratégias de aprendizagem online e das atividades interativas.

RESUMEN
El aumento de la incidencia del terrorismo global, ha marcado la necesidad de profesionales altamente educados en riesgos de seguridad y seguridad tecnológica. Como resultado, la demanda es alta para cursos sobre Ciencias de la Seguridad en el contexto nacional e internacional. La Universidad Edith Cowan ofrece educación profesional para la protección de bienes en los dominios nacionales e internacionales.
Ese artículo describe la filosofía y la pedagogía informando el diseño y el desarrollo de las varias unidades del curso online de Ciencia de la Seguridad, y proporciona ejemplos de actividades interactivas de la unidad de "Seguridad Física". Los materiales de aprendizaje desarrollados para ese curso tienen atributos únicos, porque fueron específicamente diseñados para proveer simulaciones e interactividad en

el proceso de aprendizaje. La unidad de Seguridad Física es usada para ilustrar el proceso de desarrollo de las estrategias de aprendizaje online y de las actividades interactivas.

Security management training takes to the web

Terrorism to training

The recent terrorist tragedies in Kenya (2001), New York, Washington (s9/11), Bali (2002), Morocco and Saudi Arabia (2003) have emphasised the need for high quality professional education in security risk and security technology for the protection of human and physical assets.

These events have focussed national and international attention on the necessity for professional security education and training for government, private organisations, and community services. Although the extent of the security industry in Australia is considerable (five fold on the total of all police services in Australia), it has a relatively small professional component of education and training.

Since the terrorism events, international and Australian governments have realised the necessity for professional training of personnel in security technology, security management, and security risk to protect assets in security facilities. The Security Science programme in the School of Engineering and Mathematics at Edith Cowan University (ECU) has been established on the themes of security technology and security risk. Security Science in the School of Engineering and Mathematics at Edith Cowan University has been providing professional education for the protection of assets at international and national domains.

These courses have been offered at ECU for about ten years, and have developed both a national and international reputation for quality. Security Science at ECU is widely recognised by government and industry as the foremost security programme in Australia.
As a result, the demand for Security Science courses in the national and international contexts is high. This project is an extension of these courses and has developed the online learning resources for the four security science units of the Graduate Certificate in Security. The materials in the course have unique attributes as they were specifically designed to provide simulations and interactivity in the learning process. The physical security unit are presented to illustrate the development of the online course, with learning strategies and interactive activities presented.

Features of the online units in the course include graphics, simulations, and videos to present aspects of security that are not normally available to students.

The characteristic of uniqueness of the online course is a consequence of content of the units, and the application in the protection of assets. The strategies of graphics, simulations, and interactive activities are applied to the following learning activities:

· Defence in Depth principle.
· Security lighting.
· Flowchart application to Defence in Depth.

Field scenarios have been developed for the activities to make the learning experiences as realistic as possible. The simulations and graphics provide these experiences, together with security site images for actual security barriers, systems and technologies.

All Security Science courses (except for research based courses) are currently being delivered by distance learning, using print-based materials. As a consequence, Security Science has distance education students on all continents, as well as the eastern states of Australia. The terrorist events in USA, Africa, Saudi Arabia and Bali will have the effect of considerably increasing the demand for Security Science courses, through national and international marketing initiatives.

Structure of the course

This project has developed the online learning resources for the four security science units of the Graduate/Executive Certificate in Security Management, which comprises:

· Physical Security will develop an understanding of the principles and applications of technology used in physical security systems. The scientific foundation for physical security technology in modern security applications and techniques has been presented. The security theories of defence in depth and crime prevention through environmental design are studied. The technology treated will include: security lighting, locks, safes, strong rooms, perimeter protection, structural strength of buildings, vehicle control, physical barriers, properties of material of security protection.

· Security and Risk Management introduces the student to security and risk management concepts, and examines the development of security, and the application of criminological theory to security. An introduction to risk theory, and the assessment, analysis and management applied to risk will develop the requirements for conducting and documenting security surveys. An introduction to crisis management theory, security planning, policy and procedures will be presented.

· Electronic Security 1 develops and outlines the principles underlying applications of electronic security technology for the protection of assets of an organisation. As the security technologies and devices become more sophisticated, so increases the need for law enforcement agencies and security professionals to have a comprehensive knowledge and understanding of security technology principles and practices. This unit develops an understanding of the principles and applications of technology used in security systems. It includes the scientific foundation for security technology in barrier detection, open ground detection, and intruder detection systems.

· Facility Management 1 will be introduced with emphasis placed on the interaction between fire protection and technology management of large facilities. Fire protection will include detection systems, alarm systems, codes and standards, high-rise fire management, industrial fire management and evacuation procedures. Technology management systems include the topics of energy management and light control, air conditioning systems, lifts and escalators, and audio system control.

Both the Graduate and Executive Certificates in Security Management courses seek to provide the content and generic skills and the knowledge necessary for the protection of the assets of organisations, and individuals through appropriate learning activities. The course provides the principles underlying the protection of assets of an organisation, and will encourage the learner to seek examples and applications of the security practices in the community consistent with ECU's preference for constructivist learning practices. ECU is committed to a constructivist approach to learning for both face-to-face and online learning (Steffe & Gale, 1995). These units emphasise the application of professional best practice through reducing the risk of asset loss from high threat situations.

The instructional design primarily adopted an "exogenous constructivism" approach (Moshman, 1986) which recognizes the role of direct instruction but emphasizes learners directly constructing knowledge representations (Dalgarno, 1996). Elements of endogenous constructivism (Moshman, 1986) were also incorporated into the design in the form of simulations that allowed the learner to explore aspects of the security world first hand (Dalgarno, 1996).

The field of security, in addition to the subject/professional knowledge, embraces a large number of generic skills preparing students for a variety of careers in government agencies, social services and industry. The knowledge domains to be addressed by each component of the course have been endorsed by expert committees to meet the accreditation requirements for core areas of learning. The Graduate/Executive Certificate in Security Management course seeks to provide the content, generic skills and the knowledge necessary to protect the assets of organisations and individuals through appropriate learning activities. The course provides the concepts and principles underlying the protection of assets of an organisation, and will encourage the learner to seek examples and applications of the security practices in the community.

Needs analysis
The Security Science programme is one of a very small number of high quality security education courses in the international context. The strengths of the ECU programme are the major emphases on security risk, security technology, and security management and so provide a comprehensive professional education for government, commercial and industrial security management and consultancies.

As the amount of crime continues to increase and it impacts on the community in financial and social terms, so does the need for better strategies of protecting assets increases (Smith & Robinson, 1999). Communities and individuals have always used physical security methods to protect their valuables, a trend that continues in this era. However, as the tools and devices available to criminal elements become more sophisticated, then law enforcement agencies and security professionals need to have a comprehensive knowledge and understanding of the threats, risks, and security principles necessary to protect the assets of society.

The security market
The market for the Security Science courses is extensive both within Australia, and in the international context. All forms of work and leisure in the community have a security component that needs to be

planned and implemented. The national and international demand for professional security managers and consultants is increasing rapidly, with a scarcity of high quality education and training programmes in the international context. Effective training is becoming increasing important to Australian industry because of the legal responsibility of a company to ensure that employees have adequate training to carry out their work safely and the need to achieve a competitive advantage through increased productivity.

ECU's Security Science courses are recognised to have high status by government agencies, employers, and current students. The development of online security units have been well received by the international security industry. As a consequence, information technology is a potential source of competitive advantage for delivering courses internationally in the education industry (Hosie & Mazzarol, 1999).

Interaction with Tutors
Assignments have been structured for incremental submission and formative feedback from peers and tutors before final submission for marking. Assignments will be submitted for assessment through the Digital Drop Box facility in Blackboard, which is the platform for online learning. The Drop Box facility permits students to submit files to a tutor and for the tutor to retrieve and return files to students. The facility also permits the tutor to upload files for a particular student or the entire class. For students, the Drop Box is bi-directional, permitting students to transfer files to the tutor and the tutor to send files to that student. The tutor's Drop Box is multidirectional. Tutors can receive files from students enrolled in the online course and send them onto any individual student, or opt to deliver a file to all students.

My ECU and Blackboard
My ECU is the portal to online learning environments at Edith Cowan University, and it is a personal page that offers a number of customisable management tools within Blackboard ® (http://company.blackboard.com/), a Learning Content Management System used by Edith Cowan University. The page contains a number of modules of which the content is unique to each individual user.

What is Blackboard?
Blackboard is a suite of software products and services that enable and manage a virtual learning environment. The Blackboard software platform encompasses course management, academic portal and online campus communities. Blackboard was chosen by ECU from a list of other similar products because of its flexibility and ease of use. As a Learning Management System, it:

· facilitates anytime access to study materials;
· assists in assessments and record-keeping associated with a unit or course;
· engages students in active and collaborative learning through asynchronous participation in discussion boards and group Web pages;
· provides contact with academic staff and among off-campus and international students through announcements, threaded discussions and e-mail;
· provides contact among academic staff and students between lecture sessions. Users can post announcements of late breaking changes to keep students and their class assignments up to date.

They can administer quizzes and surveys online, and even have them scored automatically. Results can be posted online, accessible securely to each student. Students can also submit assignments electronically.

Interactive multimedia
Features in the course include graphics, simulations, and videos to present aspects of security that are not normally available in this combination to students. The characteristic of uniqueness of the online course is a consequence of content of the units, and the application in the protection of assets. The strategies of graphics, simulations, and interactivities are applied to the following learning activities:

· Defence in Depth principle.
· Flowchart application to Defence in Depth.
· Security lighting simulation.
· Video clips.

Multimedia materials being developed for the course by LDS Interactive Multimedia staff have unique attributes as they are specifically designed to provide simulations and interactivity in the learning process. Features of the online course include graphics, simulations, and videos to present aspects of security that are not normally available to students. The physical security unit are presented to illustrate the

development of the online course, with learning strategies and interactive activities presented. Field scenarios have been developed for the activities to make the learning experiences as realistic as possible. The simulations and graphics provide these experiences, together with security site images for actual security barriers, systems and technologies.

Graphical animation
The principle of Defence in Depth applied to a facility or building will have a succession of barriers to protect the valuable assets of the organisation. The strategy of a succession of barriers can be applied to a commercial or industrial situation to prevent access by intruders. Field scenarios have been developed for the activities to make the learning experiences as realistic as possible. The simulations and graphics provide these experiences, together with security site images for actual security barriers, systems and technologies.

Defence in Depth principle
The purpose of physical security is to delay an intruder by barriers for sufficient time until a response group arrives to apprehend. This is best achieved by a series of barriers, rather than a strong single barrier. The principle of Defence in Depth imposes a succession of barriers, which require access, between the public and the resource (Figure 1).
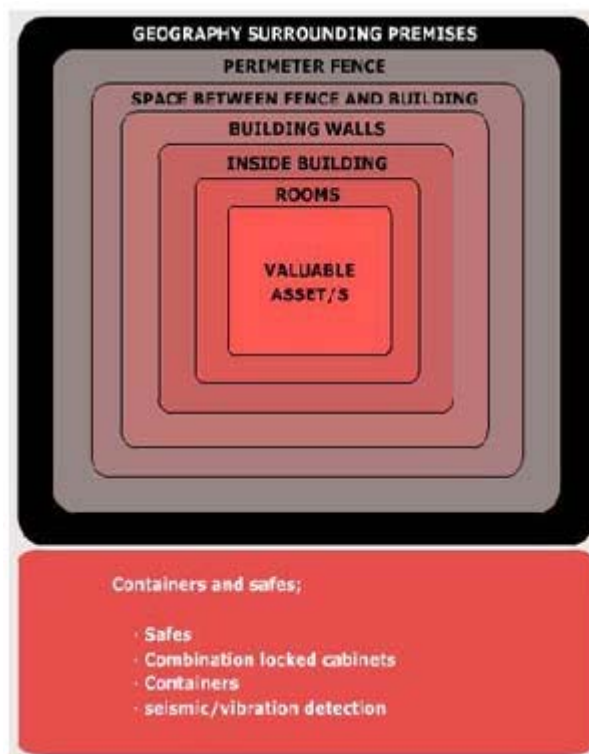

Figure 1: Defence in Depth principle

This principle has been developed to gain time for the protection of a facility, and Figure 1 shows the conceptual presentation of the Defence in Depth principle applied to typical valuable assets of an organisation. In an associated activity (Figure 2), learners are instructed to drag and drop an icon barrier onto the appropriate physical description in the activity.
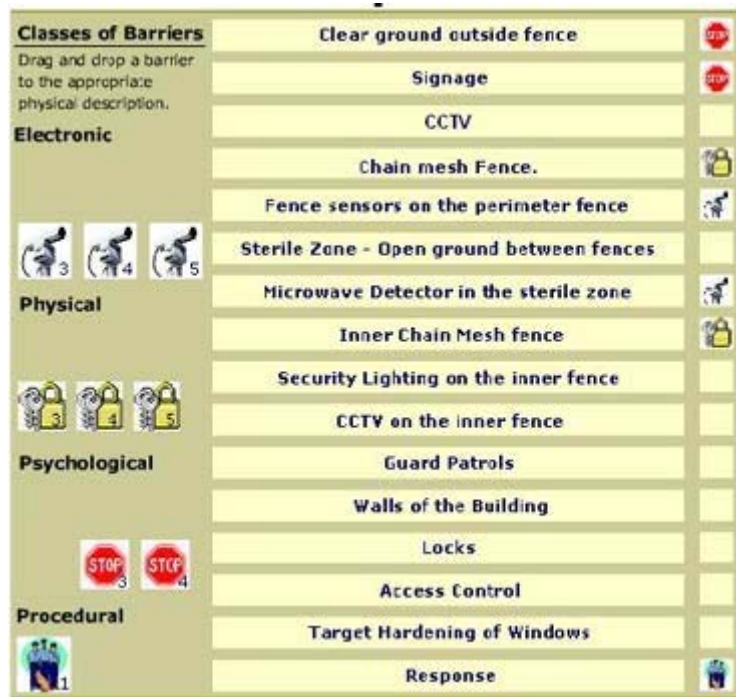
Figure 2: Defence in Depth principle where students drag and drop icons to construct the strategy

The flow chart activity in Figure 3 shows the paths taken for a successful deterrent to an attack on a facility. The diagram produced by successive clicking indicates input events and possible outcomes from the application of the functions of physical security through the Defence in Depth functions of **Deterrence, Detection, Delay, and Response.**
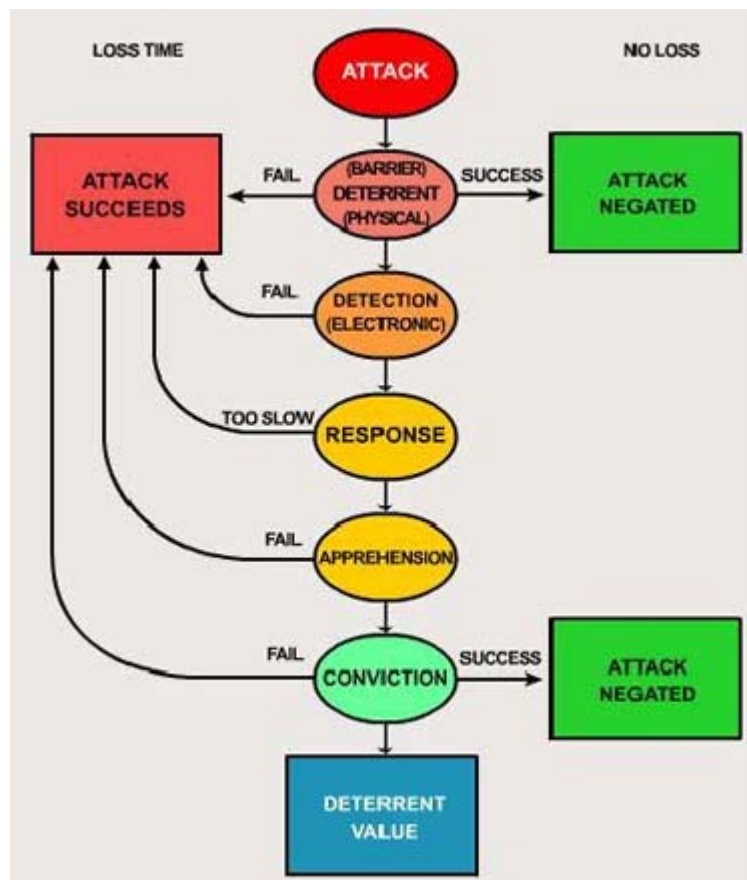

Figure 3: Generic flowchart application to Defence in Depth to a facility

The Security Lighting Simulation activity provides an opportunity for students to test and evaluate the effects of street lighting through colour rendition on a typical street scene, with the intention of observing fine detail from the observation (Figure 4).

Figure 4: Security lighting simulation of CCTV image of a street scene

The street scene appears as a view from the monitor of a CCTV camera with a reasonable field of view and depth of field in focus. The learner has the ability to change the lighting levels on the scene and to observe the degradation of the image as the intensity of illumination decreases. Also the quality of the illumination can be changed to simulate the various types of lamps used in street lighting, such as mercury, sodium and metal halide. By observing the colour rendering effects on the coloured objects in the image, the learner is able to discriminate the effect.

Also, a selection of video clips have been embedded into the online learning materials, in order to provide learners with scenes and images that would not normally be available to public learners.

As an illustration of a video clip embedded in the Blackboard platform, the Figure 5 shows a video of a working model of the first constructed lock found in Egypt with a key and key code to uniquely operate the lock.

Figure 5: Image from the video clip showing the operation of the first locking system

Flexible learning technologies have been embraced in the development of online security course to orchestrate quality course delivery across boundaries at low cost (Mazzarol & Hosie, 1997). Well-conceived and implemented use of technology is a means by which training can be made more flexible and supportive of the principles of adult learning. A databank of learning objects has been created from available still and moving images to illustrate facets and activities in security that are either too dangerous, expensive or are inaccessible to students.

Assessment
Assessments have been designed to:

· Ensure that all objectives and competencies are assessed
· Provide a balance of online submissions and invigilated work, as a precaution against cheating
· Assign tasks that integrate the acquisition and application of professional knowledge with other competencies (eg. Interpersonal, communications, IT)
· Situate learning in contexts that have personal relevance to students wherever possible (eg. research, report, problem solving)

Conclusion
The ECU Security Science programme is acknowledged to be as a high quality programme by government and industry both within Australia and in the international context.

The Graduate/Executive Certificate in Security Management course seeks to provide the content and generic skills and the knowledge necessary for the protection of the assets of organisations, and individuals through appropriate learning activities. The course applies the principles underlying the protection of assets of an organisation, and encourages learners to seek examples and applications of the security practices in the community. The emphasis of the unit is on best practice through reducing the risk of asset loss from high threat situations.

The field of security, in addition to the subject/professional knowledge, embraces a large number of generic skills preparing students for a variety of careers in government agencies, social services and industry. The knowledge domains to be addressed by each component of the Security management courses unit are further guided by accreditation requirements for core areas to be covered.

The market for the Security Science courses is extensive both within Australia and in the international

context. The national and international demand for professional security managers and consultants is increasing rapidly, with a scarcity of high quality courses in the international context.

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