

Optimising Instructional Designer—Subject Matter Expert Communication in the Design and Development of Online and Multimedia Projects

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Outline:

The design and development of online and multimedia modules requires a team with a diverse range of skills and talents to successfully complete all aspects of a module. Unfortunately a bottleneck still exists between the content expert and design and development staff (instructional designers, graphic designers, programmers, audio-visual staff) in terms of translating the content into a form that embodies sound educational design. The design and development of quality online and multimedia learning materials often require instructional designers/learning designers to assist subject matter experts (SMEs) in creating suitable teaching and learning resources. It is not possible for the instructional designer to be conversant in all content areas, and as such they must rely on SMEs to assist with determining the scope and accuracy of the unfamiliar content. Due to the crucial and unique role of the SME, the instructional designer must streamline the flow of information to prevent a communication “bottleneck”. Without an effective strategy for interacting with the SME, valuable time will be lost understanding and organising the content, hence the need for an efficient and effective method to assist in the instructional designer–subject matter expert interaction.

This tutorial addresses the relationship between the instructional designer and subject matter expert and examines a method for eliciting and conceptualising unfamiliar content knowledge from the SME so that efficient and effective instructional design can proceed on multimedia and online projects. This method is called the “Content Production Process” (CPP), and draws upon a variety of theories, constructs and methods including advance organisers, schema theory, script theory, consultation practices, elicitation procedures, knowledge acquisition strategies, ethnographic and teachback interviewing strategies and knowledge mapping (graphic organisers, concept maps and knowledge maps) (Keppell, 1997, 1999a, 1999b, 2000, 2001). The CPP was developed by using an eclectic approach. When instructional designers are working with SMEs their aim is to create a conceptual scaffold and then attach content elicited in the subsequent interactions with the SME. As designers create this conceptual scaffold (knowledge map/concept map) and elaborate the content they should begin to conceptualise the relationships within the content. In addition to helping the instructional designer conceptualise unfamiliar content, the map provides a means of portraying the instructional designer's understanding of the content for the subject matter expert to examine.

A comprehensive website outlines the details of the tutorial and provides further background.

<http://www.medfac.unimelb.edu.au/staff/mkeppell/sme/index.html>

Intended Audience:

This workshop is suitable for instructional designers, educators, multimedia designers and developers, project managers and subject matter experts who are involved in the design and development of multimedia modules.

Proposed Length of Tutorial:

Six (3) hours (half day)

Objectives:

After attending this workshop, the participants should be able to:

- Recognise the role of the SME in the design and development process
- Recognise the importance of the interaction with the SME in the success of multimedia projects
- Determine the philosophical assumptions of the SME which may affect the ID-SME interaction
- Develop a plan for defining roles and responsibilities in the ID-SME interaction

- Describe the advantages of utilising mapping strategies in the ID-SME interaction
- Construct knowledge maps for the purposes of conceptualising unfamiliar content
- Utilise questioning and teachback interviewing processes
- Communicate content to a SME using a knowledge map
- View examples of projects that have utilised the CPP
- Examine multimedia instructional design principles in multimedia projects
- Examine examples of modules which have used the CPP and embody teaching and learning models of situated cognition, constructivism, online communities and case-based learning.

Topics

Introduction

- Presenter background
- Participant background
- Workshop booklet (This can be found at the following URL)
http://www.medfac.unimelb.edu.au/staff/mkeppell/sme/protected/frame_content.htm (name: conference, password: 1961).

Design and Development Environment

- This section provides the context for the instructional designer-SME interactions. This section assists in outlining the context and the processes involved in multimedia and online learning to the SME. These concepts are discussed in relation to a proposed project.
- Pre-grant, project and post-project phases (describes the macro-context of a project ie. before, during and after).
- Design, development and evaluation model (describes how a project is created. This discussion assists the SME in understanding their role in the process).
- <http://www.medfac.unimelb.edu.au/staff/mkeppell/sme/protected/DD02.dcr>
- Who is part of the design and development environment? (defines roles and emphasises the essential nature of a team-based approach. This clarifies the role of the SME within the team).
- Needs assessment proforma and example (initial interactions with the SME)
- http://www.medfac.unimelb.edu.au/staff/mkeppell/sme/protected/frame_content.htm

Content Production Process – Model and Background

- This section examines key concepts in relation to the field of instructional design and the role of the instructional designer. It also examines the CPP which assists the designer in working in unfamiliar content areas with subject matter experts. The following concepts are explored:
- Nature of Instructional design
- Role of Instructional designers
- Completing instructional design in unfamiliar content areas
- Strategies for conceptualising unfamiliar content
- Role of the subject matter expert
- The CPP model and instructional designers
- The CPP model is examined as a process for establishing a collaborative relationship with SMEs
- http://www.medfac.unimelb.edu.au/staff/mkeppell/sme/protected/frame_content.htm

Content Production Process – Process

This section examines the process of using the CPP with SMEs. It examines:

- Philosophical assumptions of SMEs
- SME Characteristics in university, business and military settings
- Defining roles and responsibilities in the instructional designer—subject matter expert interaction
- Principles of communication with the SME

- Top-down and bottom-up cognitive processing in conceptualising unfamiliar content
- Constructing knowledge maps/concept maps/graphic organisers
- Using questions to assist the construction of the map
- Using knowledge maps to assist the designer's conceptualisation of expert knowledge
- Using knowledge maps to represent the expert's knowledge
- Using knowledge maps to assist communication with the expert
- Teachback Interviewing and questioning strategies
- http://www.medfac.unimelb.edu.au/staff/mkeppell/sme/protected/frame_content.htm

Content Production Process – Application

- This section examines four case studies which demonstrate the stages in the CPP. These include: a) creation of the map, b) creation of the storyboard and, 3) design and development of the module. This also includes shaping the content into design for multimedia projects and storyboard creation. In this section principles of multimedia instructional design will be examined by examining projects which focus on constructivist teaching models, discussion groups, online communities and case-based reasoning scenarios. Each of the following completed multimedia and online projects exemplify the CPP.
- Paediatric Dentistry
- Sensitive Examinations Technique
- Rational Test Ordering
- TeleQACE: Discussion groups with Rural GPs
- http://www.medfac.unimelb.edu.au/staff/mkeppell/sme/protected/frame_content.htm

Summary - General Principles in Working with SMEs

- Determine the Philosophical Assumptions of the SME
- Adapt the Interview Format to the SME
- Develop Generic Questions to Utilise in the Interview
- Use Mapping Strategies to Reorganise the Content
- Use the Map as a Communication Prop
- Transform the Knowledge Map into a Storyboard

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Mike has over ten years experience in collaborating with subject matter experts/content experts in the design and development of multimedia projects. He has applied his “Content Production Process” (CPP) in working with over 150 subject matter experts in fields as diverse as medicine, dentistry, nursing, psychiatry, mining, engineering, oil and gas, alumina processing, beef production, language education, physical education, early childhood education. He has experience working with subject matter experts in a University environment, commercial and military settings in Canada, Australia and Hong Kong. Mike is currently Head, Centre for Integrating Technology in Education, Hong Kong Institute of Education. He has considerable experience in managing multimedia Units which design and develop educational modules. Mike's expertise lies in his ability to combine the operational and development tasks of educational software with the academic study of curriculum, instructional design and evaluation. He has been involved in the design and development of over 200 multimedia and web-based educational modules. Specifically he focusses on processes involved in

optimising the instructional designer-subject matter expert interaction, conceptualizing projects and developing the design brief for projects.

Workshops Presented on the 'Content Production Process'

Optimising Instructional Designer—Subject Matter Expert Communication in the Design and Development of Multimedia and Online Projects.

- 2003 International Conference of Computers in Education. (**submitted**) Hong Kong. December 2003.
- 2002 18th Australian Society for Computers in Learning in Tertiary Education Conference. Auckland, New Zealand. December 2002 (**15 participants from Australia and New Zealand**).
- 2001 15th Open and Distance Learning Association of Australia's Biennial Forum. 2001 Education Odyssey. 24-27 September.
- 2000 17th Australian Society for Computers in Learning in Tertiary Education Conference. Ascilite 2000, Southern Cross University, Coffs Harbour, NSW. (**10 participants from across Australia & New Zealand**).
- 2000 ED-MEDIA 2000 World Conference on Educational Multimedia, Hypermedia & Telecommunications, Montreal, Quebec, CANADA., June 26-July 1. 2000. (**26 participants from 15 countries participated in this workshop**).
- 1999 16th Australian Society for Computers in Learning in Tertiary Education Conference. Ascilite '99, Queensland University of Technology, Brisbane, Qld. (**10 participants from across Australia**).

Publications which Specifically Focus on Subject Matter Experts

- Keppell, M. (2002). Creating quality multimedia and online learning: Blending management, design, development, evaluation and training. In H. Hansson (Ed.), *Eight Contributions on quality and flexible learning*. (pp. 69-89). Distum: Swedish Agency for Distance Education. Report 1:2002. Nybrogatan. ISBN 91-973907-5-5.
- Keppell, M. (2001). **Optimising Instructional Designer—Subject Matter Expert Communication in the Design and Development of Multimedia Projects.** *Journal of Interactive Learning Research* (2001) 12(2/3), 205-223.
- Keppell, M., Kennedy, G., Elliott, K. & Harris, P. (2001). Transforming traditional curricula: Enhancing medical education through multimedia and web-based resources. *Interactive Multimedia Electronic Journal of Computer-Enhanced Learning (IMEJ) Volume 3, Number 1, April 2001* <http://imej.wfu.edu/articles/2001/1/index.asp>.
- Elliott, K. & Keppell, M. (2000). Visual triggers: Improving the effectiveness of virtual patient encounters. In R. Sims, M. O'Reilly, S. Sawkins (Eds), *Learning to Choose: Choosing to Learn*. Proceedings of the 17th Annual ASCILITE Conference. Lismore, NSW: Southern Cross University Press. (pp. 275-283).
- Keppell, M. (2000). **Principles at the heart of an instructional designer—subject matter expert interaction.** In R. Sims, M. O'Reilly, S. Sawkins (Eds), *Learning to Choose: Choosing to Learn*. Proceedings of the 17th Annual ASCILITE Conference. Lismore, NSW: Southern Cross University Press. (pp. 317-326).
- Keppell, M., Kan, K., & Brearley Messer, L. (2000). Enhancing Total Patient Management Skills in Dentistry with Interactive Multimedia Simulation. In J. Bourdeau & R. Heller, Proceedings of ED-MEDIA 2000 World Conference on Educational Multimedia, Hypermedia & Telecommunications, Montreal, Quebec, CANADA., June 26-July 1. 2000. (pp. 1639-1640).
- Keppell, M., Kan, K., & Brearley Messer, L. (2000). Utilising educational multimedia to enhance the management of paediatric patients in Dentistry. In R. Sims, M. O'Reilly, S. Sawkins (Eds), *Learning to Choose: Choosing to Learn (Short Papers and Works in Progress)*. Lismore, NSW: Southern Cross University Press. (pp. 193-197).
- Keppell, M. (1999). Enhancing Learning Interactions of Web-based Resources for Medical Students through Instructional Design Processes. International Online Conference on Teaching Online in Higher Education. November 8-9, 1999 [On-line] Available Internet: <http://www.medfac.unimelb.edu.au/staff/mkeppell/IDProcesses/>

- Keppell, M., (1999). **The crucial roles of the instructional designer and subject matter expert in multimedia design.** ED-MEDIA 1999 - In B. Collis & R. Oliver, Proceedings of ED-MEDIA 99 World Conference on Educational Multimedia, Hypermedia & Telecommunications, Seattle, Washington, USA., June 19-24. 1999. Volume 1 (pp. 598-603).
- Keppell, M., (1999). **The use of case stories to examine the instructional designer and subject matter expert interaction.** Association for Qualitative Research (AQR) International Conference: Issues of Rigour in Qualitative Research, Melbourne, Australia, 6-10 July, 1999. [On-line] Available Internet: <http://www.latrobe.edu.au/www/aqr/offer/conferen.htm>.
- Keppell, M. J. (1997). **Development and pilot-testing of a method to assist instructional designers elicit unfamiliar content from subject matter experts.** PhD Dissertation. Graduate Division of Education Research, University of Calgary, Alberta, Canada.
- Keppell, M. J. & Buschgens, R. A. (1995). **Optimising communication between instructional designers, graphic artists and computer programmers in the development of multimedia materials.** In A. C. Lynn Zelmer, Proceedings of the 1995 Annual Conference of the Higher education and research Development Society of Australia (HERSDA), Rockhampton, 4–8 July 1995. Volume 18, (pp. 431-441).