

# The Management Challenge Online: E-Learning in Practice

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**Abstract**—The Management Challenge Online (TMCO) is a ten week online management course that begins for a cohort of 30 in the week immediately following their attendance at a residential three-day training school. This paper examines the evolution of TMCO over the inaugural two year period, detailing the cycle of evaluation and development within a culture of continuous improvement. The paper provides examples of successful activities and scheduling with supporting pedagogy. The paper also looks ahead to next steps for TMCO and how the course will be supplemented with sessions in the virtual world Second Life.

**Index**—Terms collaborative, constructivist, management training, personalized assessment, professional development

## I. INTRODUCTION

The Management Challenge Online (TMCO) was established at the Open University (OU) in 2005 in response to a need for focused, flexible and repeatable professional development for First Line Managers at the international news agency Reuters. The role of the first line manager - motivating front line staff and meeting the needs of customers and middle /senior managers - is pivotal within Reuters and significant emphasis is placed on supporting their learning in the workplace.

Cohorts of up to 30 participants are loosely classified as EMEA, Americas and Asia but individuals may be located anywhere in the geographical area, often moving around within or across areas over the duration of a course.

The ten week online course begins for a cohort in the week immediately following their attendance at a residential three-day training school delivered by another provider.

The TMCO schedule currently comprises learning modules and discussion forums. The six bespoke, interactive learning modules are derived from Open University Certificate in Management material and cover topics such as *Knowing Your Team*, *Delegating* and *Recognizing Difference*. Nine discussion forums are rolled out with various collaborative activities aimed at helping participants draw out best practice in the workplace.

Participants use a development template as an action planning tool to personalize their course assignment, creating a series of work-based tasks based on needs in their immediate working environment.

The cohort is supported within the Moodle Virtual Learning Environment (VLE), via email and through teleconferences by a coach, who also provides individual feedback on assignments at the close of the course. Participants who complete the minimum participation

requirements for the course, and who submit a completed End of Course Assignment (ECA), attend a small local ceremony and are recognized by the company as TMCO Graduates.

This paper will examine the evolution of TMCO over the two year period to date, detailing the cycle of evaluation and development within a culture of continuous improvement. The paper will provide examples of successful activities and scheduling with supporting pedagogy. The paper will also look ahead to next steps for TMCO and how the course will be supplemented with sessions in the virtual world Second Life.

## II. CONTEXT

Many models of distance learning conform to an instructional, isolationist model, with a central focus on the delivery of information from teacher (expert) to student (learner). This form of learning is predicated upon 'facts', enabling automated summative assessment through the use of computer marked assignments (CMAs) such as multiple choice quizzes. This model is currently employed at the Open University within a more blended context, where course material is delivered online in this factual paradigm and increasingly assessed with CMAs but supported by a distance tutor, who has responsibility for helping facilitate the student's self-directed learning and for providing marking and feedback on tutor marked assignments (TMAs). Primarily due to the scale of provision and need for consistency of assessment across multiple tutorial groups, there remains a tendency for TMAs to privilege information description over ways of thinking and engaging. The Centre for Professional Learning and Development ((CPLD) previously Corous – Corporate Open University Services) caters to the continuing professional development needs of commercial clients by offering flexible, accessible and personalized learning that can be studied in and around the workplace. Each course is based on the Centre's ability to blend learning delivery according to personal or organizational situations, creating a truly bespoke learning experience.

In 2005 Reuters invited Corous to join a unique collaboration with Development Dimensions International (DDI), the company that would be responsible for providing the face to face three day course running immediately prior to TMCO. This blended learning model - '[...] learning that is facilitated by the effective combination of different modes of delivery, models of teaching and styles of learning, and founded on transparent communication amongst all parties involved with a course.' [1] - follows a best practice route by providing well-structured intensive instruction in the

classroom and a follow up course online to provide deeper learning.

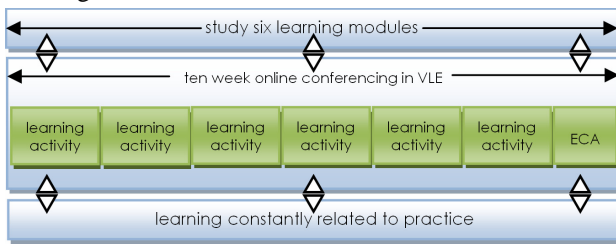


Figure 1. TMCO Core Model

### III. CORE CONTENT

The six learning modules, the role of the coach and the ECA presented in TMCO today remain fundamentally the same as they were at the very beginning, having seen little more than cosmetic changes. The Core Model (Fig. 1, above) provides 6 learning modules with associated learning activities culminating in submission of the ECA, with learning supported by discussion in a VLE and constantly related back to practice.

The learning modules are the foundation stones of the course. Through discussion and collaboration with the course design team at the OU, and building alongside the design process for the face to face course that would run for each cohort immediately before TMCO, Reuters and OU identified the followed key topics:

- Knowing Your Team
- Delegating Effectively
- Managing Key Relationships
- Recognizing Difference
- Projecting Yourself to Others
- Managing Complexity

Material for the modules was taken from the Open University MBA programme and adapted to fit the 20 minute self study format. The learning module is a compact learning experience that normally consists of around 5 sections of content and will last approximately 20 minutes.

The first section of content within a module is the Overview 'What are you going to learn?'. The penultimate section shows the Summary and Learning Outcomes and in the final section the participant has the opportunity to take a short self assessment quiz.

The remaining sections of the module consist of content comprising a combination of learning objects. An object may be text-based, a diagram, an interactive diagram or an interactive tool. Each object contributes to the Learning Outcomes and has a clearly defined purpose in the learning process: together with the core text they provide a coherent and seamless experience for the participant.

Most components are considered as being essential for the learner's understanding of the module. However More About's and Further study are supplementary in that they simply serve to reinforce or enhance the learner's experience.

Careful consideration is given to the 'layering' of information so that the learner is presented with the minimum text required to understand the idea, yet can delve further as their interest or disposition dictates.

The TMCO has always been located in a virtual learning environment (VLE), although the specific environment has changed over the development of the course.

Embedding the learning modules in a context that links them to activity and discussion exploits the value of community of practice [2] to build shared repositories and collaborative learning. This enables learners to work at a distance, in their own time and at their own pace, thus remaining better located in Vygotsky's zone of proximal development [3].

The role of the coach in TMCO is primarily as facilitator for the group learning. The specific terminology of coach rather than trainer or tutor is a result of the collaborative approach between Corous, Reuters and DDI, and an agreement to provide consistent terminology across the courses. The TMCO coach sends out a welcome email at the start of the course and a further email at the beginning of each week with a summary of what is to happen in that week. The coach is responsible for opening the learning modules and activities to schedule, monitoring and moderating discussions, prompting participants that have fallen behind, developing relationships with and between participants and general management of the course. At the close of the course, the coach is responsible for providing individual feedback on each assignment. TMCO conforms to the Salmon [4] 5 stage model of computer mediated communication (see Fig 2: Salmon Model of E-Moderating).

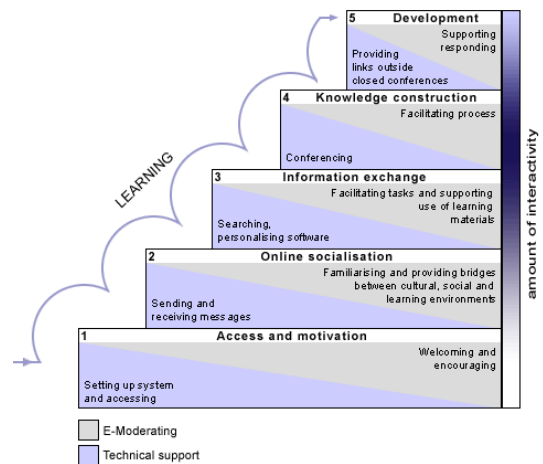


Figure 2. Salmon Model of E-Moderating

The course coach uses e-moderating skills from each of the key stages in this model to encourage access, socialization, information exchange, knowledge construction and development.

The course team was led by the core belief that TMCO should be a practical experience for delegates, empowering them with skills that would see immediate return in their workplace. The question of assessment therefore centered on how to enable an individual's experiential learning [5], see Fig. 3: Kolb's Experiential Learning Cycle) rather than evaluating learning across the course.

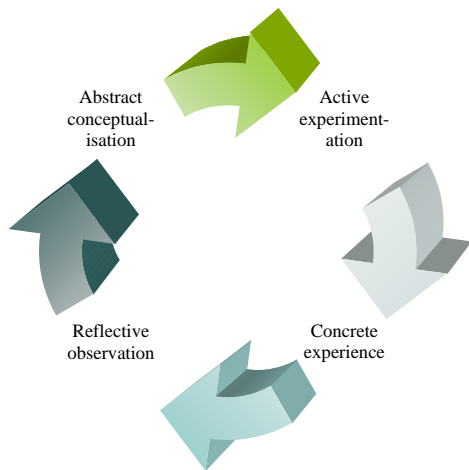


Figure 3. Kolb's Experiential Learning Cycle

Kolb stresses that there is no 'standard' starting point in this cycle, for example some course participants may read a learning module and be prompted to reflect on their current practice before thinking about how they might effect change, which then becomes a plan on which they act (most of the concrete experience takes place outside of the learning environment). Others may find themselves in a position in which they can act immediately, reflecting afterwards on the results of their actions in the context of what they have read. However, in order to prompt participants through the process in some structured manner, the ECA instructions begin by asking all participants to reflect on the personal development profile they have created in the face to face course along with what they have read in the first 3 modules of the course:

You should now have studied three of the six online modules: "Knowing your team", "Delegating effectively" and "Managing key relationships". Select two development areas from within these modules (but not both from the same one) where you need to improve your management practice and where there is scope to make meaningful progress in the next three or four weeks. Note that you can work on some aspects of Knowing your team, e.g. ways of communicating, as a team member or as a team leader.

Agree these two development areas with your line manager and then complete the brief development plan below. You should address each of the questions and provide brief details for each of your two development areas. You should also revisit your PDP from the Management Challenge workshop and amend it to take this activity into account.

Hence the ECA instructions ask participants to think about (*conceptualize*) and plan (*experiment*) some meaningful activity (*concrete experience*) as a direct result of their participation in the course. The course design employs a neat tactic to include a smaller iterative loop within the cycle, by asking participants to post the first section of their ECA, i.e. their plan, to a shared forum where they can give and receive feedback from their peers. This step not only emphasizes the significance of the thinking and planning process, but creates further opportunity for learner to learner interaction, a vital component to the course over all. Participants continue to work on their ECA as the course progresses then, in the

final weeks, write up their experience and are prompted to provide reflections (*reflective observation*), completing the cycle. The completed ECA is submitted in Week 10 and the course coach provides formative feedback and returns each document by individual email, enabling a final personal message of congratulations and closure. The assessment strategy of the course also resonates with Boud's assertion [6] of sustainable assessment, that is, assessment which examines the present but importantly provides preparation for future learning experiences and needs.

One of the key reflective questions in the ECA that provides additional information to feed back into the learning and development cycle for the course team is: What aspects of the Management Challenge Online (modules or discussions) have helped you? The following, taken from recent assignments, are typical responses:

- It was extremely insightful to read about different aspects and approaches in different departments and situations
- What I really appreciate are the discussions. I have learnt from the elements as well but the real added value is the exchanging feedback and opinions.
- Sharing of ideas online has been very useful.
- Online sessions have enabled flexibility to study when possible.
- Having many colleagues online has helped me keep up momentum to complete the learning modules.

These responses demonstrate that participants are enjoying and benefiting from discussion and the exchange of ideas within their cohort as much as they are learning from the learning modules. This information has been core to the evolution and development of the course.

#### IV. COURSE DEVELOPMENT

Although the learning modules and ECA have barely changed, the activities and schedule of the course were quite different in the early days. These activities were driven by the functional restrictions of the environment and also, significantly, by the pioneering nature of the course in extrapolating the application of sound pedagogies into a work-based learning context with very specific and demanding requirements. Evaluation of this early experience identified how and when participants were accessing the course and choosing to use it (including differences in cultural groups), and their own reflections in discussion forums and in the ECA highlighted what graduates perceived to be the critical benefits of the course, namely the immediate and practical applications of the learning along with the 'joint enterprise, mutuality and shared repertoire' [7] that signifies the development of the community of practice.

Initial, pilot cohorts of TMCO were run in the commercial VLE Teletop. Each conference or forum within Teletop lists postings in strict date order, so threading - the practice of linking postings together by subject - is not possible and discussions that go off topic can quickly alienate further topic-based discussion in that forum. Activities were written specifically to work within this environment, and did not invite any depth of discussion. A typical activity, for the module Knowing Your Team', read:

**Discussion 1**

Re-visit the Team leader's checklist in 'Knowing your team' and work through it if you have not done so already.

**Which aspect is the most important one for you to work on? What do you propose to do and how will you assess the value of these changes?**

Please post a concise message with your response to the questions and read the contributions from other people. Then, in a day or so, come back and respond constructively to someone else's contribution.

In order to manage the potential number of contributions, each learning module was given 2 activities and participants were free to choose which one they preferred to participate in. These were restricted by the environment into separate forums, again creating division, and in reality there was very little contribution beyond the first three or four postings for each activity. Reference [4], p.80, draws attention to the case where the majority of the participants are browsing. At this point, she says, '...it is time for a rethink and redesign of the purpose and activities of the forum.'

TMCO was relocated to the open source VLE Moodle in early 2006, with associated cost savings, and the benefit to participants of the more flexible conferencing functionality was immediately apparent. However it remained clear that there was potential for further improvement in scheduling and activities, both to emphasize the emerging strengths of the course - the exchange of ideas, networking, flexibility of study - and to work with rather than against the way participants were choosing to access the learning.

The increased functionality in Moodle provided greater traceability of participants. The course team observed that a 'regular' participant would usually only access once a week, twice at most, and therefore might post to a discussion but find on their next visit that the topic was outdated and a new discussion had been opened. Most people would not access and/or write to all the discussions but were happy to choose the path through the course that met their needs at the time. As long as a minimum participation level was agreed, it seemed logical to accept this approach and work with it rather than attempt to force people into a schedule that was not viable with their working pattern. Consequently it was also noted that activities to facilitate this must remain simple and not require complex interaction from all participants.

With the greater scope for discussion, participants were now feeling restrained by the existing activities that invited very specific postings and often either posted simply 'I agree' or mailed the course coach to comment that everything asked for had already been said. Many participants, particularly in the Asia cohorts where there is a clear difference in cultural approach to training, felt inhibited when offered the opportunity to prompt or contribute to any sort of discussion away from the given topic. In an environment that was created to enable collaboration and discussion, participation was restrained by instruction. The obvious solution was to remove the 'read and respond' directives completely, and provide an opportunity for discussion based on topics that actively encouraged rather than restricted diversity of opinion, whilst continuing to guide participants as to appropriate content, so that 'Learners should not be expected to generate their own effective ways of collaborating' ([8], p.87).

Experience so far had demonstrated that participants were naturally inclined towards creating a community of practice online. The course team drew on definitions from Wenger to develop this further. *Joint enterprise* was established as the need for participants to understand how they work together online and the value of doing so, *mutuality* implied getting participants to know and trust each other, and *developing a shared repertoire* referenced the exploration of 'language, routines, sensibilities, artefacts, tools, stories, styles'. Participants had indicated that they valued the opportunity to implement their learning from both courses (face to face and online) whilst retaining the contact with their original learning group. When revising the activities therefore the course team strived to build on that natural culture and to facilitate the opportunity for mutual support, embedding the community of practice firmly within the participants' daily experience of management challenge.

The first step in the evolution of the course was to create a Common Room forum in Week 1 and offer participants the opportunity to return to their desks and deal with any backlog of work, without the additional pressure of a first learning module. Participants were free to introduce themselves, reacquaint with connections made at the co-located course and generally get comfortable with the environment. This provides greater emphasis on the socialization stage as recognized in the Salmon model, and is vital for participants to feel comfortable with what is for most this very new environment for learning. Reference [9] says that 'Socialization is often described using the concepts of 'learning', 'social learning', 'societally relevant learning', 'taking on', 'receiving', 'acquiring', 'assimilating', 'absorbing' or 'internalizing', referencing the need for individuals to learn the rules of engagement with their new environment.

Following the socialization process in Week 1, the new Week 2 introduces the first learning module and the first group activity. This was the biggest change from the original course and incorporated all the requirements identified for new activities. The 3 modules that are used for the ECA are now linked and run sequentially, with the following *swapshop* format for each:

The instructions for this forum, and for the 2 subsequent forums, are based on the concept of a 'swap shop' – swapping problems for solutions. Over this three week period (weeks 2-4), and over the three discussion forums, you should aim to post at least 2 problems and the same number of responses.

Here's how it works:

When you have read this week's learning module (Knowing Your Team), please reflect on what you might do to know your team better. Do you have a particular problem with the dynamic of your team? Do they have a legacy culture you need to break? Is there one difficult member? Are they remotely located and struggle to bond? Write a summary of your problem and post it to the forum. Alternatively, if you have recently solved an issue within your team and you think your experience may benefit others, please post that instead. This sort of posting is your 'problem'.

When you see a problem that someone else has posted and you think you can help, or you would like to comment on any posting, please reply with your response. This sort of posting is your 'solution'.

In the read-only news forum for the course, a hint is posted on how to make the most of the weeks learning:

The big news this week is a hint about your End of Course Assignment (ECA), which we will ask you to start working on in Week 5. Here's a glimpse of how the instructions begin:

*Select two aspects from within the Knowing Your Team, Delegating and Managing Key Relationships modules (but not both from the same one) where you need to improve your management practice and where there is scope to make meaningful progress in the next three or four weeks.*

We're giving you this hint now as it will really help your ECA if you start thinking early on about which aspects of your management practice you need to work on from these topics. Use the Swap Shop (in the Knowing your Team forum) to prompt your ideas and make notes where you can see the opportunity to learn from others. Good luck!

Examples of topics raised in the swapshop forums include but are not limited to:

- team communication issues
- specific problems with individuals, eg time keeping, not engaging with team, poor performance, personality clashes
- conflict resolution
- over/under delegating
- delegating in difficult circumstances
- managing teams that are not co-located
- communication methods
- managing upwards

Participants exchange problems and support, and often report back during the course on how they have successfully implemented advice received in these early forums.

By encouraging groups to operate a problem based approach (PBL) and investigate a variety of solutions to a question, learners are given the opportunity to test and compare multiple perspectives and modes of representation. Reference [2] established the theory of situated learning as having two key principles;

- Knowledge needs to be presented in an authentic context i.e. settings and applications that would normally involve that knowledge
- Learning requires social interaction and collaboration

It is apparent in both theory and practice that there are strong links between these two models of learning – both emphasise the importance of embedding learning in concrete, complex and 'real' environments and stress the importance of collaborative learning, and this opportunity is clearly offered by the swapshop activity format.

With activities thus established for Weeks 1 through 4, the Information Exchange stage of the Salmon model is satisfied. In Week 5, participants begin Knowledge Construction by commencing work on the ECA, and there are no associated learning models or activities for the week. In Week 6, participants post their part-completed ECA and give and receive feedback according to the same model as the original course. Reference [10] examined a variety of interactions including Learner/Instructor, Learner/Learner, Learner/Content, Learner/Interface, Learner/Self Interaction, and Vicarious Interaction to investigate how instructors and students perceive the importance of online interactions. The study concluded that students recognise interaction as an effectual means of learning, varying according to differences in the level of online interactions as well as personality or learning style. Through the variety of directed formats in TMCO,

participants are given the opportunity to experience the greatest possible range of interactions.

In Weeks 7, 8 and 9 the course returns to the pattern of learning module and activity, notably providing a collaborative resource-gathering exercise to keep the group focused and to start reaching beyond the boundaries of the course (Salmon's 5<sup>th</sup> stage) during Week 8:

For this activity, I would like us to gather a set of resources on communication in the workplace. Please post a mail with a URL, book title (perhaps a link to an online review of the book?), DVD, e-learning object, review of a training course or any other resource that either you have found useful in the past, or you think would be useful to you and others now or in the future. This might cover subjects such as NLP, netiquette, public speaking, presenting yourself to others....anything along those lines.

Please tell us why you are offering this resource and what its advantages are. Feel free to reply to each other with any comments about the resource or topic chosen and don't be shy of starting a discussion.

In Week 10 participants are asked to post their completed ECAs for feedback from the coach, and provided with a final forum for closing discussions and to arrange any further networking. By this point the course has built, supported, nurtured and enabled individual learning and collaborative knowledge exchange to meet the necessary constructivist conditions for learning (in [11] and elsewhere, cited in [12]), summarized as follows:

1. *Embedded learning in complex, realistic and relevant environments.* [13] [14] [15]
2. *Provide for social negotiation (cooperative and socio-moral atmosphere) as an integral part of learning.* [16] [17] [18] [19]
3. *Support multiple perspectives and the use of multiple modes of representation.* [13] [15]
4. *Encourage ownership in learning.* [13] [15]
5. *Provide adequate time for learners' investigation and in-depth engagement.* [19]
6. *Nurture self awareness of the knowledge construction process.* [20] [13]

The [21] approach to learning objects centered course design – in this case focused on the six learning modules - assumes that each object is a unit of study that represents a holistic unit of study. The concept of 'extended' learning objects allows for narrative flow through the objects so they are not isolationist. Here, an object comprises;

- a discursive element
- an interactive element
- an experiential element
- a reflective element

to make up a single, fully rounded unit of study that maximizes the potential of the VLE functionality to provide a more immersive and reflexive learning experience. Thus a learning object can be considered a constructivist tutorial activity with the associated asynchronous and work-based activities. The extended learning object itself is both standalone and transportable and the structure, approach, flow, constructivist activity and progression model can be used in more than one context.

The revised course had immediate and positive impact on participation, retention and completion rates.

Participants were able to explore issues that were of direct relevance to their workplace in a safe and supportive peer environment.

Participants continue to report high levels of satisfaction with the whole course experience.

#### V. TMCO TODAY AND TOMORROW

Since these major changes the course has continued to evolve with regular reviews and input from the enthusiastic and committed TMCO team across The Open University and the Reuters EMEA, America and Asia management training groups. The most recent development is the addition of teleconferences midway in the online course, where participants have the opportunity to share their reflections on how they have developed their practice since the residential course, how they are implementing the learning from TMCO and what topics they are choosing to focus on in the ECA.

The next step in the evolution of TMCO is to take the course into virtual worlds. Participants whose years of birth classify them as “digital natives” [22] – and this is a significant number of the course demographic - habitually think, play and learn in environments that are fast-paced, multimedia, multimodal, interactive and, of course, digital with expectations of engagement and high production values at all times. These volatile, interconnected, and complex social milieus [23] call for learning options that are critical, collaborative, creative, and futures-oriented.

Given these high expectations, the appeal to digital natives of an immersive learning environment such as Second Life is clear, and they quickly absorb the skills necessary to interact in this location. However, the metaphors for multi-user virtual environment (MUVE) teaching and learning do not reference a fully rounded learning experience – rather they offer a mature option against face to face tuition, with opportunities for collaborative and community-based interaction and learning in a situated constructivist environment [24]. A Second Life activity programme element for TMCO would offer additional engagement potential for a significant number of participants and enable them to explore their learning in an immersive dimension. The proposal currently being implemented includes 3 sessions:

##### A. Session 1 (1 hour) Week 1

This session is primarily socialisation, allowing delegates to meet up again with workshop colleagues in an environment that provides a sense of physical immediacy. Delegates will have a simple orientation exercise such as a scavenger hunt around the island, and the opportunity to chat and become comfortable with the environment

##### B. Session 2 (1½ hours) Week 5

This session introduces case study working and allows the delegates to role play through various outcomes. Coach will introduce a case study to establish the scenario and then delegates will work in pairs to role play as manager and team member in an immersive setting, finishing the session with a group debrief.

##### C. Session 3 (1½ hours) Week 6

This session continues case study working and follows the same plan as Session 2, but allows delegates to swap roles in the scenario activity.

The new sessions in Second Life will build on delegates ECA development plans. Currently the 3 topics delivered in weeks 2, 3 and 4 give delegates the framework for their development plan. The course team plans to prepare a series of case studies and provide the outlines for each, allowing delegates to vote at the beginning of week 5 for the scenarios they would find most useful for ECA work.

#### VI. CONCLUSIONS

TMCO was, in 2005, a pioneering collaboration in workplace e-learning. Early cohorts provided invaluable feedback enabling the course team to identify and model what, where, when and how individuals were choosing to access and use the course. The team moved the course into a new environment and capitalized on their experience to date by revising the activities and course support in line with their understanding of participant behavior and expectations. TMCO has since developed into a thriving, exciting, stimulating and successful course. The TMCO team has established a strong model for best practice, and the team continues to assess and evaluate the success and impact of the course and to search for new opportunities to challenge, engage and satisfy participants.

#### REFERENCES

- [1] Heinze, A. and Procter, C., *Reflections on the Use of Blended Learning. Education in a Changing Environment* conference proceedings, University of Salford, Salford, Education Development Unit, 2004, Available on-line: [http://www.ece.salford.ac.uk/proceedings/papers/ah\\_04.rtf](http://www.ece.salford.ac.uk/proceedings/papers/ah_04.rtf) last accessed 13/04/2008
- [2] Lave, J and Wenger, E., *Situated learning: Legitimate peripheral participation* Cambridge, U.K.; University of Cambridge Press, 1991
- [3] Vygotsky, L. S., *Thought and Language* Cambridge, MA: MIT Press, 1962
- [4] Salmon, G., *E-Moderating: The key to Teaching and Learning online* Kogan Page Limited: London, 2000
- [5] Kolb, D. A. and Fry, R., *Toward an applied theory of experiential learning* in C. Cooper (ed.) *Theories of Group Process*, London, John Wiley, 1975
- [6] Boud, D., *Sustainable assessment: rethinking assessment for the leaning society* Studies in Continuing Education, 22(2) 151-167, 2000
- [7] Wenger E., *Communities of Practice and Social Learning Systems Organisation*, 7 (2), pp 225-46, 2000
- [8] Centre for Studies in Advanced Learning *Effective Networked learning in Higher Education: Notes and Guidelines* Lancaster: Center for Studies in Advanced learning Technology, 2001
- [9] Brezinka, W., *Socialization and Education: Essays in Conceptual Criticism (Contributions to the Study of Education)* Westport CT: Greenwood Press, 1994
- [10] Su, B., Bonk, C., Magjuka, R. Liu, X. and Lee, S., *The Importance of Interaction in Web-Based Education: A Program-Level Case Study of Online MBA Courses*, Journal of Interactive Online Learning, 4, pp 1-19, 2005
- [11] Driscoll, P.M., *Psychology of Learning for Instruction* Allyn and Bacon, Massachusetts, USA. 2000
- [12] Can, T., *Learning and Teaching Languages Online: A Constructivist Approach*, 2001 available from <http://www.ingilish.com/online-learning-constructivism.htm> last accessed 13/04/2008
- [13] Duffy, T. M., & Cunningham, D. J., *Constructivism: Implications for the design and delivery of instruction* in D. H. Jonassen (Eds.), *Handbook of Research for Educational Communications and Technology* (pp. 170- 198). New York: Simon & Shuster Macmillan. 1996

- [14] Cunningham, D., *Assessing constructions and constructing assessments*. Educational Technology, 31 (4), 13-17. 1991
- [15] Honebein, J., *Seven Goals for the Design of Constructivist Learning*, 1996 Available from [http://ctcr.ed.uiuc.edu/JimL\\_Courses/edpsy490i/su01/readings/honebein.htm](http://ctcr.ed.uiuc.edu/JimL_Courses/edpsy490i/su01/readings/honebein.htm), last accessed 11/01/2006
- [16] Piaget, J., *To Understand is to Invent* Grossman, New York, USA, (Çevrimiçi) 1973 Available at <http://curriculum.calstatela.edu/faculty/psparks/theorists/501const.htm>, last accessed 12 Jan 2006
- [17] Vygotsky, L., *Mind in Society: The Development of Higher Psychological Processes*, MA: Harvard University Press, edited by Michael Cole 1978
- [18] Bruner J. S., *Toward a theory of instruction* Cambridge, Mass.: Belknap Press of Harvard University 1966
- [19] DeVries et al, *Developing constructivist early childhood curriculum* New York: Teacher's College Press 2002
- [20] Jonassen D. H., *Learning to solve problems with technology : a constructivist perspective*, Upper Saddle River, N.J. : Merrill 2003
- [21] Mason, R. D., Pegler, C. A. and Weller, M. J., *E-portfolios: An assessment tool for online courses* British Journal of Educational Technology 35:6 pp. 717-727 2004
- [22] Prensky, M., *Digital Natives, Digital Immigrants* On the Horizon. NCB University Press 9(5). 2001 Available at <http://www.marcprensky.com/writing/default.asp>. last accessed 14/04/2008
- [23] Cohill, A. M., *Networks and the knowledge democracy: Nine challenges for communities*. 2000 Available at [http://designnine.org/library/docs/kd\\_concepts.pdf](http://designnine.org/library/docs/kd_concepts.pdf) last accessed 10/08/2007
- [24] Bennett, B. and Peachey A., (2007). *Mashing the MUVE: A Mashup Model for Collaborative Learning in Multi-User Virtual Environments* in conference proceedings International Computer Aided Learning 2007, Austria: International Association of Online Engineering 2007
- [25] Brown, J.S., Collins, A.; Duguid, S., *Situated cognition and the culture of learning* Educational Researcher, 18 (1), 32-42, 1989
- [26] Carsell, L., Thomas, P., Petre, M., Price, B. and Richards, M., *Distance Education via the Internet: The Student Experience* British Journal of Education technology 31 no.1 pp 29-46, January 2000
- [27] Kolb, D. A., *Experiential Learning: Experience as the Source of Learning and Development*. NJ: Prentice Hall: Englewood Cliffs, 1984
- [28] Lisewski, B. and Joyce, P., *Examining the five stage e-moderating model: design and emergent practice in the learning technology profession in Alt-J*, 11((1)), 55-66, 2003
- [29] Zimmer B. and Alexander G., *The Rogerian Interface: For open, warm empathy in computer mediated collaborative learning* Innovations in Education and Training International, 33, 1 (1996), pp. 13-21, Kogan Page, 1996
- [30] Duffy, T.M., & Jonassen, D.H. *Constructivism: New implications for instructional technology?* Educational Technology, 31(5), 7-11. 1991

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