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## Information Skills and the DNER: The INHALE Project

Margaret Weaver describes the work of the Information for Nursing and Health in a Learning Environment (INHALE) Project team.

The Information for Nursing and Health in a Learning Environment (INHALE) Project [1] at the University of Huddersfield is one of forty-four projects supported nationally by the JISC as part of the DNER (Distributed National Electronic Resource) learning and teaching development programme [2]. INHALE is creating portable, interactive learning materials for nursing and health students for use within a virtual learning environment such as Blackboard ©. The two year project, which commenced in September 2000, is using the ubiquity of the web to produce a series of units, each of which will help users to acquire the necessary skills to find and use quality information sources.

The first phase of the project is concerned with identifying relevant subject modules and academics with whom to work, specifying and developing the interface, and examining the functionality of the materials. An underlying principle which has emerged in the early stages of the project is that the materials will use live (rather than screengrabbed) DNER content such as BIOME and the Virtual Training Suite as well as locally available databases such as Cinahl. As new DNER services become available the materials will also incorporate these, ensuring currency and a cycle of continuity. Phase two of the project will concentrate on transferring the INHALE methodology and system architecture to other subject areas such as business.

Evaluation is a key project deliverable and two partner institutions - Leeds Metropolitan University and Manchester Metropolitan University are working with Huddersfield on this aspect of the project. Huddersfield University has forged links with the regional network of Post Graduate Medical Education libraries, and colleagues in the NHS will also have the opportunity to review the materials from a practitioner viewpoint. This multi-perspective view will be of interest to CERLIM (Centre for Research in Library and Information Management) [3], who are evaluating projects at programme level

An essential requirement is that project learning is shared with the higher/further education community so that institutions wishing to adapt and use the materials will have the necessary support. Templates and proformas will therefore be provided with the materials and the INHALE exit strategy includes the creation of a learning objects database containing disaggregated INHALE materials, freely available for use elsewhere in the FE/HE sector. User testing will include the use of the INHALE units from within the Blackboard © and WebCT © learning environments and issues of interoperability and portability will be addressed and documented. The DNER projects are clustered so that similar project focuses can work together to solve problems or celebrate success. INHALE is part of the Infrastructure and Virtual Learning Environment cluster. The other projects in the cluster are:

- ANGEL (Authenticated Networked Guided Environment for Learning). Led by London School of Economics [4].

- ICONEX (Interactive Content Exchange). Led by the University of Hull [5].
- VDML (Virtual Departments for Minority Languages). Led by University College London [6].

The team has been working closely with the JISC Programme Officer, Dr. Caroline Ingram, to clarify certain elements of the project such as the amount of relevant, free DNER resources which are currently available and which can be used by INHALE. It is acknowledged for example, that DNER content is likely to increase over the timeline of the project and therefore new resources will be incorporated as they become available. Many of these are being developed within the same programme for example NMAP (Nursing, Midwifery and Allied Health Professions Gateway) [7]. As the materials are transferred to other subject areas this will also widen the information content covered by INHALE. Because students should be able to create realistic learning landscapes, the materials will also integrate key local electronic material (such as the Catalogue and locally subscribed databases and e-journal deals). It is worth noting however, that the more localised the information content is, the less transferable the materials become. INHALE is examining ways to deal with these limitations.

The project team is currently assembling impact factors which will measure the effect of the materials on users including quantitative and qualitative mechanisms. Indicators such as the take-up and use of DNER elements, the skill level of students and academics, and the functionality of the INHALE interface will be tested using questionnaires, observation logs and focus groups. Evaluation processes are linked to iterative lifecycle development of the materials. The project evaluation plan [8] sets out in detail how this will operate. So far testing has begun on five units of materials in use by two cohorts of students in the School of Human and Health Sciences at Huddersfield.

Each unit concentrates on a different theme in the information retrieval cycle as illustrated below; DNER elements which have been used so far are shown in parentheses:

Developing your internet skills (The Online Netskills Interactive Course - TONIC) [9]

- Search strategy
- Keywords (BUBL) [10]
- Web Directories and search engines (National Information Services and Systems - NISS) [11]
- Subject Gateways (BIOME/OMNI) [12]
- Evaluation (Resource Discovery Network (RDN) Virtual Training Suite) [13]

The first trial of the materials has taken place via the Blackboard Learning environment. This was facilitated by a link to the INHALE server which was a desirable maintenance feature and was a robust means of testing the first prototype interfaces. So although the first phase of testing did not perhaps exploit the full functionality of the virtual learning environment (VLE), this is an aim for the next iteration. The use of WebCT © at partner institutions will also clarify this aspect. Other constraints on the INHALE interface design have been the very limited screen area available for users as a result of the current layout of the Blackboard interface. To maximise the display we therefore launched the materials in a new window using JavaScript. A further challenge has been documented during the trial – that of working with live web sites. Students with higher level searching skills tend

to do their own searches on the web sources rather than “sticking” to the INHALE materials. As the source is live this action is impossible to determine; from a practical point of view the only way that this could be achieved would be for html pages with simulations to be used instead. The project is committed to the use of live web sites in the INHALE materials because the interactivity afforded is so much greater. This innovation will therefore ultimately be of more benefit to the community.

Progress on technical aspects of the project have included the setting up and securing of the INHALE server (within the University firewall) including cgi capability and the creation of Perl cgi scripts which will generate the HTML interface. The INHALE materials make use of a frameset to contain both the instructions and the resource to which the instructions refer. This ensures that the student has access to the live information resource and the necessary guidance without having to move between windows. During this first phase we have concentrated on iterative interface design rather than tight integration with the functionality of the learning environment. To maximise interoperability, design of the INHALE materials has been dependent on two assumptions. Firstly that the user will have access to a web browser that supports frames, dynamic HTML and Java, and secondly that the user will not have access to third party plug-ins such as Flash or QuickTime. Adoption of these technologies is desirable and may be possible in the future depending on the outcome of further investigation.

It is planned that the INHALE materials will be accessible from a central DNER server. There are several reasons why this seems to be the most appropriate approach to take for the location of the resource. Firstly, it is highly desirable from a maintenance point of view. Secondly, since it is intended that the materials will be extensible by users, the single central location approach means that we will not end up with several divergent versions of the INHALE resource at different institutions. The resource will have two major parts. The first is a set of generic stand-alone INHALE materials available across the Internet which can be linked to (or launched from) the user’s Virtual Learning Environment (VLE). These materials will also provide value for users who do not have access to a VLE Secondly, there will be a central database of learning objects which are available for download so that users can create custom content within (and using the features of) their own VLE.

As mentioned above, one of the aims of the INHALE project is that the materials should be easily extensible. In order to achieve this, it is intended that the materials will be based around a standard template for content in order to allow users to update and add to the INHALE materials. In order to make this easy for even the relatively inexperienced computer user, the template will be in the form of a set of perl scripts which generate INHALE-style course materials based on user input (via a simple web-based interface). The INHALE resource will also allow addition to and extension of the database of learning objects that will be available for use in materials presented by the user’s VLE. Of course, this approach requires a rigorous approach to the security and integrity of the INHALE materials and server, and also to making sure that appropriate metadata is supplied when content is added to the INHALE resource. Dublin Core [14] is the metadata specification which we are considering for the INHALE resource, perhaps with minor extensions to allow closer-focussed searching of the INHALE database.

The next phase of development includes the deeper embedding of the materials into the Blackboard © and WebCT © learning environments and also building in more interactivity based on user feedback. The INHALE content will be also be extended to include the use of other rich media such

as video clips, audio and images. Full details of the project can be found on the project web site or by contacting the Project Director.

## References

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