

Australian Flexible Learning Framework

Supporting Flexible Learning Opportunities

Educational tools for Peer-to-Peer technology

What are educational tools?

Technologies are frequently used by educators to assist learning. Examples of such include word processing, slide presentations on data or overhead projectors, email, bespoke multimedia programs and enterprise Learning Management Systems (LMS).

'Educational tools' are embedded applications used within larger applications. For example Learning Management Systems (LMS) like WebCT and BlackBoard have a set of default 'tools' like bulletin boards, glossaries, chat and webmail. Third party software developers often collaborate with LMS vendors to integrate their products into LMSs.

Within the context of this project, investigation of educational tools in Peer-to-Peer (P2P) technology used the software platform Groove as an indicative P2P system. Because of this, use of the term 'educational tools' refers to '*software applications that can be injected into a Groove platform and used to provide a means of interaction and communication with, and between, students for the purpose of facilitating student learning*'.

The default tools developed by Groove, as well as some of the tools developed by third parties for business collaboration, are well suited to educational purposes. As a development environment built on open standards, Groove enables developers to build powerful tools using industry-leading software technology. Groove offers developers a broad range of creative freedom and control over the platform and user interface.

Evaluating educational tools

The following evaluation is based on the relevance of each tool to support four common activities in online learning; **Dialogue, Involvement, Support** and **Control**. These key activities, identified by Coomey & Stephenson¹, formed the basis for the Model Collaborative Learning Environment (MCLE) developed by this project team.

Comment: Julie: Is the edit of this last line conceptually correct – ie this project didn't develop MCLE's as such, rather they developed an MCLE for this project?

¹ Coomey, M. & Stephenson, J., 2001, 'Online learning: it is all about dialogue, involvement, support and control – according to the research', in 'Teaching & Learning Online – Pedagogies for New Technologies', 2001, Kogan Page, London.



Dialogue

Dialogue is often expressed as synchronous and asynchronous communication. Common online facilities include email, mailing lists, discussion forums (bulletin boards), instant messaging, chat, video and audio conferencing.

Involvement

Involvement is synonymous with interaction. Researchers talk about the concept of 'flow' being a state of total absorption by the student in online learning activities. Flow is associated with challenge, clear feedback, learner control and concentration.

Support

Support is one of the more frequently raised issues in online learning. Support can include online supervision, support from peers, feedback and advice from tutors and experts, as well as more direct support-services in administration and technical support.

Control

Control refers to the level at which learners can direct key learning activities and the extent to which the learner is encouraged to direct their learning.

The evaluation of these tools is highly subjective. The ratings given to each tool under each activity are on the basis of its potential to support that particular activity. Experienced online practitioners understand that tools, by themselves, achieve little unless they are used skilfully in the correct context. Therefore, it is assumed in this evaluation that the tool will be used by a skilled online practitioner to achieve its potential.

Three groups of tools will be evaluated:

- (a) common default tools,
- (b) tools developed by partnered developers, and
- (c) tool concepts (an educators wish list).

(a) Common default tools

Welcome tool

The Welcome tool is equivalent to a contemporary 'course homepage' that is normally seen in most Learning Management Systems, except that it is not a display of functions (ie main menu options). The bottom pane has potential as a course noticeboard, and is easy to read in a diarised format. The Welcome tool would be useful as a support tool for a 'Latest News' type display.

Dialogue ✗ Involvement ✗ Support ✓✓ Control ✗

Discussion tool

The Discussion tool is similar to the asynchronous bulletin boards that are normally found throughout e-learning. The value of this type of dialogue in learning is well known. Users are able to edit their comments after posting and also hyperlink to other parts of the space.

Dialogue ✓✓✓ Involvement ✓✓ Support ✗ Control ✗

Sketchpad tool

Sketchpad is a collaborative drawing tool that could be used as an interactive whiteboard during synchronous events such as online lectures or tutorials. One of the benefits of using Sketchpad in this manner is its ability to provide an asynchronous record of interactions that have occurred. Sketchpad is also be useful for teachers that need to use special symbols (such as maths and science symbols) or to display a range of diagrams/photos that need to be referred to during synchronous events.

Dialogue ✗ Involvement ✓✓ Support ✗ Control ✗

Calendar tool

The Calendar tool is similar to most learning management system calendars. Because of the Peer-to-Peer format, times and dates are always shown in the local time zone set on the particular user's PC. This is a convenient feature if classes are conducted across domestic time zones or internationally. In the professional edition, the Calendar can automatically link to MS Outlook. The Calendar is an excellent control activity in that the teacher can set key dates and deadlines.

Dialogue ✓ Involvement ✓✓ Support ✗ Control ✓✓✓

Web Browser tool

The Web Browser tool provides the ability for participants to browse the Web from within a Groove space. One disadvantage of the tool is that although it has the capacity for users to browse together (a function that is very convenient for simultaneous viewing of websites in a lecture with small groups), this capacity is not able to be used in instances where a website requires authorisation by password.

In contrast to its traditional use as a browser tool, the Web Browser can also be used as an e-book or interactive book. If users are operating within a Peer-to-Peer environment on the Internet, why keep with the concept of the World Wide Web? Use of this tool as an e-book or interactive book enables the inclusion of learning activities that are additional to those that rely solely upon the World Wide Web.

Dialogue ✗ Involvement ✓✓✓ ✓ Support ✗ Control ✗

Notepad tool

The Notepad is a simple text editing tool that can contain several pages and can be used by members of a group. However, in terms of its overall value as an educational tool, other tools with similar functions appear more user friendly.

Dialogue ✗ Involvement ✓ Support ✗ Control ✗

Files tool

The Files tool is one of the more powerful common default tools, and can help address the inherent difficulties (such as the time, expense and skills required to create highly interactive material for a browser interface) faced by teachers and/or developers of online learning content or courseware. Although the Files tool does not replicate the interactive courseware of Learning Management Systems, it does enable the instant creation of resources for students, and enables students (if the space manager permits this function) to place their own files in this area. Through use of this latter facility, the Files tool enables true collaboration and true content creation and sharing.

Some particularly useful functions available within the Files tool include:

- **Content production.** Teachers and subject matter experts probably have most of their source material already in digital format (Word, PowerPoint, etc). The Files tool in Groove enables a simple 'drag and drop' of this material into a learning space.
- **Resource viewing and editing.** The 'preview' function in the Files tool enables students to preview files without needing the original application. Because teachers can give students permission to also add files, the Files Tool can become a resource repository for both students and teachers. There is also a 'live edit' function, which allows one or more users to work on the same document in real time.
- **PowerPoint presentations.** The 'Start Presentation' function available when using PowerPoint files is very useful when conducting online lectures and presentations.

Use of these features within the Files tool does, however, raise intellectual property issues. In contemporary web-based systems, the content is usually set and stored in a central server under the control of the developer and teacher. In a Groove space, who owns the space and content if it is created as an 'open' environment? If the space is to be reused for following classes, the teacher is legally obliged to obtain permission to use any student-generated material from the students; otherwise the material must be deleted before the space can be reused.

Dialogue ✓ Involvement ✓✓✓✓ Support ✓ Control ✗

Outliner tool

The Outliner tool is a text tool where participants can add comments in a bullet point format. The postings are different from a discussion board thread (ie there is no subject-author-date and no open-close-expand

process), however the bullet point-indentation format does give an indication of a 'post and response' format. Although the Outliner is a simple tool, it enables more spontaneous contributions than a discussion board, and as such has potential as a story building tool, as a tool to enable brainstorming of initial thoughts, or to elicit feedback at an early stage.

Dialogue ✓✓✓✓ Involvement ✓✓✓ Support ✗ Control ✗

Forms tool

The Forms tool is only available in the Groove Professional Edition. This tool enables workspace managers to build their own online database tool for Groove. Although the use of this tool is limited only by the imagination of the workspace manager, it does require a relatively high level of skill if it is to be used by an educator.

Dialogue ✗ Involvement ✓✓✓✓ Support ✓✓✓ Control ✓✓✓✓

(b) Tools developed by partnered developers

Mind Manager

The Mind Manager tool presents a graphical interface where participants can add branches and sub-branches to a central theme or topic. The 'mind map' can be rearranged and amended by any participant. This is a valuable tool for educators to elicit ideas and thoughts from students and to allow exploration of ideas and themes.

Dialogue ✓ Involvement ✓✓✓✓ Support ✗ Control ✗

GXcel

GXcel is a specialist tool for using MS Excel in a Groove space. It is well suited for subjects that use spreadsheets extensively (eg, accounting and commerce). The GXcel tool enables students to work collaboratively on spreadsheets and also enables a teacher to review the spreadsheets of individual students.

Dialogue ✗ Involvement ✓✓✓✓ Support ✗ Control ✓✓

PinBoard

The PinBoard tool is a fun tool that appears, at first glance, to have little educational value. PinBoard can be used as a student or course notice board in a formal or informal manner. Notices can be treated with graphics and/or a polling tool. A polling tool alerts students to vote on particular questions within a notice.

Lateral thinking educators can use this tool in other ways. For example, notices could become flash cards that need to be manipulated in specific orders or become elements of a scenario that must be pieced together with comments (polling) taken on each card.

Dialogue ✓✓ Involvement ✓✓✓✓ Support ✓ Control ✓

(c) Tool concepts**Video tool**

A beta version of this type of tool (called MeetCam) is already available, and although it is unstable, it does demonstrate a video function. In MeetCam, images from participants with a webcam on their PC are collected to form a mosaic of images in the main tool frame, while participants without a webcam are allocated a grey space. Participants can set the refresh rate of the camera for bandwidth limitations thereby creating a time-lapse effect in the mosaic. Apart from any specific need for video (eg to watch a student performance), the benefit of MeetCam is the generation of a human presence/feel among the group which has the potential to create a richer collaborative experience.

Dialogue ✓✓✓ Involvement ✓✓✓ Support ✓✓✓ Control ✗

Portfolio tool

As an assessment instrument, student portfolios are valuable. Groove will enable students to create their own space (portfolio) and to invite the teacher to review their work. The provision for a portfolio facility need not be a special tool as it could be equally accomplished through the provision of another space. For instance, to assist and support students, a portfolio template space could be created with tools and embedded guidance material for students to download and start working within.

Dialogue ✗ Involvement ✓✓✓ Support ✓✓✓ Control ✓

Assessment tool

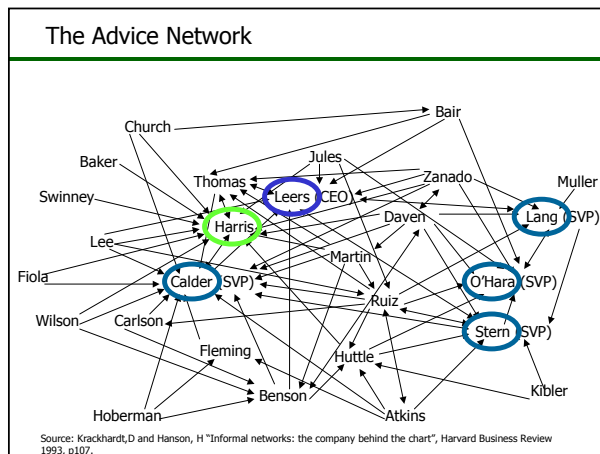
Contemporary online assessment instruments consist of multiple choice (with automatic grading and feedback), short answer, paragraph answer and assignment 'drop boxes'. There is no doubt that replication of these instruments within Groove would be useful.

Dialogue ✗ Involvement ✗ Support ✗ Control ✓✓✓✓

Network Analysis tool

The incorporation of a Network Analysis tool could show the 'closeness' of people within the group, whether it's a company team, class or project group. Network analysis is often done using a survey tool, the results of which are then shown graphically. A Network Analysis tool would enable a teacher to visualise how a particular group or community is forming.

A typical network map built from a survey might look like the following:



Dialogue ✗ Involvement ✓✓ Support ✗ Control ✓✓✓

Role-Play tool

Role-play is appropriate in a vocational educational and training (VET) setting because of the competency-based nature of VET and the value of simulations in gaining competency. Because of the ability of Groove to allow both synchronous and asynchronous communication and interaction, combined with an authoring capability by all participants, incorporation of a role-play tool would seem quite valuable.

Dialogue ✓✓✓✓ Involvement ✓✓✓✓ Support ✗ Control ✗

Choosing a tool to develop

Online Role-Play

The particular tool chosen for development by this project was the Online Role-Play tool. The advantages of online role-play include²:

1. role-play is in line with adult learning principles

Adults bring their life experience to their learning environment. In a traditional classroom setting, it is dependent upon a teacher to take advantage of this breadth of experience. Unfortunately, a teacher can miss this resource. In contrast, online role-play explicitly exploits this rich source of experience. When a learner plays a role different from their everyday viewpoint, new insight is developed through 'stepping into another's shoes'. Additionally, the learner can also benefit from interacting with persona who play the same roles as the learner. Since such roles are played by other adults, learners who bring their own life experiences and perspectives, the learner is shown alternate views of the same stakeholder.

² <http://www.roleplaysim.org/papers/>, accessed 5/2/2004.

2. cost effectiveness

Online role-play is a cost effective strategy because a minimum amount of graphics are needed to convey the context and interactivity. There is no need to create sophisticated avatars (as in virtual reality). Instead, learners actively participate in constructing the simulation collaboratively using text-based communication.

3. ample time to learn and reflect

The role-play tool provides both synchronous and asynchronous modes of communication. The asynchronous nature provides time for players to consider alternatives and to research or use 'in' or 'out-of-simulation' discussions before making a 'move'. The asynchronous nature and the support of 'in' and 'out-of-simulation' collaboration, research and reflection provide ample time for learners to rehearse.

4. anonymity

Online role-play overcomes the problem of playing a face-to-face role-play, where participants may feel shy about acting out a role. Anonymity allows free exchange of opinion without the risks associated with a face-to-face environment. While online role-play is not a silver bullet for all types of learning, the engaging nature of online role-play opens up new opportunities for adult learning.

In addition to the benefits of using online role-play as an educational tool, other factors that supported the development of a Role-Play tool as the present New Practices in Flexible Learning project included:

- the innovative nature of the tool represents a contrast to most existing tools in contemporary online learning technologies
- the existing value of role-play as an teaching/learning technique and its extension into the wider VET context
- the high level of interaction between participants and its relevance to the Peer-to-Peer concept, and
- the design and programming of such a tool appeared to be a more manageable project than the undertaking of a more complex tool concept as it was within the capabilities of the technical team and project timelines.

Role-Play tool design & development

The role-play tool design is based on the metaphor of an actual theatre play, and includes a director, characters and an audience. Use of the tool is controlled by the space manager (teacher) who can build a cast of characters, assign a director (or default to themselves as director) and then build a plot.

Space participants (student users) are assigned a character by the director and given a public profile (seen by the audience and other characters) and a private profile (known only to the director and character themselves). This private profile is released at the end of the play. Use of a private profile allows covert instructions to pass from the

director to the participant, and for the creation of a character's hidden agenda. During the play, a participant is able to view their profiles as well as record their feelings and reflections in a private journal.

The director constructs the plot by first completing a text prologue to 'set the scene'. A number of scenes are then created to reveal the plot in episodes, although the play could equally consist of one simple prologue or single scene. The ability of the director to break the plot into episodes and then release them as desired means that elements can unfold dynamically as in real life. The actual play is a chat panel contributed to by the characters, whose identity remains anonymous until the end. Following the release of all scenes, the full play is shown as a cumulative chat with interspersed scene descriptors and dividers.

Finally, the director closes the play and releases the 'Analyser'. The analyser enables all play participants to review the play chat and to see private profiles and character identities. A small chat area allows discussion among the group about the play.

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