The University of Edinburgh
Principal's Teaching Award Scheme

PTAS Project Report   (for REGULAR PROJECT GRANTS)

Project Title: Enriching recording lectures through linking and creation of rich media content

Project type (delete as appropriate) :
A Research Project ~~(research focus on particular dimension of teaching, learning, assessment)~~
B Innovation Project (introduction and evaluation of an educational innovation, usually taking a practical approach)

Principal Investigator : John Lee, Stuart Anderson, Denitsa Petrova
Schools/department : ECA/Informatics

Team members (including Schools and Departments) : Edmund Farrow (Research Associate), Trey Connelly (Visiting Student, Stanford)

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Project teams must submit a report within 4 months of the conclusion of their project.
Copies of dissemination material (eg journals/newsletter articles, conference papers, posters should be listed and attached (separate to the word count). The brief report will be published on the IAD web pages.

Report (maximum 1500 words)

What did you do?
The intention of the project was to investigate improved methods of engaging students with video content. The concept of the project was to extend an existing simple prototype system that allows students to annotate videos, link them to other resources and link them to other videos. Recorded lectures could then be used as the core of a dynamic learning resource created by students curating their own collections of materials around them. A central challenge here is designing a truly usable "Rich Media Linker" that will effectively engage the students.

Systems that allow annotation of video (or audio) often maintain a visible list of the annotations on the particular media item, perhaps automatically scrolling to the annotation nearest to the current time point in the player. The same idea seems to make sense for videos and other resources linked to the media item, allowing a view to be maintained of the wider context, in a sense, within which the item is seen. This can be seen in a relatively early version of the Linker in fig.1. In this version (developed originally by John Lee), the main "lecture" video is seen on the left; while it plays, other videos (or other resources, e.g. PDFs) appear in the window on the right as the video reaches time points where they are defined to be relevant. If necessary, more than one can appear, in a scrolling list. Meanwhile, the user can, at any time, create a new annotation or link using the elements below the main window.
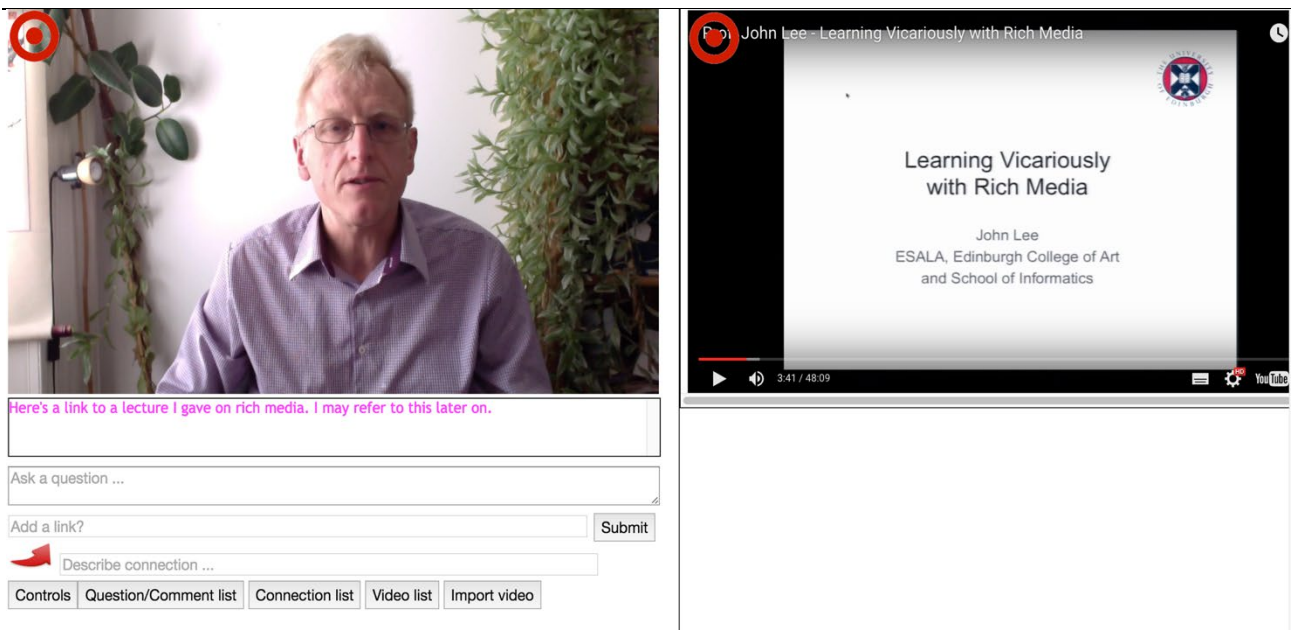
Figure 1: Early version of the Linker interface

In later versions of the interface (developed for the project by Edmund Farrow), we tried to create a more intuitive presentation of the related resources and offer a more attractively designed interface, provided also with help materials (fig. 2). We implemented a scrolling "carousel" of videos linked to the primary video. We experimented with various interface strategies to provide the functionality of defining links between specific time points in different videos.
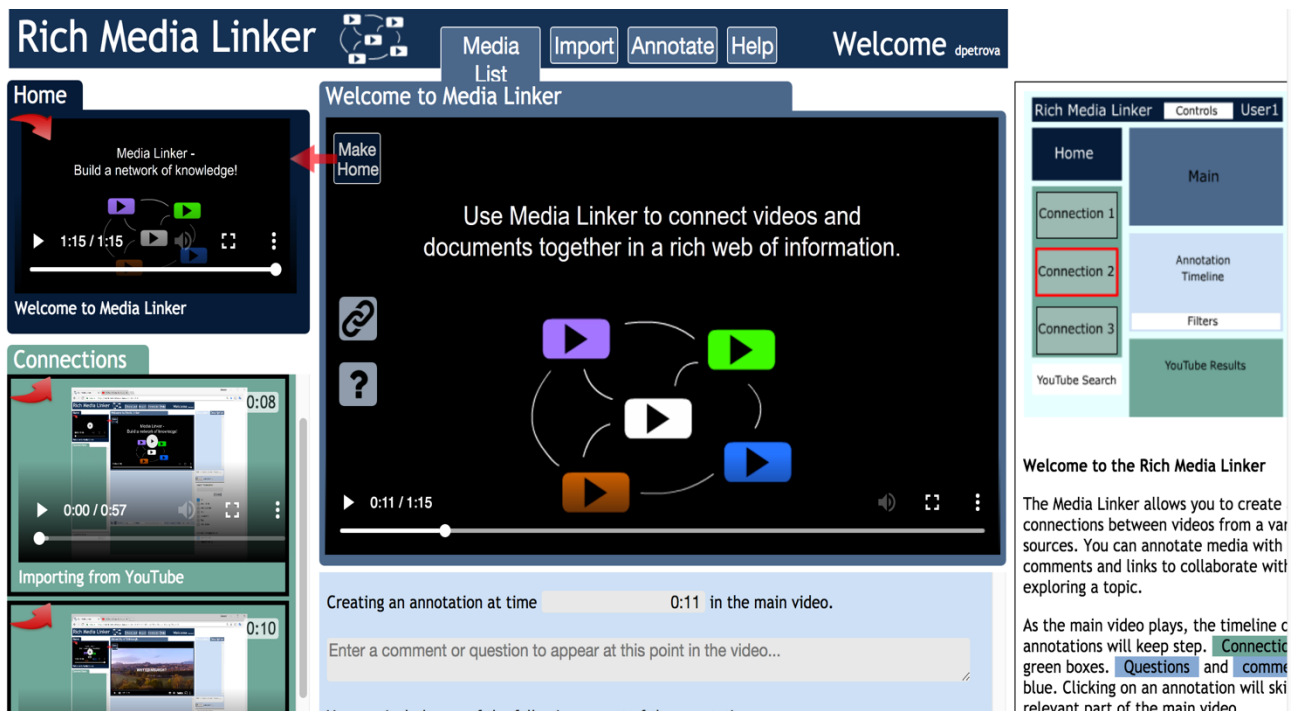

Figure 2: Later Linker design, showing help video in main window

We tested the implementations by offering the Linker to students in several classroom situations. We created tasks for the students that engaged a variety of the functionalities. For example, they were given segments of lecture or lecture-like video and asked to find related material, perhaps on Youtube, and link to it where appropriate. In some cases, they used the Linker to elaborate discussions around specific topics, creating connections to related materials and using this as a focus of online discussion (fig. 3). Students found the tasks engaging, carried them out generally successfully, and reported positive reactions to the ideas and the experience.
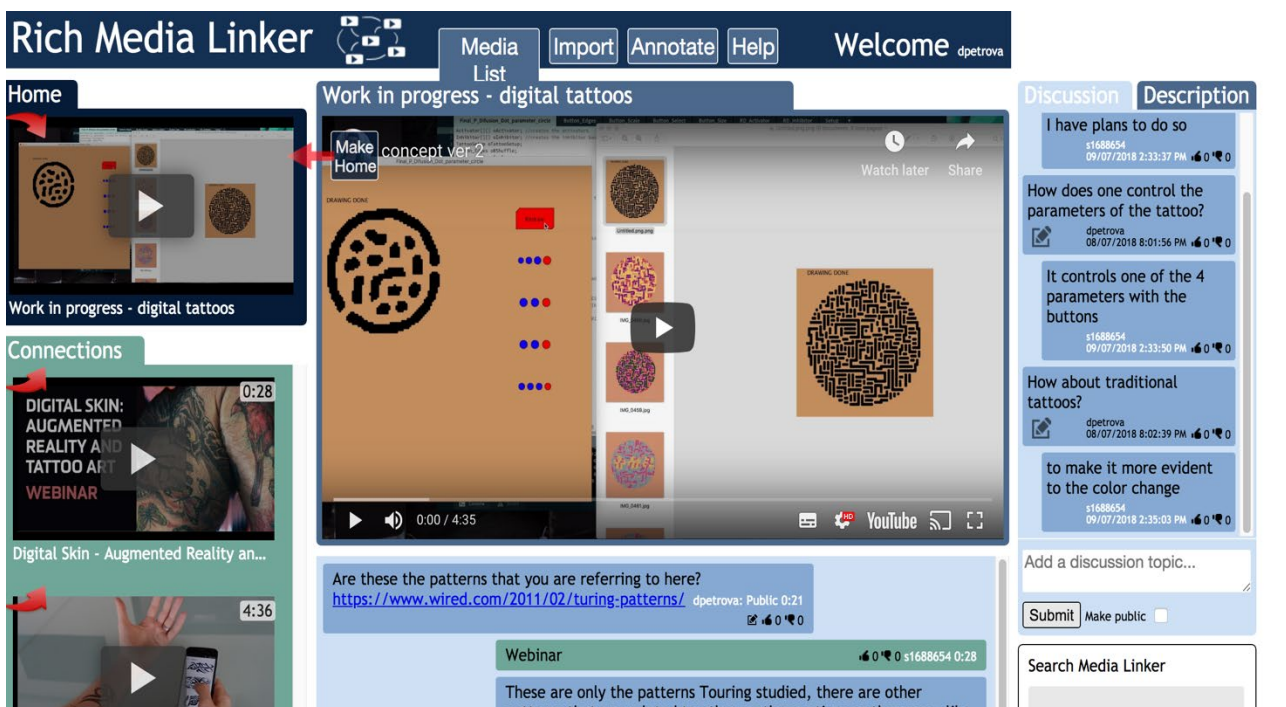

Figure 3: The Linker as focus for a discussion

We carried out further investigation using think-aloud techniques with several individual student participants, probing reactions to the interface in more detail. As one outcome of this, further design enhancements were proposed, and to some extent implemented, by Trey Connelly (a visiting student from Stanford who worked with the project for several weeks). Meanwhile, several student projects in Informatics (undergraduate and MSc) have been related to the project, covering topics from interfaces for discussion around lectures to intelligent selection of related materials from the internet.

What did you find out?
The intended level of integration of the Linker with the lecture recording system has turned out to be impossible thus far, due to the lack of a player API in the Echo360 system. Videos can be exported to Media Hopper Create, but this is a time-consuming exercise that we have not been able to complete for many courses. This issue has been an unexpected limitation on the project, which we hope will be addressed in the future.

Using the full functionality of the Linker appears to present significant challenges to learners in practice. Several types of information have to be managed: the videos "known" to the system; the

user's activity — the annotations, discussions and links they have created, and videos they have imported; the ownership and sharing of activities. Our interface has evolved to include a range of elements and options of these kinds. We have found that the complexity of the interface can't be disentangled from the complexity of the functionality. It seems that making the Linker significantly easier to use would inevitably make it less useful. This is an instance of a trade-off that is not uncommon in interface design, between power/flexibility and usability/learnability/simplicity.

We find that the users in our studies are able to grapple with the complexity, but it is difficult for wider groups of users to appreciate the potential of the Linker and take advantage of it more substantially. We have, for instance, made many or all of the lecture recordings for certain courses available to the students in the Linker, and encouraged them to develop materials and discussion around these, but uptake has been disappointing. We feel that further experimentation is still needed to understand this more fully.

How did you disseminate your findings?
We have presented the Linker, and given talks on it to a number of groups and events around the University, including PTAS-related events and others related to the lecture recording project. We are still in the process of writing up the work for publication.

What have been the benefits to student learning?
As yet, the benefits to student learning remain to be proven. However, we are convinced that the approach has merit. Our experimental tasks have shown clearly that students can be engaged and do appreciate the learning potential of the approach. We believe that there is significant potential for the Linker to be used in developing a wide range of learning and also assessment tasks. Lecture recordings are a resource that is under-used, from which much is to be gained by finding ways to incorporate it into reflective, constructive and discursive learning activities.

How could these benefits be extended to other parts of the university?
In principle, there is no limitation to the academic areas in which the Linker can be used. We have developed it primarily in areas related to design, but many of the ideas are based on earlier work done on tutorials in computing. Since lecture recording is now ubiquitous, the benefits from enriching its use could extend very widely, at least once it can be better integrated with the technology of the recording system.

Financial statement (please delete as appropriate):

Either
This project has utilised the funding awarded to it by the PTAS adjudication committee and the Principal Investigator or School Administrator appropriate can provide financial statements showing the funding usage as and when required by the UoE Development Trusts who may require it for auditing purposes.

Or
~~This project has remaining funds unused and we require details of how to return the balance. The Principal Investigator or School Administrator appropriate can provide financial statements showing the funding usage as and when required by the UoE Development Trusts who may require it for auditing purposes.~~

Please send an electronic PDF copy of this report to:
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