

# Connectivism & Interactive Narrative: towards a new form of video in online education

Michael Frantzis

University of London, International Programmes  
Goldsmiths College, Department of Computing,  
michael.frantzis@gold.ac.uk

## ABSTRACT

Techniques of online learning have evolved considerably, with the introduction of Learning Management Systems, Adaptive Learning Environments and Massive Open Onlines Courses (MOOC). However, the video resources contained within them have changed little, remaining fixed duration time-based media objects. This static nature of educational video contrasts with evolving landscape of personalization and Connectivist ideas in learning systems. We propose existing models employed in interactive video narratives, combined with emerging techniques of crowds sourcing and automatic story generation, can enable a new form of educational video narrative which reflects the collaborative systems which surround it.

## Author Keywords

Interactive,narrative,education,open,resource,connectivist

## ACM Classification Keywords

H.5.1. Information Systems, Information Interfaces and Presentation, Hypertext/Hypermedia

## INTRODUCTION

When the technology of motion picture was first introduced, Thomas Edison pronounced, "the motion picture is destined to revolutionize our educational system and that in a few years it will supplant...the use of textbooks". The rise of MOOCs [1], the animes used in Khan Academy<sup>1</sup> and other distance learning offerings would suggest he might be right. However, whilst the techniques of online learning have evolved considerably, the educational video object itself has evolved little. It remains a fixed duration time-based media object, which students consume passively before moving onto other interactive tasks or assessments modules.

This static nature of current video offerings poses two problems. Firstly, it is at odds with the surrounding landscape of personalisation in learning systems, theories of connective learning and online collaborative learning [2] where the accent is on constructing knowledge through

interactions within communities. In the modern Connectivist era [3], the material of learning will need to have the capacity to evolve. Secondly, the growing impact of MOOCs brings to the fore the problem of scalability, from both a technological and authoring perspective. The current assumption is that a video lecture is a record-once, use-many-times resource. However, the resources consumed in terms of manpower and production expertise, and the increasing demands of a technology literate student generation, makes this model difficult to sustain. A new solution is needed to allow video to evolve to meet the needs of a new educational paradigm, one capable of harnessing the knowledge contained in online communities.

Our hypothesis is that expertise and technology created in the field of interactive video narratives can be used to build interactive video objects for educational purposes, which can meet this need.

## BACKGROUND

There have been a number of methods by which researchers and learning technologist have attempted to allow learning materials to adapt according to user interactions.

Adaptive Learning Environments (ALE) typically hold a model containing a user's learning or cognitive style along with a domain model, and attempt to use these to use these to enable personalisation of the types of interaction offered according to the computed learning needs of individual students [4]. Work in Adaptive Hypermedia has proposed a hypermedia based-approach to navigation through learning materials, encouraging learning through exploration [5][6]. Also important are dynamic user models [7] further informing adaptive learning in a given course or even in other domains.

Whilst these approaches are responsive to students needs their focus is on tailoring or personalisation of predefined media (of which one type is video). They do not attempt to use a community of learners to improve the resources themselves; rather they alter the choice, sequencing and presentation of a predetermined set of resources.

## DISCUSSION.

Techniques using interactive narrative have been employed in many educational contexts. However these have tended to involve role-playing and game-based scenarios, where users interact with characters within simulated

3rd International Workshop on Interactive Content Consumption at TVX'15, June 3rd, 2015, Brussels, Belgium.  
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<sup>1</sup> <https://www.khanacademy.org>

environments.[8] However, new lines of enquiry are emerging in interactive narrative research, specifically automatic generation of interactive video narratives from shared user-generated content (UGC) [9] and crowdsourcing of interactive narratives [10]. An approach based on theories of mind and learning, narrative generation from UGC, and crowdsourcing could offer a powerful solution to delivering interactive video for education. Interactions by users with interactive narrative video objects can be recorded and structured as a representation of knowledge. This functionality, in combination with the capacity to add user generated content and the techniques of automatic narrative generation, would allow video to become an expanding and powerful resources, adapting and growing with the inputs of student interaction, rather than simply being consumed by students.

Let us take as an example a student consuming a video lecture about a specific aspect of law. He/she might find a section where they feel they would like a lot more detail, or they might remember a particularly good recording a fellow student made about this particular aspect of law. In an appropriate interface they would be able to add an interaction point. This annotation would contain the information that there exists another video resource available which a fellow student felt to be valuable, related to the content at that point in the media. This information could be added to the narrative structures held on a server generating the video narrative and associated playlists, and on the next automatic generation of the lesson narrative by a subsequent user this interaction could be displayed as an option – the video object has expanded in the same way a discussion forum might have expanded.

The potential information derivable from interaction points does not stop there. This user-generated interaction point, and associated user-generated content, can be rated, both by a teacher and other students. Aggregating these scores could offer a means of computing the best interaction possibilities, and in parallel enable personalisation of the video according to social and educational context at runtime. For example, an interface could only show interactions from those students who are the highest rated, or those best rated by a teacher or teachers. Incorporating information gleaned from social networks could inform the narrative structures even further.

## CONCLUSION

It is already a common practice to describe education as a journey and thus as a narrative, and there are significant parallels between learning through problem solving and interactives narratives [11]. Emerging techniques of crowdsourcing and automatic generation of stories from UGC can now offer a valuable opportunity to create a powerful link between emerging pedagogical techniques

from the field of Technology Enhanced Learning and the video resource they employ.

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