Capturing Finance Fundamentals Within a Student's Realm: Using YouTube and Related Technologies

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ABSTRACT

Exploiting the repertoire of knowledge, skill, and interest students bring to campus with publicly available educational material found on the web extends, enhances, and improves student access to the fundamentals we teach. We offer suggestions about ways professors can capture interesting and worthy presentations that are readily available to students on the web. YouTube, TeacherTube, Wikipedia, Investopedia, and other sources offer a rich assortment of material that fits into many existing course topics. Such material is extensive, often of excellent quality, and rewarding to students; but often it is disbursed in such a fashion as to make it nearly unusable. Locating useful material can be challenging. Most students are well acquainted with these media devices and have accessed them for entertainment and other purposes. Singling out and ordering the worthy items from this morass are difficult tasks for students, particularly when they are unfamiliar with the relevant topic. The quality of available items spreads over a staggering range from outstanding items to some that are dead wrong. Guiding students to worthy sources gives them access to information in a format that is conformable with their existing experience, possibly entertaining, and frequently advantageous beyond traditional sources. An assortment of topics covered in a finance course is enumerated here with identified material suitable to enhance understanding. This paper explores available items, considers how these things are used, examines how relevant material can be found, offers illustrations of certain representative sites, extends the process to include creating useful items, examines the legal ramifications of incorporating these sites into classroom material and concludes with an examination of the outlook for future extensions.

INTRODUCTION

During recent decades, technological advances introduced revolutionary changes in education. The joke about academics being a relic of the past no longer seems as relevant as it was just a few decades ago. That recently, people often speculated that if a person were to fall asleep sometime in the middle ages and remain asleep until the late 20th Century there was but one profession they could continue doing with the same skills and tools--teaching. The only things needed would be their knowledge, a chalkboard, and some chalk.

In a recent speech Chris Anderson, the curator of TED, an organization devoted to "ideas worth spreading" notes that the widespread dissemination of material allowed by the Internet produced what he calls, crowd accelerated innovation.[1] The term TED represents technology, entertainment, and design. People worldwide are able to learn things through YouTube from some of the most skilled people anywhere. Some of the earliest notions that encouraged people to develop and promote use of the Internet are coming to fruition on a scale that few could have imagined when the idea was conceived. In 1990 Tim Berners Lee at CERN advocated linking documents worldwide using hypertext. Perhaps his greatest hope was that physicists worldwide be easily able to communicate and readily share information. Today's applications of the World Wide Web have likely exceeded the imagination of anybody in 1990.

The notion of open source innovation has proven highly desirable in numerous applications. From constructs such as Linux and Firefox, people have learned the usefulness and benefits available to openly engaging in developing new ideas. The long employed paradigm wherein researchers huddled secretly with a limited number of others missed the benefits of a wider source of knowledge. People have employed devices such as Delphi to enhance group thinking for years, but the recent emergence of widespread open sourcing extends beyond the previous bounds. The popular book, *Wikinomics* advocates the notion of developing ideas in an open source environment in contrast to within the limited scope of private research organizations.

A device often employed for open group interaction is the wiki. Popularized by Wikipedia, the wiki allows students or researchers jointly to work on a project without the necessity of frequent face-to-face meetings. Participants working on a wiki effectively create documents and the like by interacting simultaneously or sequentially in the construction process. Additions or changes to the project are immediately available to all participants so that worthy aspects can be further enhanced and undeserving aspects can be rapidly discarded.

A reflection of the extent to which these technologies have permeated the world appears in the newly introduced term, "going viral." This term refers to the notion that some material has attracted attention from such a crowd that multiple people advocate accessing that material and thereby compound the spread of its popularity. Thus, a technology or idea spreads much as a virus spreads from person to person at a progressively accelerating rate until it permeates a huge

population. Each person who finds the material useful can readily share it with one or more other people, thereby expanding awareness of the material to a progressively larger and larger audience.

AVAILABLE ITEMS

Numerous web locations with educational implications already exist. These have been created for various reasons. Applications range from instances of material posted by individuals to extensive constructs that offer a vast array of content. Some sites have been created expressly to promote knowledge that is useful in applying specific tools. For example, Atomic Learning offers tutorials for educating people about the use of Texas Instruments calculators. Users of these calculators may access instructions for accomplishing many of the multistep routines needed for complex calculations. Tutorials for learning about currency trading are available from Forex.com.[2] Prospective traders may learn the mechanics of trading through a series of tutorials. Universities such as MIT have made virtually all of their lectures available to Internet users throughout the world.[3] This program has existed for ten years.

ILLUSTRATIVE SITES

TeacherTube and YouTube are two of the dominant sites structured around the topic at hand. Although TeacherTube would be better aligned philosophically with this document, its content is dramatically smaller than that of YouTube. Furthermore, much content on TeacherTube is oriented to younger learners than college age students. Consequently, most of this article's focus is YouTube. The reader will likely experience the same relationship with his or her applications. A considerable number of YouTube sites have been created under the sponsorship of Bionic Turtle. These were developed by David Harper. Each video takes a single financial task, often a calculation or problem to solve, and illustrates the relevant steps.

USEFUL LECTURES

A number of colleges have a formal program of distributing material over the Internet. Included among these items are many videos useful for introducing students to ideas from different viewpoints. Often lectures presented by notable people in the field are shared. For example, a person interested in endowment management could watch a lecture by David Swenson, the renowned manager of Yale University's endowment.[4] As noted earlier, MIT has an active program intended to record all of their courses. A consequence of this effort is people from around the world being exposed to some of the material they might never encounter otherwise.

News reports often generate useful items that allow students to gain insights to important topics. For example, notable people operating in business are often interviewed about activities related to their special skills. When these items find their way to publicly available channels, they can serve as outstanding insights to relevant business topics. Well known people such as

Warren Buffet, Carl Icahn, and others frequently comment about activities that are newsworthy at various times. Controversial issues may be addressed and recorded for widespread access.

Certain certifications require candidates to demonstrate knowledge regarding relevant material before they are accepted as fully certified members. For example, there are exams for the CPA, CFA, CMA, etc. A variety of sites exists to help prepare individuals to gain and demonstrate their competence in relevant tasks. The Bionic Turtle claims that their material has helped train people to "pass the toughest financial exam on the planet."[5] They offer videos dealing with countless topics covered by the Financial Risk Manager Exam.

Topics of interest frequently emerge without immediate access to necessary elaborations. A search of available videos often leads to a video explanation that provides useful background.

USING THE METHODOLOGY

The focus of this study is on readily available and easily created material that is useful in the context of financial education. The array of available technologies dealing with related areas is wide-ranging, but not addressed in this study. Many students come to campus with extensive knowledge about accessing and using material on the Internet. Dominant among sites visited by students are those located on YouTube. Some of the skills developed in dealing with these sites are readily transferrable to similar sites.

Many of the tools within YouTube follow commonly known procedures. For example, the play and pause buttons along with a volume control appear in the typical location toward the bottom left of the screen. These controls allow the user to stop a presentation while digesting some detail. Similarly, a point initially missed can be replayed to improve the listener's understanding. Several additional controls are also available. Just below the playing video toward the right of the screen are controls for resolution, captioning, popping out the screen, enlarging it, and finally viewing it full screen. The resolution control setting ranges from 240p to 720p which is consistent with HD TV material. Videos viewed for entertainment may be enjoyed at low resolution, or situations with low speed access may demand low resolution, but educational items may demand more. Videos that have considerable text or fine details to see should be viewed at the highest resolution possible, specifically 720p when available. Presently a Beta version of the captioning functionality is available as a button labeled CC. This transcribes the spoken material into text at the screen's bottom to assist with understanding a verbal explanation. Furthermore, the printed text can be translated within this functionality as well. Next, the PopOut button causes a new screen to pop up. This approach effectively abstracts from the other content on the basic page. Beside it is a toggle button containing perpendicular arrows that alternately enlarges or shrinks the image. Finally, the last button on this row opens the video in full screen mode. You return to the standard view with the escape key.

Below these controls are a few additional controls. Again, beginning on the left are buttons labeled "like" and "dislike" with either a thumb up or a thumb down symbol. A click on

these gives you an opportunity to express your opinion about the chosen video. Next, an "Add to" button allows you to add this video to your queue of videos to watch or to your playlist. Adding to your playlist requires that you first log into your YouTube account. Next are several options for sharing the video. You can email it to a friend, or connect it to your accounts in Facebook, Twitter, MySpace, Orkut, hi5, Blogger, Live Spaces, Bebo, Buzz, or, StumbleUpon among others. Both short URLs and HD URLs are possible. Next is the option to get embedded video code. You can capture code here that allows you to embed the video within other web sites. A number of options are possible controlling how the video will behave within an embedded site.

It is impractical to expect students to use this methodology without serious guidance. Although there will likely be students who come to campus with enough experience using social media to allow them to naturally find useful material, others will flounder without direction. Thus, it behooves the instructor to systematically assist students in this task. An early step for the instructor then is to identify specific items that will be useful to the student. We begin with some tips about searching.

FINDING RELEVANT MATERIAL

Traditional searches conducted with Google, Dogpile, Bing, Alta Vista, Yahoo, Lycos, Mamma, WebCrawler, and other search engines are important first steps. Such searches often take you to locations that you would otherwise never reach. Within identified sites, internal search engines often fine-tune the hunt for useful items. Such searching within a system is possible in YouTube. Among other things, YouTube includes a text entry box accompanied by a "search" button at the top of most pages. In all of these embedded search tools, selection of suitable keywords remains the crucial step. Several attempts with alternate keywords is generally an important routine to follow. Often searches return thousands of potential hits organized by relevance to the best of the site's ability. Ultimately, a searcher should be able to identify a goodly number of items that relate to the search terms used. Despite these aids, searching for material that is relevant to a specific task remains challenging.

As done in traditional Google searches, the returned results include sites identified by relevance and others that are promoted. A quick look at both categories often leads to something useful. Clearly, the promoted sites are those rewarding Google financially for their presence, and they can be examined with a degree of skepticism.

Each video prominently displays the number of times it has been viewed. Those videos with high numbers of viewings clearly have attracted many people. It is often likely that frequently viewed videos offer worthy material. Presumably, people finding the material useful refer it to friends and colleagues and perhaps even return to the site for a refresher of its content. Of the several items returned by a search it is useful to systematically attack the options. One of the frequently employed devices found on YouTube and TeacherTube is the category of "most

viewed videos." This collection allows casual users to observe the items most frequently accessed by others using that service. Since this aspect of frequency is generic, you must recognize that characteristics other than your educational topic drive activity. Frequency of access likely derives from the entertainment value of a site rather than from some perhaps more worthy causation such as educational rewards.

Once a video is selected from the assortment returned by a search operation, a new assortment of related videos is suggested along the right side of the screen. These in turn can be selected and the same result repeats. Additionally, above the screen the channel which includes this video is listed. Click on the channel name to identify all of the creations from the same source. Often these are of related value. As a member of YouTube you can subscribe to a channel and be alerted to newly uploaded videos as they become available.

An option to directly searching is to select the browse button at YouTube's home page. This leads in turn to a page loaded with alternatives. For direction there is a downward pointing icon that opens a menu assortment including Autos & Vehicles, Comedy, Education, Entertainment, Film & Animation, Gaming, Howto & Style, News & Politics, Nonprofits & Activism, People & Blogs, Pets & Animals, Science & Technology. Sports, and Travel & Events. Also shown are links to the most viewed videos of the day, and links to several popular categories.

A final thought about using the methodology takes us logically to the prospect of finding a YouTube video targeted to that very purpose. One such site can be found at the Router God location[6] This YouTube video provides an excellent introduction to the process of using YouTube itself. Among the beginning steps advocated is to create a user account. That simply requires adoption of a suitable username and identifying yourself with an email account. One of the first uses of such an account is subscribing to channels of interest.

Perhaps the greatest challenge in finding relevant material is the surrounding ocean of irrelevant material available. An exceptionally large haystack confounds the proverbial "needle in the haystack" quandary. There are extraordinarily useful tutorials available, but the number of poor quality attempts tends to be overwhelming. The reality constraint is the ease of inserting material onto the Internet. This ease encourages people of every ilk to share their insights with little in the way of reviews. The glut of these items perhaps reflects a journal with no reviewers which simply accepts and publishes every manuscript that somebody wishes to submit. Many items are thinly disguised advertisements for something else.

CREATING USEFUL MATERIAL

Many professors already have experience in recording lectures. If so, they are well prepared for creating YouTube videos. Concepts related to the presentation are developed in a similar fashion.

One of the challenges for creating material for this purpose is making it fit within the constraints imposed by the site providers. Physical size and memory requirements have explicit limits that keep packages limited. Other constraints include access to hardware and software necessary for capturing and preserving useful material.

To deliver something to YouTube, it must be in a file format consistent with their requirements. Following is the list of some well-known formats that YouTube supports:

- WebM files (Vp8 video codec and Vorbis Audio codec)
- .MPEG4, 3GPP and MOV files - (typically supporting h264 and mpeg4 video codecs and AAC audio codec)
- .AVI (Many cameras output this format - typically the video codec is MJPEG and audio is PCM)
- .MPEGPS (Typically supporting MPEG2 video codec and MP2 audio)
- .WMV
- .FLV (Adobe - FLV1 video codec, MP3 audio)[7]

YouTube recommends that files be delivered in the format closest to that of its original creation. Specifically, YouTube will recompress the file before it is loaded for use, consequently fewer compressions are logically better.

The process of loading material onto YouTube is relatively simple. In fact a very simply document can be created and loaded in one step. Specifically, if you have a lecture that merely requires your verbal explanation of something you can use a video equipped notebook computer to directly record your lecture to YouTube. You can then review what you loaded and if it is unsatisfactory, delete it immediately. On the other hand, if you find the material useful, you can publish it immediately. There is, of course, a modest delay until it is appropriately refined to fit on the YouTube servers.

More material that is complicated typically demands additional preparation. Cameras can record an image of you, any visual object you wish to illustrate, and possibly video captures of spreadsheets and other onscreen documents. Along with a video capture, an audio track can be incorporated to elaborate on images displayed on screen. As with traditional teaching, considerable advance preparation is important. Perhaps the preparation is even more important with recorded videos. Any pause or retraction remains captured for posterity. Thus, every time a student accesses a recorded video they are subject to being abused by the same mistake repeatedly.

LEGAL RAMIFICATIONS

The rapid advance of information technology has produced more questions than answers regarding intellectual property. Caution is needed to insure that students are not led into practices that exceed the bounds of law and propriety. Although copyright laws are quite generous for

student use of material in research, commercialization of those items require care and knowledge.

SUSTAINING FUNDAMENTALS

A danger in applying new and glamorous technology is the potential to mask over necessary fundamentals. For example, most people have encountered an experience with store clerks who become befuddled whenever their simple routine is disrupted. If power to a cash register fails, some clerks are unable to make change. Similarly, if a customer abruptly adjusts something about a payment confusion may reign. A clerk given a $20 bill to pay for something that costs $15.05 may get confused when a customer hands them a nickel after the clerk typed $20 into the cash register as the amount received from the customer. Similarly, many professors have watched a student reach for a calculator when asked to divide 15 by 3 or some similarly trivial question. Clearly, caution is necessary to insure that educators are not creating an army of idiot savants tethered to some technology. Rather, the technology must help the student internalize skills necessary for dealing with specific tasks.

STUDENT CREATIONS

Perhaps the ultimate step along the lines advocated in this manuscript is the assignment of tutorial creation on YouTube to students. Once students have been introduced to the educational use of YouTube it is reasonable to expand their experience with an assignment to create their own lecture. Not only will they become intimately familiar with the mechanics of creating and posting the video, they will enhance their understanding of the material they attempt to explain. At first this may be intimidating to students, but once they overcome the initial hurdles, their progress is rapid and rewarding.

OUTLOOK FOR FUTURE EXTENSIONS

Recent decades have been characterized by accelerating advances in technology. The near future is likely to continue this progression as additional people enter the practice with expanded applications. A particular opportunity for advances likely lies within the realm of encouraging students to become active developers and enhances of the various technologies available. Thus, the ultimate application of the material and concepts addressed in this paper is encouraging students to go beyond using the things already available to them and extend the assortment of material with their own creations and extensions.

One of the first realizations that a person experiences when called upon to teach is the necessity to learn that teaching imposes. The idiosyncrasies, complexity, conundrums, and conflicts within a body of knowledge seem to become more apparent in the teaching phase than in any learning or use stage.

Chris Anderson argues that video on the web is an innovation comparable to the Gutenberg Printing press. The printing press made access to the printed world accessible to the masses. After the printing press was introduced, ordinary people had full access to the material of printed documents. Furthermore, ordinary people became extraordinary people through the use of a printing press. For example, Benjamin Franklin used his skill with a printing press to help create a fortune and found a nation. Similarly, video on YouTube makes access to face to face communication accessible to the masses.[8] Furthermore, face to face communication allows for considerably richer communication than other forms. Perhaps even more importantly, the communication is not confined in time and space as direct contact or television allows, but rather the communication is available at the discretion of users throughout the world.

CONCLUSION

A goodly number of highly useful media items exist today and additional items continually accumulate. Access to these is presently relatively easy and likely to progressively become easier. An enormous number of these items are beneficial in promoting education. Unfortunately, a considerably larger universe of confounding material concurrently exists and will likely continue growing rapidly. A simple mechanism for distinguishing between worthy and questionable items seems to remain elusive. The challenges for today's professor may be to identify worthy content on the Internet and direct students toward it, to create worthy content when appropriate, and finally guide students to become creators of quality material. Perhaps the future of education lies with those able to separate the wheat from the chaff, direct learners toward useful components, and guide creations. Rescuing strugglers from drowning in the ocean of trash may prove to be equally important.

ENDNOTES

[1] http://www.cnn.com/2010/OPINION/09/18/anderson.youtube.innovation/ speech titled the Secret Power of YouTube, accessed 9/19/10
[2] http://forex.com/Learn accessed 9/25/2010
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