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Semantic Categorization Of Online Video

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Semantic Categorization of Online Video

by Supraja Swarna

December 1

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ABSTRACT

Semantic Categorization of Online Video

by Supraja Swarna

As internet users are increasing day by day, the users of video-sharing site are also increasing. Video-sharing is becoming more and more popular in e-learing, but the current famous websites like youtube are not structured when it come to serving the purpose of providing educational videos for preschool and high school students. There is a need to fill building more educationally focused video site, where the content is more structured, easy to use, support both direct search and browsing, and follow a particular curriculum for preschool and high school students. This report discuss the issues like categorization and search interface of these sites and propose alternatives to existing ones out there. In this project, I have built an educational website for preschool, high school, and college level students concentrating on improved categorization and search interface of the site. This report provides detail description of my system and the results of comparison between my site and youtube.

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1. Introduction

Video-sharing is becoming increasingly popular on the World Wide Web. It allows users to easily understand many things and get a good grasp on the subject in little time. There are so many video-sharing websites that are informative and educational such as sutree.com. The main problem with those websites is that they are poorly categorized and use the standard search interface, in which users enter keyword search terms, and results are shown in table format ordered by some measure of relevance. These sites can be effective for searching for very specific items, but do not support browsing and exploratory tasks well [7, 8, 9].

This report discusses how to build a website with meaningful categorization with semantics and how can we modify the standard search interface so that the search is more useful and informative to the users. This report also will give an overview of the website that I have built for this project to provide the concrete examples to support the ideas I have explained in this report.

The first concept of this project is "categorization" of the site. Categorizing the content on the site is an important aspect of the site design. If the site is not organized carefully, then user can feel lost at some point of browsing. One can build meaningful categorization by studying the domain carefully and picking the relevant and right terms for a specific site. Section 2 of this report gives in depth description of categorization and the use of semantics of categories in my site. The second concept of this project is "search interface". The standard search interface is more useful when the users search for a specific item, but not when the users want to learn the content by browsing and

exploring. The faceted search interface integrates searching and browsing continuously. It supports exploration and learning and also avoids possible dead ends while searching. Section 3 gives in depth overview of faceted search and its advantages and disadvantages over standard search.

In this project I have built an online community for sharing educational videos from grade k-12 and College in specific subjects. This website implements the both the concepts: semantic categorization and faceted search. This project try to fill a need for more educationally focused, safe place for children, teachers, and home learners.

The rest of this report is organized as follows: Section 2 gives a detailed description of the categorization of the site. Section 3 provides a detailed description of faceted search. Section 4 provides comparison of my site with youtube. Section 5 provides the implementation details of the site. Section 6 concludes the report, and discusses future directions.

2. Categorization

Categorizing the content on the site is an important aspect of the site design. If the site is not organized carefully, then user can feel lost at some point of browsing. One can build meaningful categorization by studying the domain carefully and picking the relevant and right terms for a specific site. In this project, I will be referring categorization as "Taxonomy". For my project I studied different websites such as "youtube.com (most famous video sharing site), sutree.com, and teachertube.com (educational video site) to understand the taxonomies used by different sites in education. Finally I have decided to go with traditional based categorization as combining subject and class level.

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In my project, the taxonomy of the video site was built according to the "California Department of Education (http://www.cde.ca.gov/be/st/ss/)" standards. Currently the site has about 500 videos in total and planning to add more in future. The site has three main categories: GradeK-7, Grade8-12, and college and professional. Each category has sub categories. Each sub category allows the users to enter synonyms for each term. This feature eliminates the taxonomy duplication. Example: In taxonomy of Gradek-7, a term "Mathematics" may have a synonym "Math". User should be able to type "Math" in a search filed and submit and have it matched up with "Mathematics" in the database and get the "Mathematics" results.

The Gradek-7 category will have the videos for children who are studying from preschool to grade7. This category has 4 sub categories: English, Mathematics, Science, and History-Social sciences. The Grade8-12 will have the videos for children who are studying from grade 8 to grade 12. This category has five sub-categories: Biology, Mathematics, Physics, Chemistry, and SAT. The Biology sub-category has one more level of sub-categories. It has Cell Biology, Ecology, Evolution, Genetics, Nuclear Process, and Physiology. The mathematics also has one more level of sub-categories. It has 7 sub-categories: Algebra, Calculus, Geometry, Linear Algebra, Mathematical Analysis, Probability and Statistics, and Trigonometry. The Chemistry also has one more level of sub-categories. It has 10 sub-categories: Acids and Bases, Atomic and Molecular Structure, Chemical bonds, Chemical Equilibrium, Chemical Thermodynamics, Conservation of matter and Stoichiometry, Gases and Their Properties, Nuclear Processes, Organic Chemistry and Biochemistry, Reaction Rates, and Solutions. The Sat category will have all videos related to SAT test and doesn't have has any sub-categories. The College and Professional category will have videos for college students and professionals in industry. It has 8 sub-categories: Business, Engineering, humanities and Arts, Law, Mathematics, Medicine, Science, and Social Science.

3. Faceted Search

Faceted search is also called as faceted navigation or browsing. It is a technique for accessing a collection of information represented using a <u>faceted classification</u>, allowing users to explore by filtering available information [Wikipedia:

http://en.wikipedia.org/wiki/Faceted_browser].

Instead of waiting for the user to create structured queries from scratch, a faceted search interface allows the user to progressively narrow down the choices by choosing from a list of suggested query refinements [2].

The important element of the faceted search is that there is no enforcement of hierarchy of options. Users can apply and remove facet constraints in any order. There will be no surprises while searching. The user is only given facets and constraints that make sense in the context of items they are searching. In advance, the result count for a particular constraint will be shown to the user, but the users never reach an empty result set. Facets are categories used to characterize information in a given site. In an information collection that supports faceted search, multiple labels are assigned to each item, as opposed to a strictly hierarchical system in which items are placed into single categories or folders **[1].** In the faceted navigation interface, when a term is selected by a user, all items that have been assigned to that term are retrieved, so selecting a term within a facet hierarchy is equivalent to querying on a disjunction over all the terms under the selected

Page 9

one. When terms from different parts of the hierarchy are selected, the system in effect builds a conjunct of disjuncts over the selected terms and their subcategories.

3.1 My Site Search

My site supports both direct search and browsing. In my project, I have used faceted search concepts and build facets based on categories instead of meta data of the site as most of the faceted search sites do. My search adopts the concepts from faceted search and also the category search. This search gives results that are themselves entry points into faceted navigation. If a user performs a category search and then selects a result of that search, then the resulting navigation state is identical to that achieved if the user selects the same facet value through navigation.

My site provides two ways for searching the content: one is using keyword search, where the user enters search terms and the other is using guided search, which is more like a navigation and discovery tool. The user can start at any search and use both searches at the same time to narrow down his results. Basically, Keyword search dims at the users who knew exactly what they wanted and the guided search aims at users who are not sure of what they wanted.

3.1.1 Keyword Search

Keyword search provides standard search functionality but also allows the user to search within results. It also interacts with guided search to give the user hint to what to search for next. It also provides different options with search the title, search any where "with all of the words, with the exact phrase, with at least one of the words, without any words" as we can see in figure 1.

Keyword search	
	O Anywhere ▼
With all of the words	
With all of the words	
With the exact phrase	
With at least one of the words	
Without the words	

Figure 1: Screenshot of my site keyword search with different filtering options

The keyword search also has "auto complete" functionality as shown in figure 2. Auto

complete makes the user not only type less but also it spares him the frustrating

experience of over-specifying a query and then being presented with no relevant results.

Search

-Keyword search			
a		0	Anywhere 🔹
Acids and Bases	and an Ohm of the		
Atomic and Mole	ecular Structure		
author Chris And	lerson		
archaeology			
acropolis			
asia			
akta way arizona			
Algebra author Chris And archaeology athens acropolis asia akta way arizona	lerson		

Figure 2: Screenshot of my site keyword search with auto complete functionality

For example, the user is searching for information about the Taylor's theorem in calculus. However, either he has forgotten the exact name or he is not sure about spelling variants (Tylor, Toylor..). He starts typing the letter T and the auto complete brings up all the matching terms that starts with T. User can see list of matching terms and can easily recognize the word he wants to search for and starts his search.

3.1.2 Guided search:

Guided search continuously integrates with keyword search. It gives the user feeling of "browsing the shelves". It helps users to identify what kinds of things are available on the site. It reduces mental work. The user only has to recognize the things, doesn't have to recall them.

Example:

Suppose the user is searching for basic mathematical videos. The user can browse and search at the same time using Guided search. User starts his search by clicking the term "Mathematics" under Gradek-7 in Guided search block as in figure 3. The system will display the results for "Gradek-7 Mathematics". At the same time, the system will display the matching tags under the term Mathematics, so that user can easily recognize some terms that interests him and start refining his search results.

Home » Search	Garrent Search
Search: Mathematics Results	[×] GradeK-7: Mathematics Results 1 - 10 of 48
Secret Trick : Math Division	Keyword Search
Submitted by admin on Thu, 09/25/2008 - 20:10. Mathematics division r Find hard to divide numbers. Not anymore !! In 3 mins master long Easy multiplication division trick divide fraction	numbers O Anywhere
video: 32142 ÷ 9 35	Search within results Search More options Guided Search Click a term to refine your
Average rating (0 votes) Rate this: Submit	GradeK-7: all » Mathematics Tags number sense (8) data analysis (2) number sence (2) probability (2)

Figure 3: Screenshot of guided search with search term "Gradek-7 Mathematics"

There is also a "current search" block for the user to see what he has searched so far and also to allow the user to remove particular search term form the whole search at anytime as shown in figure 4.

Example: If the user has searched the videos for "high school-> mathematics-> Algebra->Alternate interior angles" so far. Then the current search block will show the search path so far the user has chosen.



Figure 4: Screenshot of current search with search term

"Gradek-7→Mathematics→>Algebra→ Alternate Interior Angles".

Suppose, now the user want to look at all videos with "Alternate interior angles" tag then he can simply remove the "grade8-12 Mathematics" from the search by clicking "x" mark left to each term in current search block. The system will displays the results for all videos from all categories with matching tag "alternate interior angles".

4. Comparison of my site with Youtube.com

4.1 Categorization Comparison

As we can see at http://www.youtube.com/browse?s=mp&c=27&l=, the site doesn't support multi level categorization. It has only one high level categorization called "education" and there are no sub categories that to help the users to navigate the site further in that area. However, it allows the users to create folksonomies by entering tags. However, in this way, there is a high chance of creating duplicate terms that makes the site overwhelming.

As we can see in figure 5, the site supports both pre defined taxonomy terms with subcategories and also taxonomies created by user entered free tagging. This approach gives the users flexibility to choose whether to use already defined taxonomy terms or to create their own terms to include his node item. As shown in figure 6, the site also allows the user to enter synonyms for a particular taxonomy term to eliminate duplication of taxonomies.



Figure 5: Screenshot of my site with Predefined taxonomies

 GradeK-7 Grade8-12 College and Professional My account Recent posts Categories Taxonomy Manager 	Parents: <root> English Language History-Social Science Science Parent terms.</root>	
 Actions Voting API Category Browser Log out 	Related terms: <none> English Language History-Social Science Science Term name: * Mathematics</none>	
	The name of this term. Description:	
	A description of the term.	
	Synonyms:	
		4

Figure 6: Screenshot of category allowing users to synonyms for taxonomy term

4.2 Search Interface Comparison

Example: Suppose a 8th grade student is studying for algebra exam. The following two

tables show the detailed steps of how my system and youtube system reacts to his actions.

You Tube:

Step	Tester Action	System Response
1	User enters "Algebra" as a search	System displays thousands of videos that
	term	match the term "Algebra". (Figure 1)
2	Now user thought it is going to	System displays the videos that match the
	take him so much time to go	term "High school Algebra complex
	through each video and learn each	numbers". Still it has hundreds of videos.
	concept. So he decided to study	
	the material on "complex	
	1 22 / 1 2 1 1 1 1 1	
	numbers" at high school level.	

	Now he has to restart his search by	
	retyping the whole phrase as High	
	school Algebra complex numbers.	
3	Since the results are in hundreds,	System displays the results that match the all
	the user decides to look at the	the terms in the phase "high school algebra
	videos only on quadratic formulas	complex numbers quadratic formulas". Now
	in complex numbers. Now user	the results are about 30 videos.
	wants to refine the above results.	
	Again User has to restart the	
	search by entering the whole	
	phrase High school Algebra	
	Complex numbers quadratic	
	formulas.	

 Table 1: Youtube Search test case



Figure7: Youtube Search for term Algebra

You Tube	Worldwide	English					🛱 supi	raja2§
Broadcast Yourself™		Hor	me	Videos		Char	nnels	Co
		high	n school Alge	bra		Videos	 Search 	n 🤮
"algebra" video resul	ts 1 - 20 of abo	ut 7,970						
Videos Cha	nnels P	laylists	Sort by: Relevance v	Uploaded: Anytime v	Typ All v	e:		
Also try: linear algebra	<u>alqebra 1</u>	billy connolly	algebra pe	sona algebra	gilbert	strang	<u>mit algebra</u>	<u>mit i</u>
VideeMathTuter.oce	Algebra: Sol [NOTE: This vid please visit my	ving Linear E leo is only the website to pur	Equations first 18 minute rchase comple	Part 1: The E es of the full les ete version (m	Basics son, lore)	Added:1 From: vic Views:7 **** 18:21	year ago deomathtutor 72,360	
* 2 -517 - 5 -7 - 2 -7 - 2	Introduction t (NOTE: This vid please visit my	O Algebra leo is only the website to pur	first 11 minute rchase comple	es of the full les ete version (m	son, lore)	Added:8 From: vic Views:1 *** 11:22	3 months ago deomathtutor 19,322	
(5-2x=3x+1).	Algebra - Lir	near Equatio	ns in One V	ariable - Ch. :	2.1	Added:1	year ago	

Figure 8: Youtube Search for High School Algebra

My System:

Step	Tester Action	System Response
1	User enters "Algebra" as a search	System displays all the videos that match the
	term in "Key word Search" block.	term "Algebra".
		At the same time the "Guided Search" block
		just below the "Keyword Search" displays
		only the categories that match the term
		"Algebra" with the count. (Figure 3)
2	Now user thought it is going to	System displays the videos that match the
	take him so much time to go	term "High school Algebra".

	through each video and learn each	At the same time "Guided Search" block will
	concept. So he decided to study	display the tags with node count that are only
	the material on "complex	related to the term "High school Algebra" to
	numbers" at high school level.	give the user chance to refine further. (Figure
	User can simply select the	4)
	"Algebra" sub category under	
	"Grade8-12 \rightarrow Mathematics" in	
	guided search block.	
3	Since the results are in hundreds,	System displays the results that match the all
	the user decides to look at the	the terms in the phase "High school Algebra
	videos only on quadratic formulas	Complex Numbers quadratic functions".
	in complex numbers. Now user	(Figure 5)
	wants to refine the above results.	
	Now user can select "search within	
	results" checkbox in keyword	
	search block and type in	
	"quadratic formulas" in search	
	box.	

 Table 2: Mysite Search testcase



Figure 9: Mysystem Search for term Algebra

[×] algebra [×] Grade8-12 : <mark>Mathematics</mark> » Algebra
Keyword Search
0
Anywhere 🔽
\square Search within results
Search More options
Guided Search
Click a term to refine your current search.
Grade8-12: all » Mathematics » Algebra
Tags Alternate Interior Angles (1) C rule (1)

Figure 10: Mysystem Search for term High school Algebra



Figure 11: Mysystem Search for term High school algebra complex numbers

Conclusion:

As we can see above, using "You tube search" if the user wants to filter his results he has to restart his search, there is no way of filtering his results in the middle of the search. In this way, user gets frustrated if he has to restart search every time.

Using "My System" User can filter his results multiple times in the middle of the search without restarting new search. This way user feels more interactive with the system. In each step system is giving him some hint what to search for next. By looking at count with each term, user can decide whether he wants to refine his search or not before hand.

5. Implementation

To build the site, the Drupal Content Management System Software has been used. This section covers module configuration and installation, and code customization. The following modules have been used from Drupal to build the site.

5.1 Drupal Installation:

- 1. Download Drupal latest version from http://drupal.org/download
- 2. Extract the files into a directory called drupalx-x.
- 3. Move the contents of that directory into a directory within your web server's document root(...webroot/htdocs/drupal57)
- 4. Go to <u>http://localhost/phpMyAdmin</u>
- 5. Create new database called drupal57
- 6. Go to <u>http://localhost/drupal57</u> and enter the database details for the database which you have created in step 5.

Database configuration - M	zilla Firefox		
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Database configuration - Mi	szilla Firefox		
<u>File E</u> dit ⊻iew Hi <u>s</u> tory <u>B</u> ookn	varks Iools Help		0
 - 	👌 http://localhost/drupal57/install.php?profile=default	▼ ► G• Google	Q
& Blackboard Learning System	🔢 🦙 Yahoo! Mail - supraja_swama@yahoo 🔄 👌 Database configuration 🛛 🔀 drupal project drupal.org		•
	Database configuration		
	Basic options To set up your Drupal database, enter the following information.		
	Database type: *		
	mysql mysql		
	○ pgsql		
	The type of database your Drupal data will be stored in.		
	Database name: * drupal57 The name of the database your Drupal data will be stored in. It must exist on your server before Drupal can be installed.		Ξ
	Database username: * root		
	Database password:		
-	Advanced options		
	Save configuration		~

Figure 12: Screenshot of database configuration for drupal installation

7. Once you enter all the details, Installation complete page displays.



Figure 13 : Screenshot of drupal installation complete page

- 8. Click on "your new site" link on Drupal installation complete page.
- 9. Drupal doesn't automatically create admin account, so you have to create admin account by yourself.
- 10. Click on "create the first account" link as shown in figure



Figure 14: Screenshot for creating new account

11. Enter username and email address and click create new account button as in figure .



Figure 15: Screenshot for creating new account form.

12. After creating an account, the system will give a password.

13. You can change the password by clicking on Edit button.

	admin Drupal - Mozilla Firefo admin Drupal - Mozil <u>la Firefo</u>	x x	
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Image: Second to the second	😞 Drupal		Edit primary links
Password: Confirm password: To change the current user password, enter the new password in both fields. Status: Status: Status: Active	admin Create content My account Administer Log out	Home > User account admin View Edit Account information Username: * admin Toru preferred username; punctuation is not allowed except for periods, hyphens, and unc E-mail address: * Supraja_swarna@yahoo.com A valid #-mail address: All e-mails from the system will be sent to this address. The e-ma new password or vish to receive certain news or notifications by e-mail.	derscores. Il address is not made public and will only be used if you vish to receive a
		Password: Confirm password: To change the current user password, enter the new password in both fields. Status: O Blocked O Active	

Figure 16: Screenshot for editing the user account form

5.2 Embedded Media Field Module:

To upload videos, you need Content Construction kit module (CCK) and Embedded

Media Field module.

This module supports You Tube, Google, Revver, My Space, MetaCafe, Jump Cut,

Bright Cove, Seven Load, iFilm, Blip.TV, Daily Motion, and Live Video video formats.

5.2.1 Embedded Media Field Installation:

- 1. Download module CCK (http://drupal.org/project/cck)
- 2. Download module Embedded Media Filed(<u>http://drupal.org/project/emfield</u>)
- 3. Unzip both of them and copy into modules sub-folder.
- 4. Go to Administrator\Site Building\Modules and enable both (CCK and Emfield)

😻 Modules Drupal - Mozilla Firefox									
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👌 Modules Drupal 🛛 🔯 ಿ Energ	y and Power	Drupal 💽	🔠 YouTube	e - Introduction to Al	🔄 🛛 👌 Modules drupal.	org 💽	Content Construction Kit (CC.	. 💿 🗍 🚖 Embedded Media Field drup	🖬 🔹
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 User management Logs Holp 		Content	5.x-1.6-1	Allows administrate Required by: Conte (disabled), Number	ors to define new conter nt Copy (disabled), Eml (disabled), Option Wid	nt types. oedded Media Fie gets (disabled), "	eld (disabled), Fieldgroup (disab Text (disabled), User Reference	led), Node Reference (disabled)	
 Log out 	V	Content Copy	5.x-1.6-1	Enables ability to ir Depends on: Conte	nport/export field defin nt (disabled)	itions.			
	Embedded ✔ Audio Field				o for displaying third pa dded Media Field (disab	rty music, podca led)	sts, and other audio, such as p	odOmatic and Odeo.	
	V	Embedded Image Field	5.x-1.0	Defines a field type Depends on: Embe	e for displaying images dded Media Field (disab	from third party led)	providers, such as Flickr.		
	V	Embedded Media Field	5.x-1.0	Provides an engine Neighborhood, and Depends on: Conte Required by: Embe (disabled), Embedo	for modules to integra Audio Neighborhood, nt (disabled) dded Audio Field (disab led Image Field (disable	ed), Embedded I ed), Embedded V	arty content providers, such as Media Import (disabled), Embed ideo Field (disabled)	Video Neighborhood, Image Ided Media Thumbnail	
	V	Embedded Media Import	5.x-1.0	Imports media fror Depends on: Embe	n certain third provider dded Media Field (disab	s, such as FlickR led)			
	V	Embedded Media Thumbnail	5.x-1.0	Allows custom thur Depends on: Embe	nbnails for Embedded N dded Media Field (<mark>disab</mark>	ledia Fields. led)			
		Embedded Video	5 v=1 0	Defines a field type	o for displaying third pa	rty videos, such	as YouTube and Google Video.		~
🔀 Find: ffm 🕹 Next 🎓 E	revious 🖹 H	fighlight <u>a</u> l 📃 M	lat <u>c</u> h case						
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Figure 17 : Screenshot of enabling module page

5. Go to administer/content types/video/edit and click on Add field" button on top.

😻 Video Drupal - Mozilla Firefox							
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🚖 Video Drupal 🛛 🗳	🚖 Youtube Drupal	VouTube - Introduction to	Al 💿 👌 🚖 Modules drupal.org		Content Construction Kit (CC 💽	🚖 Embedded Media Field drup 💿	1-
e duain		Managan Galida — Diaulau					^
admin	Video	Manage neius – Display	neius Auu neiu Auu y	oup			
Create content	Identification						
 My account 							
Administer	Name: *						
Content management	Video						
 Categories 	The human-readable with a capital letter an	name of this content type. This t id consists only of letters, numbe	ext will be displayed as part of th rs, and spaces . This name must	e list on the creat be unique to this	e content page. It is recommende content type.	d that this name begins	
 Comments 	-						
 Content 	rype:						
 Content types 	The machine-readabl	e name of this content type. This	field cannot be modified for syst	em-defined conte	ent types.		
 Customfields 	Description						
 Embedded Media Field configuration 	Allow a variety of v	ideo formats to be posted as	nodes in your site				
 Image galleries 							
 Image import 							
 Multidownload 							
Post settings							
 RSS publishing 	A brief description of	his content type. This text will be	e displayed as part of the list on t	he create content p	page.		
Site building							
Site configuration		n					
User management	Title field labels						
Logs	Title						
 Help 							
° Log out	Body field label: Body						~
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Figure 18: Screenshot of adding a video field using "Embedded media filed"

module.

6. Enter Video as Title and choose Embedded Video 3rd party at the bottom of the



Figure 19: Screenshot of settings of video field to embed third party videos

- 7. Submit "create field".
- 8. Now choose from which providers you want to upload videos to your site.

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 - 	ocalhost/drupal57/?q=admin/content/types/vide	eo/fields/field_video			🔻 🕨 💽 • Go	ogle 🔍
👌 Drupal 🛛 🔁 🛃	itube Drupal 💿 🔠 YouTube	e - Introduction to Al 🔝	≳ Modules drupal.o	g 💽 🁌 Co	ntent Construction Kit (CC 🔝	🚖 Embedded Media Field drup 💽 💌
	Providers: Blip.tv Blip.tv Boilp.tv Dailymotion Google JumpCut Live Video MetaCafe MySpace Revver Sevenload YouTube Custom URL Embedded Media Import If checked, then as otherwise allove Embedded Custom Thumbnails for	d d, sets from alloved provi alls This field	ders may be importe	d into this field, creatin	g nev nodes as needed.	
🕞 Find: ffm	If checked, then editors may specify Previous 🕞 Highlight all 🔲 Match case	a custom thumbnail to h	e used, overriding an	v. automatic thumbnails	otherwise created.	×
Done	Contrata Contragingin Contratgin Case					
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Figure 20: Screenshot of available third party video providers

9. Go through rest of the configuration page and enable the other functions such as "auto play" etc you wanted for your site.

5.2.2 How to make the video size bigger:

1. Go to Administrator/content types and click on video.

Home > Ad	lminister >	Content management		
Conten	t types	List Add content type Fields Export Import		
Below is a content ty	a list of all ypes.	the content types on your site. All posts that exist on your site are instances of one	of thes	e
Name	Туре	Description	Oper	ations
Image	image	An image (with thumbnail). This is ideal for publishing photographs or screenshots.	edit	
Page	page	If you want to add a static page, like a contact page or an about page, use a page.	edit	delete
Story	story	Stories are articles in their simplest form: they have a title, a teaser and a body, but can be extended by other modules. The teaser is part of the body too. Stories may be used as a personal blog or for news articles.	edit	delete
<u>video</u>	video		edit	delete

Figure 21: Screenshot of Content types once the user create video field

Click	on video and then click on "Manage fields".	
lome > Adı	minister > Content management > Content types	
/ideo	Edit Manage fields Display fields Add field Add group	
Identific	cation	
Namer	*	
video	*	
The hum recomme unique to Type: *	an-readable name of this content type. This text will be displayed as part of the list on the <i>create content</i> page. Ended that this name begins with a capital letter and consists only of letters, numbers, and spaces . This name r In this content type.	It is must be
video		
The mad content t Undersco content t	phine-readable name of this content type. This text will be used for constructing the URL of the <i>create content</i> pag ype. This name may consist of only of lowercase letters, numbers, and underscores. Dashes are not allowed. wes will be converted into dashes when constructing the URL of the <i>create content</i> page. This name must be uniq ype.	ge for this ue to this
Descrip	tion:	

Figure 22: Screenshot of video field form

3. Now clink on "Configure" for video field under manage field.

ideo	Edit Manage	fields Displa	y fields Add	field Add group					
There are no groups configured for this content type.									
Label	Name	Туре	Weight	Group	Operations				
image	image	image	-10 💌						
title	title	title	-5 💌						
taxonomy	taxonomy	taxonomy	-3 💌						
video	field_video	Embedded Video	0 💌	No group 💌	<u>confiqure</u>	remove			
body	body_filter	body_filter	0						

Figure 23: Screenshot of manage field form

- 4. In the "video display" section give the dimensions you wanted to play the video. The default video size is 425x350.
- 5. As we can see in the following screen shot, we can change the default video display settings to the new dimensions 800x800.

VouTube
▽ Video Display Settings
These settings control how this video is displayed in its full size, which defaults to 425x350.
Video display width: *
800
The width of the video. It defaults to 425.
Video display height: *
800
The height of the video. It defaults to 350.
If supported by the provider, checking this box will cause the video to automatically begin after the video loads when in its full size.
▽ Video Preview Settings
These settings control how this video is displayed in its preview size, which defaults to 425x350.
Video preview width: *
800
The width of the preview video. It defaults to 425.
video preview neight: *

Figure 24: Screenshot of video field settings form

5.3 Taxonomy Module

The Taxonomy module helps classify content and allows vocabularies to be setup as

either user defined tags or administrator defined terms. It is a default module in drupal.

5.3.1 Installation and Usage:

- 1. Go to Administer/site building/modules and enable taxonomy module.
- 2. Go to Administer/Content management/Categories and click on "Add Vocabulary".



Figure 25: Screenshot of Categories page

3. Now go to Add vocabulary page and enter vocabulary name, description, select type as video, select hierarchy(single for single layered node and multiple for multiple layered tree structure)

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	əld drup 💽 🔻
Comparis Vacabulary name: * Mathematics Content types Customfields Embedded Media Field configuration Image import Multidownload Post settings RSS publishing Help text: Logs User management Logs Help Story Log out Video Alst of node types you want to associate with this vocabulary. Hisrae-Heinzeldy Image inport Multiple Alst of node types you want to associate with this vocabulary.	

Screenshot of "Add vocabulary page".

- 4. Repeat Step 3 to add more vocabulary.
- 5. To add second layered terms click on "add terms" for which term you want to add more layers.

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	Home > Adminis	ter > Content mana	gement					
admin	Categories	; List 4	Add vocabulary					
 Create content My account Administer Content management Categories 	The taxonomy (controlled voi (controlled voi creation. To vi "edit vocabula	module allows yo cabularies) and off cabularies where r ew and manage th ry".	u to classify cont ers the possibilit relationships are ne terms of each	ent into categories and sub y of creating thesauri (contr indicated hierarchically), an vocabulary, click on the ass	categories; it allows i olled vocabularies thi d free vocabularies w ociated <i>list terms</i> link	multiple lists of catego at indicate the relation here terms, or tags, a . To delete a vocabula	ories for classification nship of terms), taxonom re defined during conten ary and all its terms, choo	ies It Ise
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 Content types 	Created nev	v vocabulary Phys.	ics.					
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 Embedded Media 	Name		Туре	Operations				
Field configuration	Mathematics		Video	edit vocabulary	li	st terms	add terms	
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Site building								
Site configuration								
User management								
Logs								~
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http://localhost/drupal57/?q=admin/content/t	axonomy/1/add/term							ی:
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Figure 26: Screenshot of categories listing page

6. Enter term name, description, and the weight (in which order you want the term to be displayed) for that term.

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Figure 27: Screenshot of edit form for taxonomy term

5.4 Taxonomy Manager Module

This module provides a powerful interface for managing a taxonomy vocabulary. A

vocabulary gets displayed in a dynamic tree view, where parent terms can be expanded to

list their nested child terms or can be collapsed.

5.4.1 Installation:

- 1. Download module Taxonomy Manager (<u>http://drupal.org/project/taxonomy-manager</u>)
- 2. Unzip it and copy into modules sub-folder.
- 3. Go to Administrator\Site Building\Modules and enable Taxonomy manager module.

5.4.2 Usage:

- 1. Go to Administer/Content management/Taxonomy Manager
- 2. Choose the vocabulary you want to display.



Figure 28: Screenshot of taxonomy manager page

- 3. Now you can add more terms, delete terms, move terms, or merge terms.
- 4. We can also add sub categories in each term by choosing that term and clicking on add term.



Figure 29: Screenshot for adding multiple taxonomy terms to a single category

5.5 Jrating Module:

This module allows the user to rate specific node or comment.

5.5.1 Installation:

- 1. Download module votingAPI (http://drupal.org/project/votingapi)
- 2. Download module Rating (<u>http://drupal.org/project/jrating</u>)
- 3. Download module actions (http://drupal.org/project/actions)
- 4. UnZip them and copy into module sub-folder
- 5. Go to Administrator\Site Building\Modules and enable three of them (jRating requires

voitingAPI to be there and enabled and actions required by voting API).

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		jRating 5.x-1.x-dev	Rating widget for no Depends on: Voting	des and comments. API (disabled)					
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Figure 30: Screenshot of module page to enable Jrating

6. Go to Administrator\Site Configuration\jRating and configure it.



Figure 31: Screenshot of Jrating settings page

- 7. Go to Administrator\Site Configuration\Voting API to configure tally.
 - a. Select Tally results whenever vote is cast.

5.5.2 Usage:

- 1. Go to Administer\Content Management\Content Types
- 2. Select type you want, let's say "Video"
- 3. Enable it as such:

~	Display	a rating	widget	with	nodes	of this	conter	t type		
~	Display	a rating	widget	with	comme	nts on	nodes	of this	content	type
Att	achmen	ts:								
\bigcirc	Disable	d								
\odot	Enabled	1								

Save content type Reset to defaults

Figure 32: Screenshot of jrating setting s to enable ratings for video

5.6 Tagadelic and Community Tags Module:

Tagadelic module generates a page with weighted tags. The cool thing is that by merely

altering font sizes, these lists suddenly gain a dimension.

Community module allows members of the community to tag other users' content, uses

the module to show a "tag cloud" for a node based on popularity of tags.

5.6.1 Installation:

- 1. Download module Tagadelic (<u>http://drupal.org/project/tagadelic</u>)
- 2. Download module Community Tags (http://drupal.org/project/community-tags)
- 3. Unzip them and copy to module sub-folder.
- 4. Go to Administrator\Site Building\Modules and enable tagadelic and Community Tags module.
- 5. Go to administer/site configuration/community tags and follow instructions as specified.

Home > Administer > Site configuration
Community tags To set up community tagging, you must first create a normal free tagged vocabulary. Then activate community tagging on such a vocabulary below, and set the workflow options for node types to control how users can tag nodes.
Save configuration Reset to defaults

Figure 33: Screenshot of community tags settings page

- 6. Click on "create a normal free tagged vocabulary".
- 7. It takes to administer/Content management/categories.
- 8. Add a new vocabulary called Tags and choose "free tagging" as below.

Types: *
🗖 Image
Page
Story
Video
A list of node types you want to associate with this vocabulary.
Hierarchy:
Disabled
O Sinale
O Multiple
Allows a tree-like hierarchy between terms of this vocabulary.
Allows related terms in this vocabulary.
Free traging
Content is categorized by typing terms instead of choosing from a list.
Multiple select Allows nodes to have more than one term from this vocabulary (always true for free tagging).
Required If enabled, every node must have at least one term in this vocabulary.
·····

Figure 34: Screenshot of Tags vocabulary with enabling free tagging

9. Go to Administer/site building/blocks and enable "tags for the current post" block.(This block is because of Tagadelic Module)



Figure 35: Screenshot of showing Tags for current post

5.6.2 How to create Tag Cloud:

1. Go to Administer/site building/blocks and enable "tags in Tags" block, this will create tag cloud.



Figure 36: Screenshot of Tagcloud

2. Enable "Community Tagging form" this will display tags for current post and allow user to tag that post.



Figure 37: Screenshot of community tagging block

5.7 Taxonomy Menu Module:

Transform any of taxonomy vocabularies into menus easily.

5.7.1 Installation:

- 1. Download module Taxonomy (<u>http://drupal.org/project/taxonomy_menu</u>)
- 2. Unzip it and copy to module subfolder.
- 3. Go to Administer/site building/modules and enable taxonomy menu module.
- 4. Go to Administer/site configuration/taxonomy menu and select the categories which you want them to show in Navigation Menu.

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admin	Taxonomy Menu	Most played videos
> Create content	Mathematics	 Introduction to Algebra
Tags		♀ ghgh
My account	Show this category in menu:	samp
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Content management	Normal	
Site building		
▽ Site configuration	Dhyring	
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theme	Show this category in menu:	
 Clean URLs 	O No	
 Community tags 	🗵 Normal	
 Date and time 		
 Error reporting 	-	
 File system 	lags	
 File uploads 	Show this rategory in menu	
 Image 	No	
 Image attach 	O Normal	
 Image gallery 	o homa	
 Image import 		
 Image toolkit 	Module page:	
 Input formats 	Category How should be the first item on the menu? Example: categories/1/2/3, technology/1/2/3	
 jRating 		
 Performance 	Display number of nodes per terms	

Figure 38: Screenshot of taxonomy menu settings page

5.7.2 Enable Number Of Items in each Category:

Go to Administer/Site Configuration/taxonomy menu and enable display number of items

check box.

Module page:
category
How should be the first item on the menu? Example: categories/1/2/3, technology/1/2/3
Display number of nodes per terms If checked, number of node per term will be displayed in the menu.
Hide Empty Terms
If checked, only taxonomy terms with members will be shown in the menu.
Display descendants If checked, then when a term is selected all nodes belonging to subterms are also displayed.

Submit

Figure 39: Screenshot of Taxonomy menu setting page to enable number of items

per node

5.8 Links Package Module

The Links Package is a set of modules that facilitate use of web links (URLs) in various content types.

5.8.1 Installation:

- 1. Download module Links Package (http://drupal.org/project/links)
- 2. Unzip it and copy to module subfolder.
- 3. Go to Administer/site building/modules and enable Links and weblink modules under Links.

Enabled	Name	Version	Description
V	Links	5.x-1.8	Controls Links settings and API. Required for any other Links module. Required by: Links Administration (disabled), Links Related (disabled), Links Weblink (enabled)
	Links Administration	5.x-1.8	Allows links from all over the site to be managed in a centralized way. Depends on: Links (enabled)
	Links Related	5.x-1.8	Adds an extra URL field to nodes of admin-specified types. Depends on: Links (enabled)
✓	Links Weblink	5.x-1.8	Creates articles whose main purpose is to catalog a web link. Depends on: Links (enabled)

Figure 40: Screenshot of Module gage enabling links module

4. Go to Administer/site configuration/Links package and choose how the links node should display on the system.



Figure 41: Screenshot of links package module settings page

5. To open the links in new window select "external links only" in links targets section of site configuration of links package.

Visit link display mode:

- O display as title
- 🔘 display as url
- 🔘 only display the 'visit linked page' text

Users are able to visit links via the node links list. This setting toggles how the visit link is displayed, either containing the node title or the node target URL or just the words 'visit linked page'

Link targets

These settings allow you to apply the attribute target="_blank" to cause links to open in a new browser window or tab. Using this setting will cause your pages not to validate under the XHTML standard, but will work with most browsers. There is some debate over whether using the target attribute is good design practice; Links leaves this choice up to the system administrator.

Open links in new window:

- O Never
- O All links
- 🗵 External links only

Controls opening of new browser windows for links.

Figure 42: Screenshot of links package settings page to open links in new

window.

5.8.2 How to add the links:

- 1. Once we install links package and enable links and web links modules, "weblink" data type will be automatically generated under create content.
- 2. Go to create content and click on welink to add the new link.

Home
Create content Choose the appropriate item from the list:
Image An image (with thumbnail). This is ideal for publishing photographs or screenshots.
Page If you want to add a static page, like a contact page or an about page, use a page.
Story Stories are articles in their simplest form: they have a title, a teaser and a body, but can be extended by other modules. The teaser is part of the body too. Stories may be used as a personal blog or for news articles.
Video
Weblink
Add a new weblink.

Figure 43: Screenshot of create content page

- 3. Now "the submit link" form will display.
- 4. Enter the title of the link you wanted to add in "Title" text box and enter Url of the link in "Link URL" text box.



Figure 44: Screenshot of how to create weblink

- 5. Fill out the rest of form and click submits.
- 6. Now the link is successfully added into the system.

5.9 Forward Module

Forward module allows the users to email the specific link or page to other user. This module needs SMTP server to send an email, so it only works if the SMTP server is working properly.

5.9.1 Installation

- 1. Download module Forward (http://drupal.org/project/forward)
- 2. Unzip it and copy to module subfolder.
- 3. Go to Administer/site building/modules and enable forward module.
- 4. Go to Administer/site configuration/forward and select the options you wanted for forwarding the node.
- 5. Fill the form and save the configuration.



Figure 45: Screenshot of Forward module settings page

5.9.2 How to forward the Specific node

1. Once you install "Forward module", every node will have a link at the bottom or top as "Email this video" depending on your forward display settings.



Figure 46: Screenshot of showing forward link on specific node

2. Click on "Email this video", it will open "forward this page" form.

Home	
Forward this page	
Your Email: * supraja_swarna@yahoo.com	
Your Name: * admin	
Enter multiple addresses on separate lines or separate	them with commas.
rou are going to email the following: linear equations	

Figure 47: Screenshot of forward page submit form

- 3. Enter sender email address in "your Email" field, name of the sender in "Name" field, and recipient email address in "send to" field.
- 4. Fill the rest of the form and submit.
- 5. If the both entered email addresses are valid and the SMTP server is working properly, then the link will be emailed to the recipient successfully.

5.10 Faceted Search Module:

The Faceted Search module provides a search API and a search interface for allowing users to browse content in such a way that they can rapidly get acquainted with the scope and nature of the content, and never feel lost in the data **[drupal]**. It works as a discovery tool as well as search interface.

5.10.1 Installation:

- 1. Download module Faceted Search (http://drupal.org/project/faceted_search)
- 2. Unzip it and copy to module subfolder.
- 3. Go to Administer/site building/modules and enable the following modules: Faceted search, Faceted Search UI, Search (Drupal core search module), At least one of the following modules (which are provided with Faceted search): Author Facet,Content Type Facet, Date Authored Facet, Taxonomy Facets, Field Keyword Filter.
- 4. Go to the Administer/site configuration/ Faceted Search page, and click on the "Add Environment" tab.

🖉 Add a faceted search environn	nent Drupal - Windows Internet Explorer		
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			Search
DR DR	UPAL		
admin	Home » Administer » Site configuration		Keyword Search
GradeK-7 Grade8-12	Add a faceted search environment List Add environment Date formats Taxonomy index		O
 College and Professional 	▼Basic information		Anywhere -
 Favorite video My account 	Name: *		Search More options
 weblinks Create content 	A unique name to help site administrators identify the environment. Only alphanumeric and the underscore character are allowed here	а.	Guided Search
 Recent posts Administer 	Title: * Search		Click a term to initiate a search.
Content management	The title shown to users on the environment's pages.		GradeK-7
 Site building Site configuration 	Description:		Mathematics (48) Science (21) English Language (12)
 Administration theme 	The description of the environment for site administrators.		Grade8-12
Calais Settings			Physics (83) Mathematics (60)
Crean URLs Community tags	Story		SAT (47) Biology (40) Chomistry (1)
Date and time	🗆 video		College and Professional
reporting	weblink		Science (53) Engineering (33)
search Favorite	Only the checked types will appear in this search environment. If none is checked, all types will be allowed.		humanities and Arts (24) Medicine (17)
nodes • Field indexer			Business (3)
 File system File uploads 	The base path under which this faceted search environment will be accessed. All faceted search links will be derived from that base pa or end the base path with a /. Be careful to assign each faceted search environment its own distinct path.	th. Do not begin.	Tags
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Figure 48: Screenshot of faceted search module settings page

- 5. Now fill the "Add a faceted search environment" form to define the environment. Now click save to save the new environment. This will takes you back to the Administer/ Site configuration / Faceted Search page.
- 6. Go to Administer/ site building /blocks page, and enable the following blocks: environment name/ Current search, environment name / Keyword search, and environment name/ Guided search
- 7. Go to Adminster/ site building/ blocks, and click on configure page for keyword search or guided search block and set visibility of the block. Select "Show on every page except the listed pages", then enter the following paths in the Pages field: search environment base path, base path/*.
- 8. Go to Administer / user management / Access control page, and give the permission to the roles you want to give access to "Use faceted Search".

5.10.2 Faceted Search: Key word search auto complete functionality:

The auto complete functionality doesn't come with default package of faceted search module. The user has to insert following code in faceted_search_ui.php file.

Code:

```
/**This has to be add under function faceted_search_ui_menu($may_cache)**/
$items[] = array(
    'path' => $base_path .'/categories',
    'callback' => 'faceted_search_ui_stage_categories',
    'callback arguments' => array($env_id),
    'access' => user_access('use faceted search'),
    'type' => MENU_CALLBACK,
   );
```

/** autocomplete functionality for search box

```
* Retrieve a pipe delimited string of autocomplete suggestions for existing users
*/
function tax autocomplete($search) {
 matches = array();
 $result = db query range("SELECT name FROM {term data} WHERE
LOWER(name) LIKE LOWER('%s%%')", $search, 0, 10);
 while ($user = db fetch object($result)) {
  $matches[$user->name] = check plain($user->name);
 }
 print drupal to js($matches);
 exit();
}
/** This has to be add under function faceted search ui form($search)*/
// Add the keywords to search.
 $form['keywords'] = array(
  '#type' => 'textfield',
  '#title' => ",
  '#default value' = ".
  '#size' => $current stage == 'select' ? 35 : 20,
  '#autocomplete path' => 'faceted search/autocomplete',
```

'#maxlength' => 255,)

6. Future work

The search interface could be improved in a number of ways. For example, the keyword search and guided search block could be placed just below the banner of the site so that the user doesn't have to scroll down to see all the categories. One more additional nice-to-have feature would be a checkbox next to each term so that user can always see all the terms in entire time even user chooses a specific term. Currently, once the user clicks on a specific category in guided search block, the system hides all the other catogories and shows only the selected one. So far this project concentrated on proving certain new features (the interface for entering synonyms for categories, allow the user to search those synonyms, faceted search, keyword search with auto complete), and showing that my site can support them very efficiently.

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