THE FRONT-END TO GOOGLE FOR TEACHERS' ONLINE SEARCHING

By

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ABSTRACT

This paper reports on an ongoing work in designing and developing a personalised search tool for teachers' online searching using Google search engine (repository) for the implementation and testing of the first research prototype.

INTRODUCTION

Teachers have many needs when searching for online resources. They express these needs using pedagogical vocabularies or their own pedagogical expressions, which are unique to the teaching profession. In order to personalise teachers' online search, a research prototype of the personalised search tool has been designed and implemented.

1. Research Prototype

The personalised search tool consists of One Hundred and Seventy Six (176) pedagogical expressions. When translating teachers' pedagogical vocabulary to Google language (search engine), Fifty-Eight (58) 'Exact Matches' and One Hundred and Eighteen (118) 'Gray Searches', were identified, please see Table 1. details on 'Gray Search' given in section 3.1.

To implement the personalised search tool the 'Google' search engine (repository) was used to retrieve the personalised search results (since according to our questionnaire survey, approximately 96% of the teacher trainees and 94% of the teacher practitioners said they used Google search engine for their online searching).

The book called 'Google Hacks' (Tara Calishain & Real Dornfest, 2004), was used to translate the pedagogical vocabularies into Google language.

2. Interface

In the research prototype the personalised search tool consists of five sections; 'Cross Curricula', 'Differentiation', 'Project-based', 'VAK Plus' (visual, Auditory, Kinaesthetic and more) and teacher's 'Your Profile' which is called 'PoSTech' Personalised Search Tool for Teachers.

Cross Curricula (Teachers' Vocabulary)	Google Translation	Matching Exact | Gray
Topic in mind	"q= Topic in mind"+	Gray Search
Subject		
Art & Design	"Art & Design"	Gray Search
Business & Economics Education	"Business & Economics Education"	Gray Search
Citizenship	"Citizenship"	Gray Search
English	"English"	Gray Search
English with Drama	"English with Drama"	Gray Search
Geography	"Geography"	Gray Search
History	"History"	Gray Search
Information &	"Information &	Gray Search
Communications Technology	Communications" "Technology"	Gray Search
Mathematics	"Mathematics"	Gray Search
Modern Foreign Languages	"Modern Foreign Languages"	Gray Search
Music	"Music"	Gray Search
Religious Education	"Religious Education"	Gray Search
Science	"Science"	Gray Search
Social Science with Humanities	"Social Science with Humanities"	Gray Search
Generic	""	Gray Search
Together with ...		
Worksheet	"+WorkSheet"	Gray Search
Homework	"+HomeWork"	Gray Search
Both	"+WorkSheet+HomeWork"	Gray Search
None	""	Gray Search

Differentiation (Teachers' Vocabulary)	Google Translation	Matching Exact | Gray
Subject	q=	
Art & Design	"Art & Design"	Gray Search
Business & Economics Education	"Business & Economics Education"	Gray Search
Citizenship	"Citizenship"	Gray Search
English	"English"	Gray Search
English with Drama	"English with Drama"	Gray Search
Geography	"Geography"	Gray Search
History	"History"	Gray Search
Information &	"Information &	Gray Search
Communications Technology	Communications" "Technology"	Gray Search
Mathematics	"Mathematics"	Gray Search
Modern Foreign Languages	"Modern Foreign Languages"	Gray Search
Music	"Music"	Gray Search
Religious Education	"Religious Education"	Gray Search
Science	"Science"	Gray Search
Social Science with Humanities	"Social Science with Humanities"	Gray Search
Generic	""	Gray Search

Topic	+"Topic" +	Gray Search
Type		
Gifted	"Gifted"	Gray Search
Talented	"Talented"	Gray Search
Main scale	"Main scale"	Gray Search
SEN (Special Educational Need)	"Special Educational Need"	Gray Search
ESL (English as Second Language)	"English as Second Language"	Gray Search
Together with ...		
Worksheet	"+WorkSheet"	Gray Search
Homework	"+HomeWork"	Gray Search
Both	"+WorkSheet+HomeWork"	Gray Search
None	""	Gray Search

Project-Based (Teachers' Vocabulary)	Google Translation	Matching Exact | Gray
Subject	q=	
Art & Design	"Art & Design"	Gray Search
Business & Economics Education	"Business & Economics Education"	Gray Search
Citizenship	"Citizenship"	Gray Search
English	"English"	Gray Search
English with Drama	"English with Drama"	Gray Search
Geography	"Geography"	Gray Search
History	"History"	Gray Search
Information &	"Information &	Gray Search
Communications Technology	Communications" "Technology"	Gray Search
Mathematics	"Mathematics"	Gray Search
Modern Foreign Languages	"Modern Foreign Languages"	Gray Search
Music	"Music"	Gray Search
Religious Education	"Religious Education"	Gray Search
Science	"Science"	Gray Search
Social Science with Humanities	"Social Science with Humanities"	Gray Search
Generic	""	Gray Search
Together with ...		
Worksheet	"+WorkSheet"	Gray Search
Homework	"+HomeWork"	Gray Search
Both	"+WorkSheet+HomeWork"	Gray Search
None	""	Gray Search

VAK Plus (Teachers' Vocabulary)	Google Translation	Matching Exact | Gray
Subject	q=	
Art & Design	"Art & Design"	Gray Search
Business & Economics	"Business & Economics Education"	Gray Search
Education	"Citizenship"	Gray Search
Citizenship	"English"	Gray Search
English	"English with Drama"	Gray Search
English with Drama	"Geography"	Gray Search

Profile (Teachers' Vocabulary)	Google Translation	Matching Exact | Gray
Geography	"History"	Gray Search
History		Gray Search
Information &	"Information &	Gray Search
	Communications" "Technology"	
Communications Technology	"Mathematics"	Gray Search
Mathematics	"Modern Foreign Languages"	Gray Search
Modern Foreign Languages	"Music"	Gray Search
Music	"Religious Education"	Gray Search
Religious Education	"Science"	Gray Search
Science	"Social Science with Humanities"	Gray Search
Social Science with Humanities	""	Gray Search
Generic		
Topic in mind	+"Topic" +	Gray Search
Type		
Animations	"Animations"	Gray Search
Audios	"Audios"	Gray Search
Bibliographic	"Bibliographic"	Gray Search
Books	"Books"	Gray Search
	"Diagrams"	Gray Search
Diagrams	"q=define="Topic in mind"+	Exact Search
	&hl="+"&num=" (profile)	Gray Search
Dictionary	"Games"	Exact Search
	"ICT Activities"	Exact Search
	"Jokes"	Gray Search
Games	"Lesson Plans"	Exact Search
ICT Activities	"Maps"	Exact Search
Jokes	"News"	Gray Search
Lesson Plans	"Paintings"	Exact Search
Maps	"Pictures"	Gray Search
News	"Poems"	Gray Search
Paintings	"Songs"	Gray Search
Pictures	"Stories"	Gray Search
Poems	"Tables"	Gray Search
Songs	"Text"	Exact Search
Stories	"Videos"	
Tables		
Text		
Videos		
Picture	"&imgsz=" +	Exact Search
Large	"xxlarge"	Exact Search
Medium	"small|medium|large|xlarge"	Exact Search
Small	"icon"	Exact Search
All	""	Exact Search
Picture	"&imgc=" +	Exact Search
Black & White	"mono"	Exact Search
Greyscale	"gray"	Exact Search
Full Colour	"Color"	Exact Search
Any Colour	""	Exact Search
File Format	"&as_filetype=" +	Exact Search
Adobe Acrobat PDF (.pdf)	"pdf"	Exact Search
Adobe Postscript (.ps)	"ps"	Exact Search
Microsoft Word (.doc)	"doc"	Exact Search
Microsoft Excel (.xls)	"xls"	Exact Search
Microsoft PowerPoint (.ppt)	"ppt"	Exact Search
Rich Text Format (.rtf)	"rtf"	Exact Search
GIF Files	"gif"	Exact Search
JPG Files	"jpg"	Exact Search
PNG Files	"png"	Exact Search
Any Format	""	Exact Search
Profile (Teachers' Vocabulary)	**Google Translation**	**Matching Exact | Gray**
Name	"Name"	N/A
Language	"&hl=" +	Exact Search
English	"en"	Exact Search
French	"fr"	Exact Search
German	"ge"	Exact Search
National Curriculum	+	
England	" England"	Gray Search
Wales	" Wales"	Gray Search
Northern Ireland	" Northern Ireland"	Gray Search
Scottish	" Scottish"	Gray Search
Irish	" Irish"	Gray Search
Other	"Other"	Gray Search
Level	+	
Preschool (3-5 years old)	"Key Stage 1"	Gray Search
Year 1 & 2 (5-7 years old)	"Key Stage 1"	Gray Search
Year 3 (7-8 years old)	"Key Stage 2"	Gray Search
Year 4 (8-9 years old)	"Key Stage 2"	Gray Search
Year 5 (9-10 years old)	"Key Stage 2"	Gray Search
Year 6 (10-11 years old)	"Key Stage 2"	Gray Search
Year 7 (11-12 years old)	"Key Stage 3"	Gray Search
Year 8 (12-13 years old)	"Key Stage 3"	Gray Search
Year 9 (13-14 years old)	"Key Stage 3"	Gray Search
Other	""	Gray Search
Resources	+	
Free	"free + free + free"	Gray Search
Paid	""	Gray Search
Both	""	Gray Search
Date	"&as_qdr=" +	Exact Search
Last Hour	"h"	Exact Search
Last Day	"d"	Exact Search
Past Week	"w"	Exact Search
Past Month	"m"	Exact Search
Past 3 Months	"m3"	Exact Search
Past 6 Months	"m6"	Exact Search
Past Year	"y"	Exact Search
Anytime	"all"	Exact Search
Site/Domain	+	
Educational sites	"&as_sitesearch=edu"	Exact Search
Governmental sites	"&as_sitesearch=gov.uk"	Exact Search
Organizational site	"&as_sitesearch=org.uk"	Exact Search
All	""	Exact Search
Search From ...		
The Web	""	
UK Website	"&meta=cr%3DcountryUK%7CcountryGB"	
Page Results	"&num=" +	Exact Search
2	"2"	Exact Search
3	"3"	Exact Search
4	"4"	Exact Search
5	"5"	Exact Search
10	"10"	Exact Search
15	"15"	Exact Search
20	"20"	Exact Search
25	"25"	Exact Search
30	"30"	Exact Search
35	"35"	Exact Search
40	"40"	Exact Search
45	"45"	Exact Search
50	"50"	Exact Search
100	"100"	Exact Search

Table 1. Translation Table: translating Teachers' Pedagogical Vocabulary into Google Search Language

To enter/turn ON the search tool, teachers would need to type in their name and password, followed by creating their individual profile (by clicking on the 'Your Profile' button), which is compulsory and essential for performing the personalised search. To begin with, all the buttons /categories will be disabled until the user types in his/her name and the correct password, please see Figure 1.

Upon supplying the correct username and password, the user will be greeted by the system and directed to create/modify his/her profile. The profile button "Your Profile" (profile button only) will become enabled, please see Figure 2.

Once the new/modified profile has been saved the user will be directed back to the main menu to select from any of the four categories and thus perform a personalised search, please see Figure 3. The profile consists of the following information:
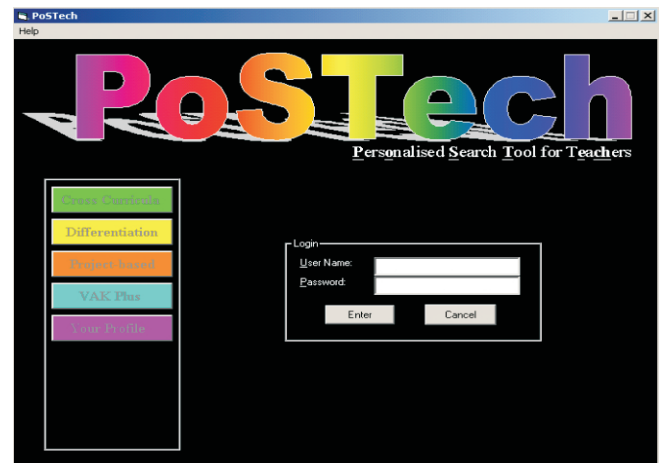

Figure 1. Personalised Search Tool for Teachers (PoSTech)

Figure 2. In this example the username is "Teacher".

Figure 3. Teacher's Personal Profile

Teacher's Name – this will be the same as the username printed by the system upon successful login.

Language – at present there are three available languages to choose from English, French and German.

National Curriculum – this includes England, Wales, Northern Ireland, Scottish and Irish (UK national Curriculum).

Level – this consists of PreSchool (3-5 years old), Year 1 & 2 (5-7 years old), Year 3 (7-8 years old), Year 4 (8-9 years old), Year 5 (9-10 years old), Year 6 (10-11 years old), Year 7 (11-12 years old), Year 8 (12-13 years old) and Year 9 (13-14 years old).

Resources – this is to restrict search results to free or paid resources, thus teachers have the option of Free, Paid or Both resources.

Date – here search results can be restricted to their last published/updated date. Teachers have eight options to choose from Last Hour, Last Day, Past Week, Past Month, Past 3 Months, Past 6 Months, Past Year or Anytime.

Site/Domain – this will allow teachers to restrict their search results to Educational sites, Governmental sites or Organizational site. To use any site teachers may choose the 'All' option.

Page Results – here teachers can limit or increase the number of search results they see on each page. This can be any number between 1-100 per page.

Teachers may turn ON/OFF the personalised search tool at any time during their search, by clicking on the 'OFF' button. This is to enable teachers to find online resources based on the "chaos factor", the possibility of finding other relevant materials by chance (non-personalised search), please see Figure 4.

Under the 'Cross-Curricula' category teachers would need to type in their topic i.e. "World War II"; subject "History" and then to specify the required supporting materials by selecting one of the available options under 'Together with' i.e. "worksheet", please see Figure 5-6.

There are fifteen subjects, including the 'generic' option, to choose from. These are Art & Design, Business & Economics Education, Citizenship, English, English with, Drama, Geography, History, Information & Communications Technology, Mathematics, Modern Foreign Languages, Music, Religious Education, Science and Social Science with Humanities.

Figure 4. Turning off the personalised search tool

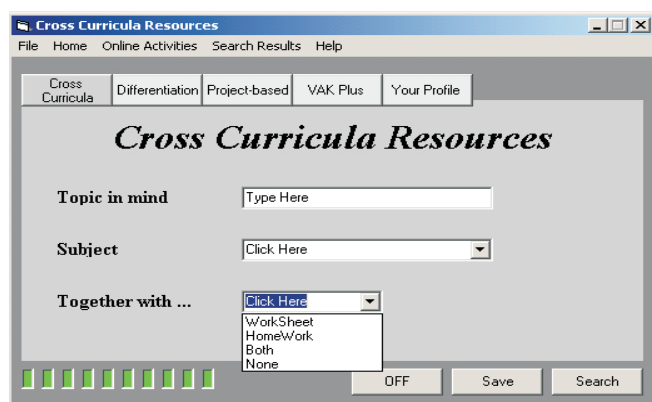Figure 5. Searching for Cross Curricula Resources

Figure 6. Selecting supporting materials for Cross Curricula

To search for differentiated materials, the teacher would need to type in his/her Subject i.e. "English", Topic i.e. "Comma", select his/her students Type i.e. "Gifted" and select the required supporting materials using the 'Together with' option, i.e. "homework", please see Figure 7.

There are five types of differentiation, which the teacher can choose from these includes Gifted, Talented, Main scale, SEN (Special Educational Need) and ESL (English as Second Language), please see Figure 8.

To search for 'project based' resources the teacher needs to type in his/her Subject i.e. "Information and Communication Technology" and would then need to specify the required supporting materials i.e. "both" (Worksheet & Homework), please see Figure 9.

To search for 'VAK Plus' resources, the teachers would need to type in their Subject i.e. "Maths", Topic i.e. "Multiplication", and then choose the required Type and file format (where appropriate), i.e. "Animation", please see Figure 10-12.
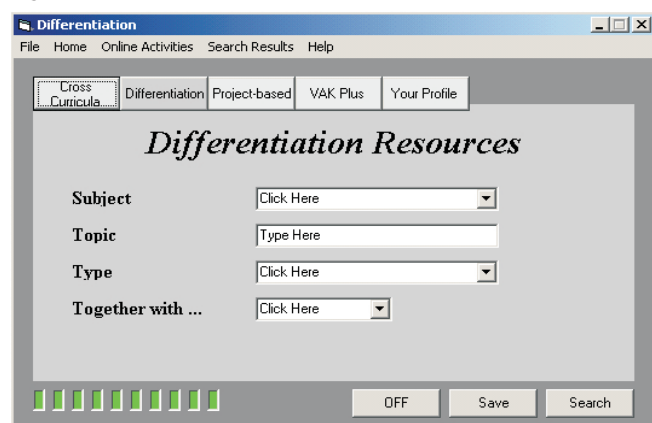
Figure 7. Searching for Differentiation Resources
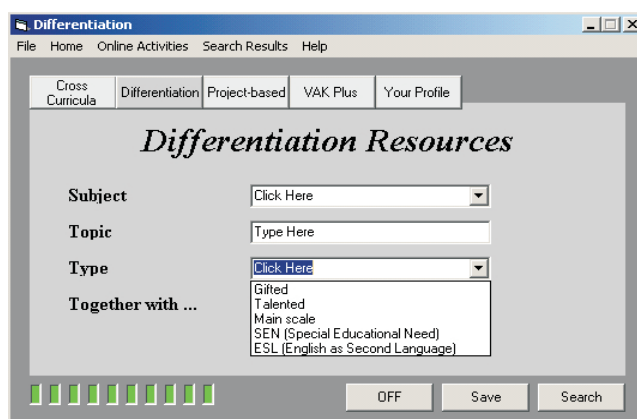
Figure 8. Differentiating according to students' ability/type
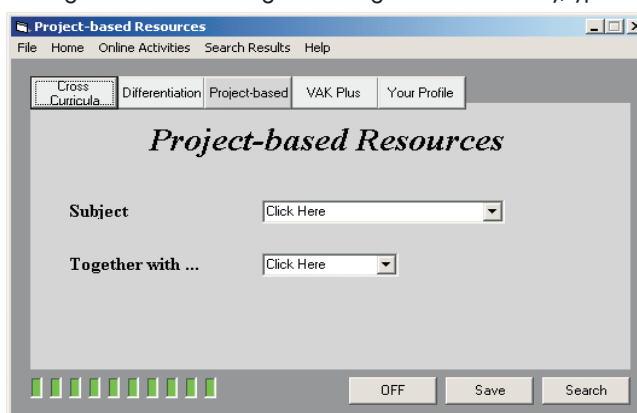
Figure 9. Searching for Project-based Resources
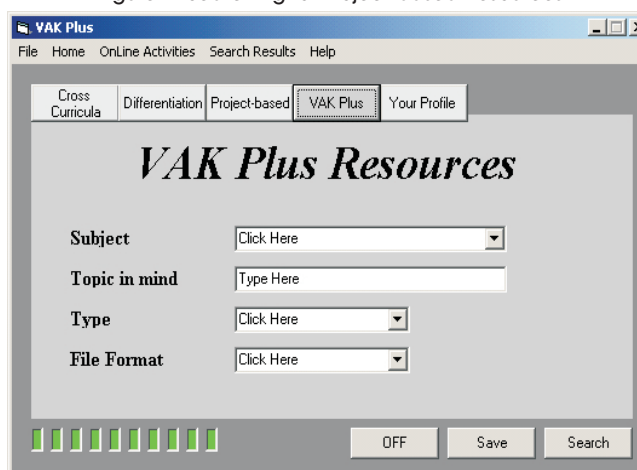
Figure 10. Searching for 'VAK Plus' Resources

There are twenty different types of resources for teachers to choose from Animations, Audios, Bibliographies, Books, Diagrams, Dictionary, Games, ICT Activities, Jokes, Lesson Plans, Maps, News, Paintings, Pictures, Poems, Songs, Stories, Tables, Text and Videos, please see Figure 11.

Under 'File Format' teachers have ten options, including 'Any Format' to choose from. These are Adobe Acrobat PDF
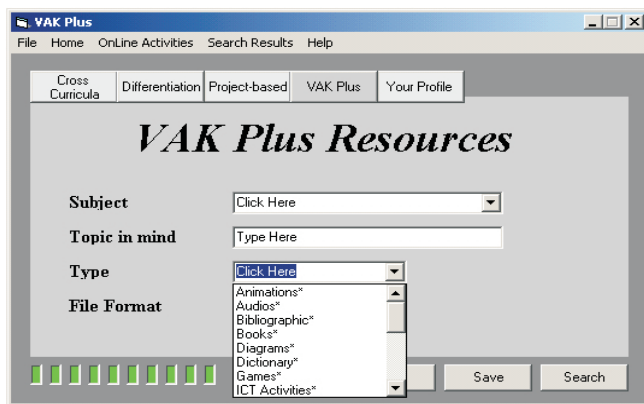
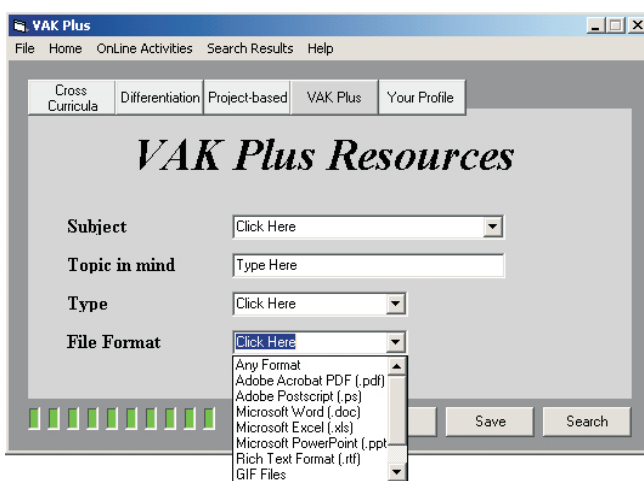Figure 11. Selecting the Type of Resource in VAK Plus

Figure 12. Selecting File Format in VAK Plus

(.pdf), Adobe Postscript (.ps), Microsoft Word (.doc), Microsoft Excel (.xls), Microsoft PowerPoint (.ppt), Rich Text Format (.rtf), GIF Files, JPG Files and PNG Files please see Figure 12.

2.1 Gray Search

With regards to this research prototype the personalised search tool will not be able to control/interfere with the metadata attached to online resources nor will it be able to influence the Google search language/repository.

This is because the coding behind Google search engine is treated as a top secret to the general public and that the teaching resources uploaded by different parties (governmental bodies, educational companies or the individuals) will have private ownership of their codes.

Therefore, when translating teachers' pedagogical vocabularies to Google language it was clear that the personalised search tool will not be able to find an exact match for every single pedagogical expression (teachers' needs). This was then called the 'Gray Search' (the mismatch between the teachers' pedagogical vocabulary and the search metadata).

Although 'Gray searches' would not produce the desired search results (perfect match) for teachers it was still included in the personalised search tool in order to increase the probability of finding the correct/relevant online resources.

Teachers are informed of the Gray Search upon selecting the pedagogical expression i.e. when selecting their 'National Curriculum', please see Figure 13.

2.2 The Menu

The menu bar consists of five options, which is located on the top left hand side of each category. These are called 'File', 'Home', 'Online Activities', 'Search Results' and 'Help'. These options are designed to provide extra facilities/support to teachers when searching online, please see Figure 14.

There are twenty options excluding the help menu, of which twelve are not activated (disabled), as it is not possible to implement these options within the current research prototype, however it will be considered and where possible implemented in the next stages of our development.

Under the 'File' menu teachers have the following options to choose from, please see Figure 15:

New Search – to start with a blank page/remove previous search.
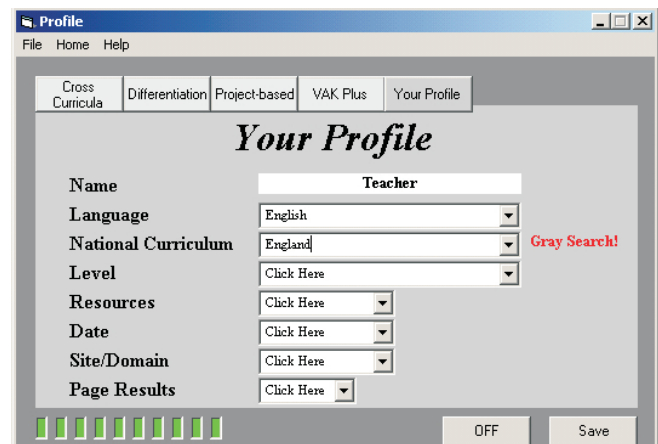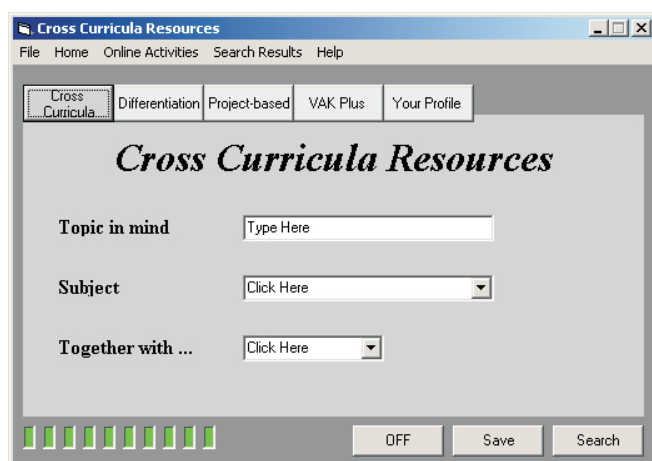

Figure 13. Informing Teachers of 'Gray Search'
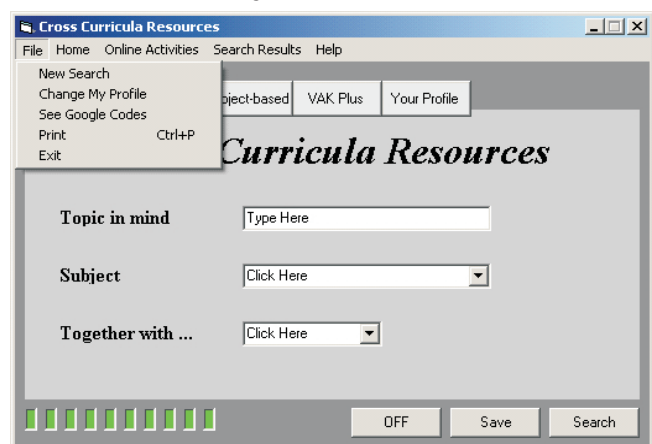
Figure 14. The Menu

Figure 15. Options available under the 'File' menu

Change My Profile – to see individual profile in order to change/modify the original preferences.

See Google Codes – to see the translation codes for the selected pedagogical expressions.

Print – to print the selected search query.

Exit – to leave the personalised search tool.

Clicking on the 'Home' menu would take teachers back to the main page or the starting page.

Under the 'Online Activities' menu teachers have the following options to choose from, please see Figure 16:

Activate Copy and Paste – to copy and paste the resources directly from its location to their desired location.

Link To My Homepage – to create a link directly from its location to the individual (teachers') home page.

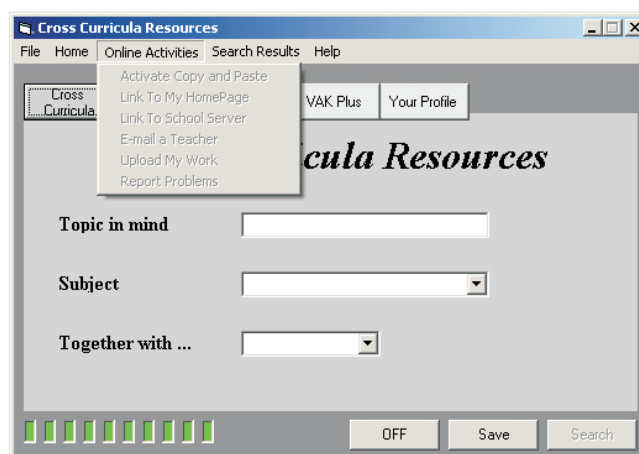*Link To School Server* – to create a link directly from its

Figure 16. Options available under the 'Online Activities' menu

location to the school server.

E-mail a Teacher – to e-mail the link/online resource directly from its location to another teacher/colleague.

Upload My Work – to allow teachers to publish or upload personalised work (individual resources i.e. teaching materials) to the search database in order for other teachers (with the same interest) to share resources.

Report Problems – to report technical problems directly to the site administrator i.e. faulty links, out of date links and so forth.

Under the 'Search Results' menu teachers have the following options to choose from, please see Figure 17:

Tap It! – to store the URL address for future purposes.

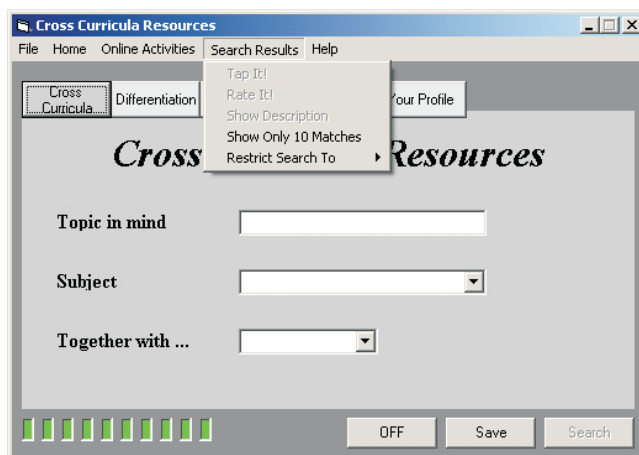*Rate It!* – to send feedback to the site administrator/author.

Figure 17. Options available under the 'Search Results' menu

Show Description – to see an introduction/abstract of the selected resource (content) before visiting the site.

Show Only 10 Matches – to change the page results seen per page, to ten items per page.

My School Server Only – to restrict search results within the school server.

Teachers' Uploads Only – to restrict search results to teachers resources or resources created by teachers, please see Figure 18.

Under the 'Help' menu, teachers have the following options to choose from,

How To Use – to learn about the different categories and functions in the personalised search tool.

What is 'Gray Search'? – to learn about Gray Search

Figure 18. Restricting Search Results

and its definition.

About PoSTech – to give information about the software licence and copyright.

Future Plan

The research prototype is currently been tested by primary and secondary teachers. The results obtained from testing the research prototype will be used to develop and improve the personalised search tool, and thus to prepare for stage 2/implementation of prototype II.

In prototype II, iClass repository (IEEE LOM) will be used to improve personalised search results by eliminating 'Gray Searches' and activating (where possible) disabled options on the menu bar for further testing and developments.

For more information about the iClass project please visit (www.iclass.info). To test the personalised search tool (trial version) or to see a demo of the system, please send your email to F.Seyedarabi@ioe.ac.uk.

References

[1]. Tara Calishain & Rael Dornfest. (2004). Google Hacks (2nd ed.): O'Reilly.

Aknowledgement
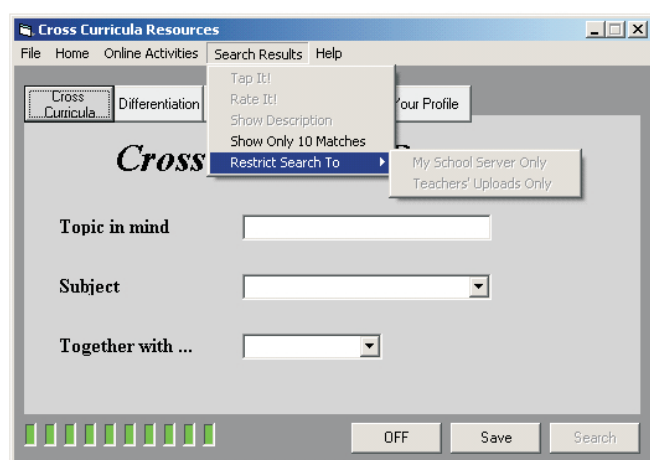

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