# Degree of Learning Resources Value

## Define the value of resources

The biggest difference with normal search engines is that a learning resources search engine needs to be evaluated more strictly and on more features.

In the section ‘value resource attributes’. We give a basic model to evaluate learning resources, which contains six characteristics. We use these six directions to evaluate the value of learning resources. This basic model is explained below. We call it the DLRV model. We get the value of resources by quantifying the six characteristics, and then return them to users according to the value from high to low.

## Static and Dynamic

Characters are divided into static and dynamic. Dynamic means that the value of this characteristic is generated dynamically, and different values are generated each time because of different conditions. It has no direct relationship with the resource itself, and different conditions can produce different results even on the same resource.

The most obvious example is that when users search for two words ‘English’ and ‘Chinese’, to the DLRV system, the value of different resources are different, to the users, the search results are different.

Among the six characteristics, only one is dynamic, which is the ‘usability’. It is related to the user's search keywords. The other characteristics, cost, reliability, practically, popularity, review are all static. Which means they are determined by the status of a resource itself. And the values of static characteristics are stored in the database statically. Static is not permanent. It is just that static characteristics will not be changed in real time and will not change due to user search conditions. Static value will also be changed due to the change of resource quality and nature, such as views, evaluation, publisher, etc.

The methods to calculate the value of learning resources in a DLRV system are as follows:

The total value of a learning resource, *V(j),* is the dynamic value of characteristics, Dynamic(j), multiply by static value of characteristics, Static(j).

## Suitability

This is a dynamic characteristic of DLRV, which means, the value of this characteristic is not determined by the resource itself, it is not a static value, and will change as well each search behaviour.

Suitability means: the results can match the user's search keywords and purposes. If it is different from what users want, or even the opposite result, we call it an unsuitable resource. How to fix what users want? We can set all the keywords into an array, as *[ k(1), k(2), k(3), k(4) ... k(i) ]*, and set the resources as *[ r(1), r(2), r(3), r(4) ... r(j) ]* this step is the same with traditional RD search engine in section ‘Introduction of Traditional RD Way, Rank of Results’. We still use keywords array to match the information and content of resources. Because these keywords represent the general purposes of the users.

The concept and method are shown above. Add the frequency of each keyword in the resource title, tag and description. The higher the frequency of occurrence, the higher value of resource suitability. Finally, accumulate the number of times keywords appear in the title, description and tags to get a value of suitability. The value of the suitability should more than 0.

S(j) is the value of suitability for r(j), r(j) is a resource.

# Reliability

Reliability is determined by the source of resources, which we call resource publishers. Resource publishers can be divided into personal accounts or unit accounts, and personal account can be divided into certified or uncertified account. The unit must be certified, unit is generally an organization or an enterprise.

The reliability value for a resource is calculated as follows, a user can be generated as user(i):

In this function, R(j) is the reliability value of a resource r(j).

This is a piece wise function:

1. For the first piece, if a user is not certified (variable cer(i) = 0) then the R(j) is 0.
2. The second piece is under the condition that a user is certified but not a unit account (not an organization or a company), then the R(j) equals k1 multiply the total usage of this user’s resources so far. So far means this value only calculated before the resource r(j) being published. If a user u(i) publishes resources [ r(1), r(2), r(3) ... r(k) ], the reference or usage is [ u(1), u(2), u(3) ... u(k) ]

k1 is a weight number. It can be adjusted according to the experiment to fix the value of reliability.

1. The same way to understand the third piece. It is under the condition that a user is a unit account as an organization or a company. k2 is another weight number set for unit account. The same, we need to sum all the usage of the resources the user has published.
2. The count of the usage in this system is how many times a resource itself has been referenced in courses or other resources.