Research on the Effectiveness and Evaluation of Ship Security Consciousness and Responsibility Course Based on Cloud Computing

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\textbf{Abstract:} the paper application of cloud computing to teaching evaluation, adopting multiple interactive mode, fuzzy modeling analysis, to research teaching evaluation, the model is reasonable and scientific and reasonable.

\textbf{Introduction}

Cloud computing used in the education industry, various cooperative institutions can be their own educational information resources stored in the "cloud", and then in the scope of cooperation to achieve the sharing of educational information resources, greatly promote and facilitate the use of teachers and students, The school teachers and students and the community related personnel exchanges and cooperation.

\textbf{The Construction of Teaching Evaluation Cloud Platform}

We Chat public platform after the account opens the development mode, you can use the public platform for the development of the interface, development We Chat program, and deploy on their server, receiving user We Chat news, and can according to need to reply, realizing message interaction with the use. [1]

\textbf{Figure 1.} Web Service call process in practice.

Web Service call process in practice is shown in Fig. 1. (1) The client application through the client proxy server requests into the distance, (2) The client proxy to transform the request for a SOAP request, sent to the server, (3) The server proxy server after receipt of the client's request, converted to have achieved API interface to invoke the service end, (4) Get return results, (5) Service converts the results into a SOAP request agent and returned to the client proxy, (6) Generation manage the data back to the client application.[6]
Security Consciousness and Responsibility Course

In order to improve the prevention ability of ship and port, the international maritime organization (IMO) in January 1, 2012 formally implemented "the seafarers' training, certification and the international convention on standards on duty". Set by the maritime safety administration of the People's Republic of China for Marine officers security awareness training certification exam outline and crew training certification exam outline[2], responsible for the specified security in accordance with the requirements of ship security consciousness and responsibility is engaged in maritime operations and the crew and the boat service personnel required a course.

Figure 2. The course evaluation system design.

The Course Evaluation System Design

The course the flow chart is as shown in the figure2, Evaluation index of multivariate intercrossing including ship security certificate, security professional skills, attitude of ship security, quality security and security capabilities. Evaluation subject of multivariate intercrossing including students self-evaluation, mutual evaluation, teacher evaluation, the department colleagues evaluation, ship leadership evaluation. Evaluation method of multivariate intercrossing including security field observation method, the network interview method, the scenario simulation method, the theory test.

Teaching Evaluation Fuzzy Modeling

This paper builds the fuzzy comprehensive evaluation of teaching [3], Evaluation factor set, Eq. 1.1

\[ U = \{u_1, u_2, u_3, u_4, u_5\} \]

Ship security certificate, security professional skills, attitude of ship security, quality security and security capabilities. Evaluation of language collection .Eq.1.2

\[ V_i = \{V_1, V_2, V_3, V_4, V_5\} \]

Each index of the evaluation, can provide qualitative judgment, can also for quantitative judgment, And causal judgment f: U \rightarrow R \in (V), u_i \rightarrow f(u_i) = (r_{i1}, r_{i2}, r_{i3}, \ldots, r_{im}). according to f can push R_i \in F(U \times V) including R_i=(u_i \times v_j) = f(u_i)f(v_j) = r_{ij}. fuzzy matrix can be represented as R = [r_{ij}]_{m \times n} \in F(U \times V), Fuzzy comprehensive evaluation process is shown in figure 2.
U = [ship security certificate, security professional skills, attitude of ship security, quality security and security capabilities]
V = [Good, better, general, is not good]
The structure of the fuzzy membership functions,
Membership function of fuzzy set “excellent”:
\[ \mu_A(u) = \begin{cases} 0, & 0 \leq u < 85 \\
\frac{u - 85}{10}, & 85 \leq u < 95 \\
1, & 95 \leq u \leq 100 \end{cases} \]
Membership function of fuzzy set “good”:
\[ \mu_B(u) = \begin{cases} 0, & 0 \leq u < 70 \\
\frac{U - 70}{10}, & 70 \leq u < 80 \\
1, & 80 \leq u \leq 100 \end{cases} \]
Membership function of fuzzy set “pass”:
\[ \mu_C(u) = \begin{cases} 0, & 0 \leq u < 55 \\
\frac{65 - u}{10}, & 55 \leq u < 65 \\
1, & 65 \leq u < 75 \end{cases} \]
Membership function of fuzzy set “fail”:
\[ \mu_D(u) = \begin{cases} 1, & 0 \leq u < 40 \\
\frac{60 - u}{10}, & 40 \leq u < 60 \\
0, & 60 \leq u \leq 100 \end{cases} \]

Set \( x_i, y_i, z_i \) respectively students self-evaluation, mutual evaluation, teacher evaluation, see Table 1.1 Evaluation subject

<table>
<thead>
<tr>
<th>index</th>
<th>U31</th>
<th>U32</th>
<th>U33</th>
<th>U34</th>
<th>U35</th>
<th>U36</th>
<th>U37</th>
<th>U38</th>
<th>U39</th>
<th>U310</th>
</tr>
</thead>
<tbody>
<tr>
<td>students self-evaluation</td>
<td>95</td>
<td>80</td>
<td>90</td>
<td>75</td>
<td>80</td>
<td>93</td>
<td>82</td>
<td>87</td>
<td>92</td>
<td>80</td>
</tr>
<tr>
<td>mutual evaluation</td>
<td>90</td>
<td>75</td>
<td>92</td>
<td>70</td>
<td>90</td>
<td>88</td>
<td>75</td>
<td>90</td>
<td>90</td>
<td>69</td>
</tr>
<tr>
<td>teacher evaluation</td>
<td>85</td>
<td>85</td>
<td>80</td>
<td>70</td>
<td>85</td>
<td>90</td>
<td>78</td>
<td>86</td>
<td>87</td>
<td>70</td>
</tr>
</tbody>
</table>

The secondary fuzzy evaluation index to the evaluation set, the fuzzy evaluation of indicators for evaluation set. Students, with their peers, experts in the index set respectively
\[ U_2 = \{u_{21}, u_{22}, u_{23}, u_{24}\} \] To comment on the set of fuzzy single factor evaluation matrix.

\[
A_i = \begin{pmatrix}
0.667 & 0.322 & 0 & 0 \\
0.322 & 0.833 & 0.322 & 0 \\
0.391 & 0.853 & 0.104 & 0 \\
0.233 & 0.933 & 0.322 & 0
\end{pmatrix}
\]

\[ B_i = \begin{pmatrix}
0.322 & 0.833 & 0.322 & 0 \\
0.467 & 0.534 & 0.322 & 0 \\
0.294 & 0.892 & 0.217 & 0 \\
0.167 & 0.322 & 0.667 & 0
\end{pmatrix}
\]
$$C_1 = \begin{pmatrix} c_{21} \\ c_{22} \\ c_{23} \\ c_{24} \end{pmatrix} = \begin{pmatrix} 0 & 1 & 0 & 0 \\ 0 & 0.667 & 0.322 & 0 \\ 0.245 & 0.956 & 0.152 & 0 \\ 0.067 & 0.322 & 0.66 & 0 \end{pmatrix} \quad W_{21} = (0.096, 0.322, 0.322, 0.238$$

Student can get fuzzy comprehensive evaluation results.

$$a = W_{21} \cdot A_1 = (0.096, 0.322, 0.322, 0.328) \begin{pmatrix} 0.667 & 0.322 & 0 & 0 \\ 0.322 & 0.828 & 0.322 & 0 \\ 0.391 & 0.853 & 0.104 & 0 \\ 0.233 & 0.933 & 0.322 & 0 \end{pmatrix} = (0.361, 0.851, 0.225, 0)$$

**Effect of Curriculum Evaluation**

Research and evaluation model was used to optimize validation evaluation model is effective. Solve the test, the appraisal method with relative evaluation object and evaluation concept, the separation appraisal path problem such as free with the teaching process, identifying the evaluation paradigm transformation Curriculum evaluation is a part. Using AHP to calculate fuzzy weighted vector [4][7]. In traditional evaluation, the method of AHP is mostly used to admeasure weight of indexes set. We build the weight vector by AHP. The detail of the algorithm refers to Building fuzzy matrix, we can obtain the fuzzy vectors of the second layer indexes. Taking same layer index as row [7]. It is a fuzzy vector, and can not be used in decision directly. Generally, the methods are used to solve the problem-maximum membership method and weighted average method., we can build a fuzzy matrix. The maximum membership method only considers the information of max grade of membership element, and ignores the information of others. At the same time, the method is not applicable when two attributes have same max membership. we can regard the vectors into same class. The conclusion is not rational according to the fact. he conclusion of evaluation is consistent with the actual situation of project execution. Thus, the evaluation indexes and evaluation model in the paper are effective. In system design and implementation is completed, choose to test the system application effect of the subjects, and put forward strategies for the improvement of the system according to the feedback information [5]. Overall system application effect is good, but in the qualitative evaluation of communication and feedback function part, teacher and the student two roles, application effects of the existence question to this function. After in-depth interviews with the subjects. Through questionnaire investigation, reply to number, analysis of research result [4]. The weighted vectors is shown in Fig 3.

![Figure 3. The weighted vectors.](image-url)
Conclusions

In the case of network support, teachers, students and enterprises are improved to facilitate the quality evaluation of students. Multidisciplinary integration of students' comprehensive quality evaluation system has not yet been established, can't realize the evaluation of multiple intelligence development, Long-term follow-up evaluation on students' academic development did not cause enough attention.

Curriculum evaluation is a part of teaching is put forward, Evaluation is the process, Evaluation is improving the effectiveness of course tools. Evaluation is improving the effectiveness of course tools. Using research and fuzzy evaluation, the influence index of teacher evaluation is dominant.

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References


