Research on College Students' Ideological and Political Education in the Mobile Environment

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Abstract. Ideological and Political Education is very important in college students especially in China, and meanwhile, mobile phones are more and more universal among college students. This paper studies college students' ideological and political education in the mobile environment. First, we survey the using of mobile phones among college students, and then quantitatively evaluate the effect of mobile phones on college students' ideological and political education.

1. Introduction

Nowadays, mobile phone is universal in college students, and college students could use mobile phone to access the Web easily for information sharing and acquiring, which makes it different to control the emotion of them, so college students' ideological and political education in the mobile environment is a hard work. From the standpoint of dialectic materialism, based on the relating literature, this paper illustrates the significance of the promotion of Ideological and Political Education Assessment for College Students in the mobile environment. This paper combs the theoretical connotations of Ideological and Political Education and its assessment, which analyzes the relations between them; explains the connotations, aims, contents and characteristics respectively; and concludes the essential basis and major principles.

2. Related works

In terms of government, college, college students and grassroots units, factors that have effect on college students' Ideological and Political Education and the relationship among them are analyzed by decision-making trial and evaluation laboratory method. The effect is quantitatively measured by so-called comprehensive degree, causal degree, and central degree. Moreover, SWOT is efficient method for this kind of work. Some related documents have put forward methods of quantified analysis, such as the following methods generalized by David [1]: the External Factor Evaluation Matrix (EFE), Internal Factor Evaluation Matrix (IFE) and Competitive Profile Matrix (CPM) methods. Kurttila et al. [3] and Stewart et al. [4] combined the Analytic Hierarchy Process (AHP) with SWOT to provide a new hybrid method for improving the usability of SWOT analysis. Although a consistency test is used to ensure the weights are scored objectively by the evaluation group, carrying out SWOT analysis comparison on several enterprises simultaneously is difficult. Sun et al. [5] qualified SWOT analysis by Fuzzy Comprehensive Evaluation to analyze the case of an enterprise, aiming at providing scientific basis for enterprises establishing their competitive strategy.

3. Quantitative evaluation

In the college student ideological and political education, test scores, class time, number of operations and other projects are numerical quantify. In this section, we can use the quantitative methods for evaluating the college students' ideological and political education in the mobile environment.

3.1. Analytic Hierarchy Process

In order to choose the optimal policy action to evaluate the ideological and moral education of college students quantitatively, we have applied the analytic hierarchy process (AHP), developed by Saaty, which decomposes the decisional process in a hierarchy of criteria, sub criteria, attributes and alternatives through a set of weights that reflect the relative importance of alternatives. Therefore, it supports decision makers to make decisions involving their experience, knowledge and intuition. The AHP has become a significant methodology in EIA due to its capability for facilitating multi-criteria decision-making. In facts, the AHP has been widely applied to numerous complex problems.

3.2. Building a hierarchy evaluation model

Hierarchy evaluation model is an index evaluation system composed by all levels of the evaluation indicators and their corresponding weight and evaluation criteria. It reflects the interdependence of the various aspects of the relationships in the evaluation process. College student ideological and political education effectiveness evaluation is a comprehensive, multi-criteria, multi-factor complex process. When we use judgment to estimate dominance in making comparisons, and in particular when the criterion of the comparisons is an intangible, instead of using two numbers wi and wj from a scale (if we must rather than interpreting the significance of their ratio wi/wj) we assign a single number drawn from the fundamental 1–9 scale of absolute numbers shown in Table 1 to represent the ratio (wi/wj)/1. It is a nearest integer approximation to the ratio wi/wj. The derived scale will reveal what the wi and wj are. This is a central fact about the relative measurement approach and the need for a fundamental scale.

Table 1. Fundamental Scale of Absolute Numbers

Intensity of Importance	Definition
1	Equal Importance
2	Weak or slight
3	Moderate importance
4	Moderate plus
5	Strong importance
6	Strong plus
7	Very strong or demonstrated importance
8	Very, very strong
9	Extreme importance
Reciprocals of above	If activity i has one of the above nonzero numbers assigned to it when compared with activity j, then j has the reciprocal value when compared with i

For computing the priorities of the elements, a judgmental matrix is assumed as follows:

$$A = \begin{pmatrix} a_{11} & a_{12} & \cdots & a_{1n} \\ a_{21} & a_{22} & \cdots & a_{2n} \\ \vdots & \vdots & \ddots & \vdots \\ a_{n1} & a_{n2} & \cdots & a_{nn} \end{pmatrix} \tag{1}$$

where a_{ij} represents the pairwise comparison rating between the element i and element j. The entries a_{ij} are governed by the following rules: $a_{ij} > 0$; $a_{ij} = 1/a_{ji}$; $a_{ii} = 1$ i.

3.3. Computing judgmental matrix

Experts were asked to compare pair-wise the relative importance of the elements for each level on the basis of the Saaty's scale (Table 2). From the pair-wise comparisons, a judgmental matrix was formed for each expert. This matrix was used for computing the priorities and the

consistency index was carried out. The priorities expressed by experts have been combined using the geometric mean method.

Table 2. Matrix of criteria comparison

Criteria	C1	C2	C3	C4
C1	1	3/2	1	3/2
C2	2/3	1	2/3	1
C3	1	3/2	1	3/2
C4	2/3	1	2/3	1

Table 3. Matrix of the priorities of Alternatives in criteria C1

Alternatives	A1.1	A1.2	A1.3	A1.4
A1.1	1	3/2	2	2
A1.2	2/3	1	3/2	3/2
A1.3	1/2	2/3	1	1
A1.4	1/2	2/3	1	1

Tables 3-6 report the priorities of the policy options for each -criterion respectively. In Table 3, the value in the matrix represent the ratio of *A1.i* to *A1.j*, and the a single number is drawn from the fundamental 1–9 scale of absolute numbers shown in Table 1. You can see that, for every ratio of *A1.i* to *A1.i*, the value is 1. This means that *A1.i* is equal to *A1.i*. But the others are not equal to 1, for example, the ratio of A1.1 to A1.2 is 7/3. It means that compared to A1.2, A1.1 has moderate importance. In Table 4, every ratio of *A2.i* to *A2.i* is 1. This means that *A2.i* is equal to *A2.i*. But the others are not equal to 1, for example, the ratio of A2.1 to A2.2 is 1/2. It means that compared to A1.2, A1.1 is important, but the importance is weak.

Table 4. Matrix of the priorities of Alternatives in criteria C2
Table 5. Matrix of the priorities of Alternatives in criteria C3

Alternatives	A2.1	A2.2	A2.3	Alternatives	A3.1	A3.2	A3.3	A3.4
A2.1	1	1/2	2/5	A3.1	1	7/3	7/4	7/6
A2.2	2	1	7/9	A3.2	3/7	1	3/4	1/2
A2.3	5/2	9/7	1	A3.3	4/7	4/3	1	2/3
				A3.4	6/7	2	3/2	1

We can see that, in Table 5, every ratio of A3.i to A3.j is reciprocal of A3.j to A3.i.
In Table 6, we can find the same situation of the matrix of the priorities of Alternatives in criteria C4.

Table 6. Matrix of the priorities of Alternatives in criteria C4

Alternatives	A4.1	A4.2	A4.3	A4.4
A4.1	1	3/4	1/3	1/2
A4.2	4/3	1	1/2	2/3
A4.3	3	2	1	1
A4.4	2	3/2	1	1

The priorities of the elements can be estimated by finding the principal eigenvector w of the matrix A, that is:

$$AW = \lambda_{max} W \tag{2}$$

When the vector W is normalized, it becomes the vector of priorities of elements of one level with respect to the upper level. λmax is the largest eigenvalue of the matrix A. In cases where the pairwise comparison matrix satisfies transitivity for all pairwise comparisons it is said to be consistent and it verifies the following relation: $a_{ij} = a_{ik} * a_{kj}, \quad \forall i, j, k$ (3)

AHP allows inconsistency, but provides a measure of the inconsistency in each set of judgments. The consistency of the judgmental matrix can be determined by a measure called the consistency ratio (CR), defined as: $CR = CI/RI$ (4)

where CI is called the consistency index and RI is the Random Index. Furthermore, Saaty provided average consistencies (RI values) of randomly generated matrices. CI for a matrix of order n is defined as: $CI = (\lambda_{max} - n)/(n - 1)$ (5)

In general, a consistency ratio of 0.1 or less is considered acceptable. This threshold is 0.08 for matrices of size four and 0.05 for matrices of size three. If the value is higher, the judgments may not be reliable and should be elicited again.

Table 7. Random index (RI values)

Order	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
R. I.	0	0	0.52	0.89	1.11	1.25	1.35	1.40	1.45	1.49	1.52	1.54	1.56	1.58	1.59

Once the local priorities of elements of different levels are available, in order to obtain final priorities of the alternatives ai, the priorities are aggregated as follows:

$$S\left(a_i\right) = \sum_k w_k * S_k\left(a_i\right) \tag{6}$$

where wk is the local priority of the element k and Sk(ai) is the priority of alternative ai with respect to element k of the upper level. By applying the procedure previously outlined, the results indicate the highest importance to the criteria C1 "Education ideas" (30%) and C3 "Teaching content"(30%); the other criteria "Teaching resources "and "Student quality" have equal priority (20%).

4. Conclusion

Ideological and Political Education is very important in college students especially in China, and meanwhile, mobile phones are more and more universal among college students. In the evaluation of the effectiveness of college student ideological and political education, Qualitative evaluation focuses on the natural scene with the complexity of the real world and open thinking, and generally speaking, it is an abstract language statement. This paper studies college students' ideological and political education in the mobile environment. First, we survey the using of mobile phones among college students, and then quantitatively evaluate the effect of mobile phones on college students' ideological and political education.

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