An Empirical Study on the Effect of Information-Based Teaching of Ideological and Political Courses in Higher Vocational Colleges Based on Moso Teach

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Abstract. Using modern information technology to assist the reform of ideological and political course teaching has become a hotspot and a difficulty needing to be addressed immediately in ideological and political education. In order to further understand the effect of ideological and political education via information teaching platform in higher vocational colleges, the author takes Sanya Aviation and Tourism College as the research object, adopts questionnaire survey method, and makes an empirical analysis with SPASS software. The results show that Moso Teach plays a positive role in teaching management, teacher-student interaction, student assessment etc. The report also points out some problems in the process of teaching with Moso Teach, which leads us to the direction of future reform.

Keywords: Moso teach · Higher vocational colleges · Ideological and political courses · Information-based teaching

1 Introduction

Nowadays, information technology has a wide and far-reaching impact on people's learning, work and life. The integration and innovation of information technology and education has generated many new educational models. Moso Teach is such a teaching software based on Internet. It has two versions of mobile terminals, IOS and Android. It can be accessed directly by computer or mobile phone APP. Moso Teach has the characteristics of "small and smart". And its platform has multiple functions such as signing in, sharing teaching resources, sending notifications, leaving assigning tasks, voting, questionnaire survey, testing. This application is very easy to download and operate, thus is very popular among teachers and students in many Higher Vocational colleges.

What is the effect of using Moso Teach in ideological and political course? What are the advantages and disadvantages? What problems should we pay attention to while using it? Taking the practice of applying Moso Teach in ideological and political courses in Sanya Aviation and Tourism College as an example, this paper makes an

G. Sun et al. (Eds.): eLEOT 2019, LNICST 299, pp. 417–428, 2019.
https://doi.org/10.1007/978-3-030-35095-6_45

in-depth analysis with the help of questionnaires and data analysis, with a view to providing suggestions and references for similar colleges to carry out the information-based teaching reform of ideological and political courses.

2 Research Objects and Research Methods

This research was conducted in Sanya Aviation and Tourism College with questionnaire. Since the first half year of 2017, Sanya Aviation and Tourism College has used Moso Teach Platform to carry out the teaching reform of ideological and political courses. After two years of construction, it has gradually established Moso Teach Courses of "ideological and moral cultivation and basic law education", "Introduction to Mao Zedong Thought and the Theoretical System of Socialism with Chinese Characteristics". At present, all students of 2017 and 2018 are studying ideological and political course on this platform.

Empirical analysis method was adopted in this survey. The samples cover five secondary schools, including School of Civil Aviation Transport, School of International Tourism, School of Flight Attendants, School of Mechanical and Electrical Engineering and School of Maritime Transport. All together, we give out and collect 403 questionnaires.

3 Empirical Analysis

3.1 Description of Statistics

We analyze the frequency of the demographic variables and get the result in Table 1. Among 403 tested samples there are 203 females, taking up 50.4% of the total amount; there are 402 freshmen students, taking up 99.8% of the total amount; and the tested students are mainly from School of Civil Aviation Transportation and School of Flight Attendants, the numbers of these students are 132 and 172 respectively taking up 75.5% together. Their Knowledge about Moso Teach can mainly be divided as familiar and generally familiar, the numbers of these students are 194 and 122 respectively, taking up 78.4% all together. 325 students often use "Moso Teach" in ideological and political course, taking up 80.6% of all the tested students. Students' favorite studying methods are "teachers upload instructional resources on Moso Teach platform, then students study them after class" and "teachers combine face-to-face teaching and Moso Teach on-line learning", 176 and 193 students like these two studying methods respectively, taking up 91.6% together. As for their attitudes towards teaching ideological and political course with Moso Teach, 251 students "totally accept it and think it is helpful for classroom teaching", then 141 students "can accept it but still hold doubts about its defects", all those students take up 97.3% of the total amount. And the numbers of students who think that the general effects of using Moso Teach are very good and relatively good are 178 and 162 respectively, taking up 84.4% of all the tested samples.

Table 1. Frequency statistics (N = 403)

Variables	Attribute	Frequency	Percentage (%)
gender	male	200	49.6
	female	203	50.4
age	freshman	402	99.8
	sophomore	1	0.2
Schools or departments	School of Civil Aviation Transportation	132	32.8
	School of International Tourism	53	13.2
	School of Flight Attendants	172	42.7
	School of Mechanical and Electrical Engineering	33	8.2
	School of Maritime Transport	13	3.2
familiar of Moso Teach	very familiar	79	19.6
	familiar	194	48.1
	general familiar	122	30.3
	not familiar	5	1.2
	not heard of	3	0.7
Frequency of using Moso Teach in ideological and political class	often	325	80.6
	occasionally	75	18.6
	rarely	2	0.5
	never	1	0.2
Favorite learning methods	teachers upload instructional resources on Moso Teach platform, then students study them after class	176	43.7
	teachers combine face-to-face teaching and Moso Teach on-line learning	193	47.9
	face-to-face teaching without Moso Teach APP	34	8.4
Attitudes to teaching ideological and political course with Moso Teach	totally accept and think it is helpful for classroom teaching	251	62.3
	can accept but still hold doubts about its defects	141	35
	can't accept, prefer traditional teaching method	8	2
	can't accept at all	3	0.7
General effect of using Moso Teach platform	very good	178	44.2
	relatively good	162	40.2
	just so so □	54	13.4
	not good □	5	1.2
	very bad	4	1

Table 2 shows the frequency statistics of multiple-choice questions. Among 403 samples, more than half students used the functions of "sign-in", "assignment/group task", "test", "check, download teaching resources" and "Q&A/discussion" in Moso Teach APP during the study of ideological and political course; less than half students used the functions of "vote/questionnaire", "brainstorm" and "send notification"; and only very few students used "send gift card" and "others" functions.

Table 2. Frequency statistics of multiple-choice questions (N = 403)

Variables	Attribute	Frequency	Percentage
Functions used in Moso Teach software during the study of ideological and political course	sign-in	394	97.80%
	check, download teaching resources	244	60.50%
	send notification	128	31.80%
	assignment/group task	325	80.60%
	vote/questionnaire	184	45.70%
	brainstorm	148	36.70%
	Q&A/discussion	214	53.10%
	test	258	64.00%
	send gift card	38	9.40%
	others	5	1.20%

3.2 Validity Test

We conduct exploratory factor analysis on 22 questions to explore the questionnaire structure. Before the exploratory factor analysis, we need to check whether the KMO value is above 0.7 and whether Bartlett sphericity test reaches significance. According to Table 3, the KMO value is 0.943, which is above 0.7, and the Bartlett sphericity test value is 10216.411, whose significance level is less than 0.001. Therefore, this sample is fit for factor analysis.

Table 3. Test list of KMO and Bartlett

KMO		0.943
Bartlett sphericity test	approximate chi-square	10216.411
	df	231
	Sig.	0.000

Principal component analysis is used to do factor analysis on 22 questions and the analysis result is made into list, including: the extracted factors, factor load capacity, eigenvalue and cumulative variance contributing rate etc.

Table 4. Contributing rate of factors

Factors	Eigenvalue	Cumulative contributing rate(%)
1	6.662	30.283
2	5.364	54.663
3	5.166	78.146

From Table 4 we can see the cumulative contributing rate of those three factors whose eigenvalue are above 1 has achieved 78.146%. The rotated component matrix is as shown in Table 5. The three factors are renamed: factor 1 is named as "advantage", which includes 8 questions; factor 2 is named as "effect evaluation", which includes 6 questions and factor 3 is named as "problem", which includes 8 questions. The maximum factor loads of all the questions are all above 0.5, and the maximum load exists only on one factor, which means the structure validity is good.

Table 5. Rotated component matrix

Question	Factor 1	Factor 2	Factor 3
advantage 8	0.882		
advantage 2	0.872		
advantage 5	0.871		
advantage 1	0.86		
advantage 4	0.849		
advantage 7	0.845		
advantage 3	0.816		
advantage 6	0.787		
effect evaluation 3		0.883	
effect evaluation 4		0.878	
effect evaluation 5		0.876	
effect evaluation 6		0.866	
effect evaluation 2		0.863	
effect evaluation 1		0.847	
problem 5			0.873
problem 2			0.866
problem 8			0.852
problem 7			0.824
problem 3			0.814
problem 6			0.798
problem 1			0.706
problem 4			0.632

3.3 Reliability Test

We run reliability test on all studied variables and get the result as shown in Table 6. The result shows that Cronbach's α coefficient lowers as we delete any question, which means all the question items could be kept. The Cronbach's α coefficients of "advantage", "problem" and "effect evaluation" are 0.969, 0.919 and 0.976 respectively, all above 0.7, which reflects that the result of reliability test is good.

Table 6. Reliability test table

Studied variable	Item	Deleted Cronbach's α coefficient	Cronbach's α coefficient of studied variable
advantage	advantage 1	0.964	0.969
	advantage 2	0.962	
	advantage 3	0.966	
	advantage 4	0.966	
	advantage 5	0.963	
	advantage 6	0.967	
	advantage 7	0.962	
	advantage 8	0.964	
problem	problem 1	0.915	0.919
	problem 2	0.901	
	problem 3	0.907	
	problem 4	0.922	
	problem 5	0.901	
	problem 6	0.909	
	problem 7	0.906	
	problem 8	0.903	
effect evaluation	effect evaluation 1	0.974	0.976
	effect evaluation 2	0.971	
	effect evaluation 3	0.971	
	effect evaluation 4	0.973	
	effect evaluation 5	0.97	
	effect evaluation 6	0.971	

3.4 Correlation Analysis

We did descriptive statistics and correlation analysis on "advantage", "problem" and "effect evaluation". The result is shown in Table 7. The maximum score is 5, while 3 as the mid-value. The descriptive statistics shows that the mean values of "advantage", "problem" and "effect evaluation" all exceed 3, which means the scores of "advantage", "problem" and "effect evaluation" from the tested objects are relatively high. The result of correlation analysis reflects that among the three variables of "advantage", "problem" and "effect evaluation", each two variables show significant positive correlation ($p < 0.05$).

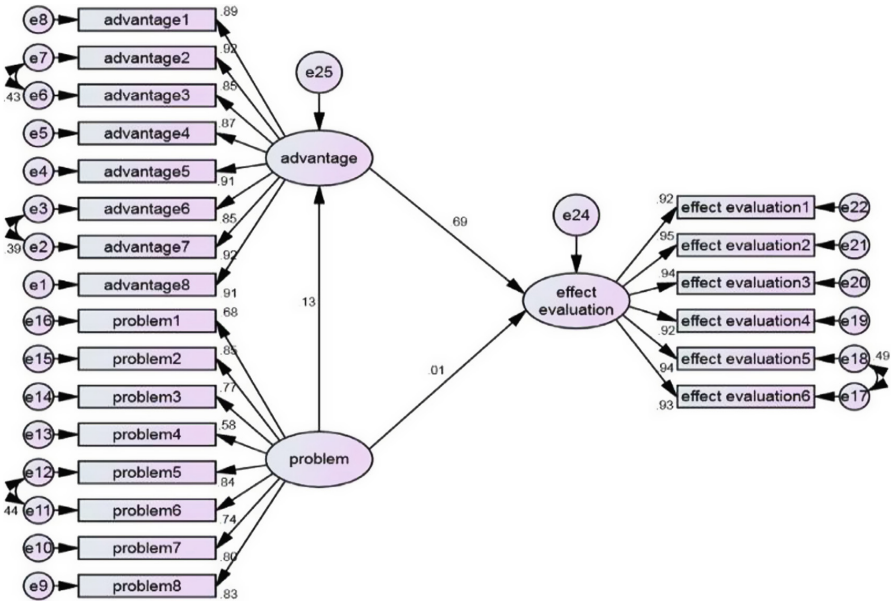
Table 7. Descriptive statistics and correlation analysis

	Advantage	Problem	Effect evaluation
advantage	1		
problem	0.141**	1	
effect evaluation	0.684***	0.113*	1
mean M	4.435	3.427	4.297
standard deviation SD	0.599	0.942	0.680

Note: * stands for $p < 0.05$, **stands for $p < 0.01$, ***stands for $p < 0.001$

3.5 Mediating Effect Model

We build structural equation model to examine the mediating effect of "advantage" between "problem" and "effect evaluation". We find the MI modification indexes of "advantage 2" and "advantage 3", "advantage 6" and "advantage 7", "problem 5" and "problem 6" and "effect evaluation 5" and "effect evaluation 6" are relatively high, thus we set correlation for their residuals to adjust the model and the final structural equation model is as follows:



The major fit indexes of this structural equation model are shown in Table 8, $X^2/df = 2.931 < 3$, RMSEA = 0.069 < 0.08, RMR = 0.041 < 0.05, NFI = 0.943 > 0.9, RFI = 0.935 > 0.9, IFI = 0.962 > 0.9, TLI = 0.956 > 0.9, CFI = 0.962 > 0.9, which are all in the range of fitting, thus the structural equation model is proved acceptable.

Table 8. The fitting result of the structural equation model

The fit index of the model	Critical value	Studied model	Fitting result
X^2/df	<3	2.931	fitting
RMSEA	<0.08	0.069	fitting
RMR	<0.05	0.041	fitting
NFI	>0.9	0.943	fitting
RFI	>0.9	0.935	fitting
IFI	>0.9	0.962	fitting
TLI	>0.9	0.956	fitting
CFI	>0.9	0.962	fitting

Table 9 shows the path coefficients of the structural equation model. According to the result, "problem" has significantly positive influence on "advantage" ($\beta = 0.074$, $t = 2.539$, $p < 0.05$), "problem" has no significant influence on "effect evaluation" ($\beta = 0.008$, $t = 0.307$, $p > 0.05$), and "advantage" has significantly positive influence on "effect influence" ($\beta = 0.859$, $t = 16.035$, $p < 0.001$).

In order to examine the indirect effect "problem" has on "effect evaluation" via "advantage", we adopted bootstrap and leant after 2,000 extraction the indirect effect is 0.092, and the confidence interval is [0.024, 0.164], excluding 0, which reflects significant indirect effect. The direct effect that is the effect "problem" has on "advantage" does not reach significance, which means the direct effect is not significant. Therefore, "advantage" exerts full mediating effect between "problem" and "effect evaluation", the indirect effect is 0.092 and positive.

Table 9. The path coefficients of the structural equation model

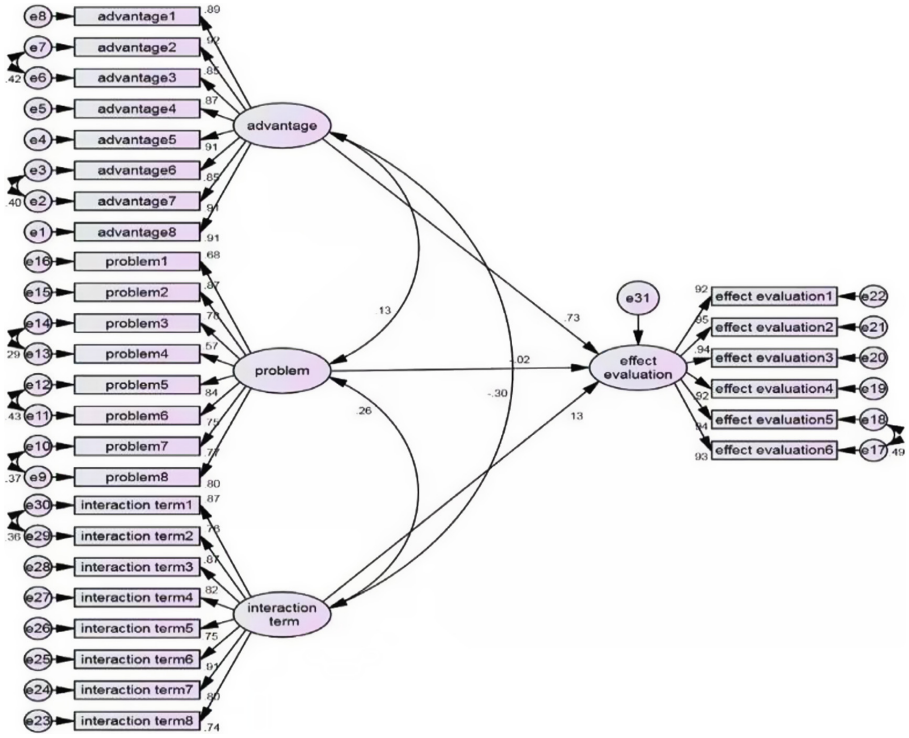
Influence path	β	S.E.	C.R.	P
"problem" → "advantage"	0.134	0.029	2.539	0.011
"problem" → "effect evaluation"	0.012	0.027	0.307	0.759
"advantage" → "effect evaluation"	0.691	0.054	16.035	***

Note: *** stands for $p < 0.001$

3.6 Moderating Effect Model

We build structural equation model to examine the moderating effect of "problem" between "advantage" and "effect evaluation". In order to avoid multiple collinearity, all the questions put into the model have already been standardized. According to the principle of "big with big, small with small", the 8 standardized questions of "advantage" times the 8 standardized questions of "problem" one by one, then we get 8 constitutional question items of interactive items (i.e. int1 ~ int8). We find the MI modification indexes of "advantage 2" and "advantage 3", "advantage 6" and "advantage 7", "problem 3" and "problem 4", "problem 5" and "problem 6", "problem 7"

and "problem 8", "int 1" and "int 6" and "effect evaluation 5" and "effect evaluation 6" are relatively high, thus we set correlation for their residuals to adjust the model and the final structural equation model is as follows:



The major fit indexes of this structural equation model are shown as in Table 10, X2/df = 2.928 < 3, RMSEA = 0.069 < 0.08, RMR = 0.055, NFI = 0.916 > 0.9, RFI = 0.907 > 0.9, IFI = 0.943 > 0.9, TLI = 0.937 > 0.9, CFI = 0.943 > 0.9, except RMR is a bit higher, other indexes are all within the range of fitting, so the structural equation model is acceptable.

Table 10. The fitting result of the structural equation model

The fit index of the model	Critical value	Studied model	Fitting result
X^2/df	<3	2.928	fitting
RMSEA	<0.08	0.069	fitting
RMR	<0.05	0.055	not fitting
NFI	>0.9	0.916	fitting
RFI	>0.9	0.907	fitting
IFI	>0.9	0.943	fitting
TLI	>0.9	0.937	fitting
CFI	>0.9	0.943	fitting

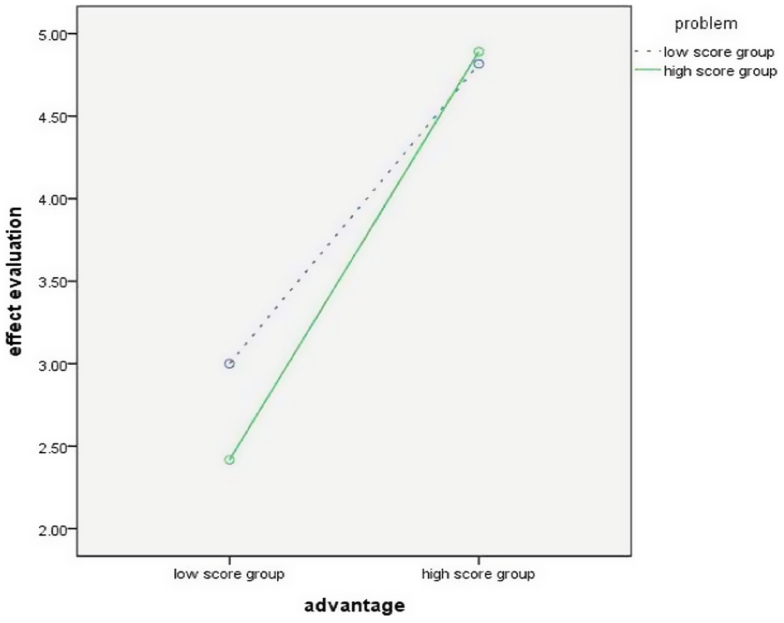
Table 11 shows the path coefficients of the structural equation model. According to the result, "advantage" has significantly positive influence on "effect evaluation" ($\beta = 0.744$, $t = 15.958$, $p < 0.001$), "problem" has no significant influence on "effect evaluation" ($\beta = -0.022$, $t = -0.46$, $p > 0.05$), and the interactive items have significantly positive influence on "effect influence" ($\beta = 0.129$, $t = 2.911$, $p < 0.01$), which shows conformed positive moderation of "problem" between "advantage" and "effect evaluation".

Table 11. The path coefficients of the structural equation model

Influence path	β	S.E.	C.R.	P
"advantage" → "effect evaluation"	0.744	0.047	15.958	***
"problem" → "effect evaluation"	−0.022	0.048	−0.46	0.646
interactions → "effect evaluation"	0.129	0.044	2.911	0.004

Note: *** stands for $p < 0.001$

Below is the interaction chart of the moderating effect, from which we can see that when the "problem" gets low scores, the positive correlation relationship of "advantage" and "effect evaluation" is relatively flat, while when the "problem" gets high scores, the positive correlation relationship of "advantage" and "effect evaluation" is relatively steep.



4 Conclusion and Suggestions

The results show that the problems in using Moso teach have significantly positive influence on the platform's advantages, but have no significant influence on the teaching effect evaluation. The advantages of Moso teach have significantly positive influence on the teaching effect evaluation of ideological and political course; its advantages play a full mediating effect between the problems and effect evaluation, while problems exert positive moderating function between the advantages and effect evaluation.

To conclude, Moso teach has remarkable advantages in improving class management efficiency, strengthening the interaction and communication between teachers and students, and it's quite helpful in the assessment and evaluation of students in ideological and political teaching. However, some functions of the platform still have been underutilized because of teachers' and students' insufficient understanding of the teaching media and ability of using it. In addition to the teaching environment and the technology itself, the integration level of information technology and ideological and political course can also be affected by teachers' teaching concept, innovative ideas and technology application capability as well as students' understanding and mastering of the teaching media. There is still plenty of room for both teachers and students to improve their media literacy. Besides, there are still some problems need to be solved, such as how to reduce the negative influences of the platform in order to give better play to the role of Moso teach in students' independent learning and in-depth learning and how to better combine the qualitative evaluation with the descriptive evaluation. All of these still require our further and specific study and they are also the directions for future exploration and reform of ideological and political course.

Fund Project. Sanya Aviation & Tourism College Subject on "Research on Ideological and Political Education Mode Innovation in Higher Vocational Colleges under New Media Environment" (XY201806).

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