

Learning Platform Moderation: Research on Innovation of Online Action Learning Instruction

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Abstract: Conforming to the trend of digital economy, business schools actively deepen the instruction reform and promoted the "Internet+" Instruction mode. This study focuses on the influence mechanism of "online action learning" instruction mode on college students' personal initiative, and uses the relevant concepts of information system success model and mental maturity theory for reference, to study the influence relationship among the four variables: learning platform quality, online action learning, college students' mental maturity and college students' personal initiative. By randomly selecting 421 college students to conduct a survey, data statistics and effect verification were also conducted, further analyzed the mechanism among the variables. In a word, under the influence of students' mental maturity and learning platform quality, online action learning can have a positive impact on college students' personal initiative.

1 INTRODUCTION

For colleges, online instruction research focuses more on the construction and effective use of information platforms, while the adult characteristics of college students are relatively less involved. The traditional view is that only the behavior of students who are educated in formal learning places like schools can be called learning. In fact, college students are adults like college lecturers, should be defined as a group that can complete self-study with the help of advanced IT instruction models (Li, 2021). Especially in the digital economy environment, adult learning often takes place in informal places, such as online communities or virtual communities (Wang, 2020). This research believes that online action learning is an important strategy to improve college students' lifelong learning ability, and discusses the necessity and applicability of online action learning instruction mode from the theoretical level, demonstrates how online action learning can promote college students' personal initiative, and studies the mediation effect of college students' mental maturity and the moderation role of college learning platform quality. (Li, 2021; Wang, 2020)

2 THE BASIC THEORY

2.1 The Platform Quality

The concept of platform quality can be traced back to the theory of information system success model. This model firstly studies the influence of information quality, as shown in Figure 1, system quality and service quality on users' usage intention and customer satisfaction, and then further studies the effect of this influence on net income, so as to find the path to optimize the information system (Cao, 2021).

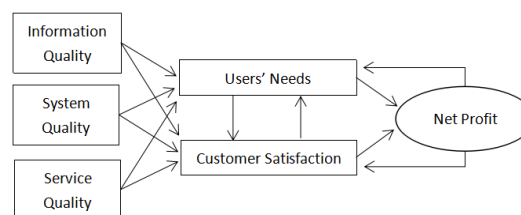


Figure 1: Information System Success Model (Cao, 2021) [Owner-draw]

The information provided in the online live teaching platform is mostly resources related to teaching and subject knowledge. Therefore, in the information system of live teaching, it is more effective to define

information quality as resource quality. Service quality refers to the user's evaluation of the service obtained from the information system, including the responsiveness, accuracy, technical ability, etc. of the service. Satisfaction is "the impact of users' actual use of information systems". The intention to use refers to the evaluation of users' actual behavior in using the information system. As online live teaching is a mandatory learning alternative to offline courses, it is weak in the online live teaching platform, so this paper does not consider it as a variable. The key link of distance learning is knowledge sharing, which can be seen as an information system use behavior. Net income mainly refers to the benefit evaluation of users using the information system (Cao, 2021; Bock G W, 2009). The online live teaching platform system empirically analyzed in this study was closely related to the learning ability of college students. The improvement of the learning ability of users after using the live teaching platform is called "net income". Moreover, based on the three factors of system quality, resource quality and service quality of the "information system success model", combined with the characteristics of the online live teaching platform, the platform quality measurement factors were constructed, and the 5 point Likert scale was used for measurement.

2.2 Online Action Learning

The concept of action learning originates from management science. It was first proposed and developed by the British scholar Revans. R in the middle of the 20th century. He applied this method to develop organizational business, improve and solve problems encountered. It is a form of organizational learning. The so-called online action learning, just as its name implies, is the action learning carried out on the network, which is the combination of online learning and action learning (Li 2021, Wang 2020, Bock 2009, Jiang 2021). With the in-depth development of information technology in the "Internet+" era, the network has become an important tool for human learning and cognitive activities. Online learning based on the network has been welcomed by teachers, lecturers and education institutions for its immediacy, openness, flexibility and other characteristics, and has been widely used in various lecturer training projects (Li, 2021; Wang, 2020).

Online action learning is a learning method emerging with the continuous combination of information technology and adult learning. It is an online and timely ability building process, and also a way for

learners to use online technology to implement specific action plans to solve practical work problems and learn from them. In other words, online action learning is action learning carried out through the Internet, and the network is the carrier of its learning activities. Teachers' online action learning not only has the advantages of rapid updating and strong flexibility of online learning knowledge, but also has the characteristics of practical, reflective, cooperative and cyclical action learning (Li 2021, Wang 2020, Bock 2009, Jiang 2021). The lecturer professional development project designed by the concept of online action learning embodies lecturers' individual reflection and collective wisdom, and reflects the combination of individual progress and organizational development. Based on the theory of action learning, this research measures online action learning instruction from four aspects: learning resource deployment, group learning, questioning and reflection, and guidance and catalysis. The 5 point Likert scale was used for measurement.

2.3 Personal Initiative

Personal initiative is expected to be an effective behavior model for individuals and organizations to cope with fierce competition, and is an important area for organizations to focus on in the future (Gao 2018). Based on the research of Free et al., (1994), this paper believes that: The rapid development of science and technology in the 21st century, the ever-changing dynamic environment, the new concept of organization, and the new changes in the concept of work all make the workers in it more and more need to adapt to and tolerate this unstructured uncertainty. Therefore, the concept of personal initiative, characterized by positive work attitude and active work behavior, has gradually become an important concept of work performance in the 21st century. Based on "the Personal Initiative Self statement Reporting Scale" compiled by Free et al., (1997), this study emphasized four aspects of college students' initiative behavior: initiative, spontaneity, perform and endurance. The 5 point Likert scale was used for measurement. (Gao 2018, Frese 1994, Frese 1997)

2.4 Mental Maturity

Chris Argyris (1957), an American organizational behaviorist, believes that a person's maturity is actually the degree of responsibility he is willing to take for his own behavior, which includes two core elements, namely, job maturity and mental maturity (Chris 1957). Mental maturity refers to the willingness and

motivation of an individual to make a certain behavior. If an individual cannot consciously complete a certain behavior, it means that the person's mental maturity is low. On the contrary, it is higher (Zhang 2000). Generally speaking, it is a transformation process from passive to active, from dependence to independence, and from short-sighted to far-sighted. Many domestic scholars have carried out in-depth research on mental maturity, among which Zhang Li believes that mental maturity belongs to the socialization process of individuals, that is, through the training and accumulation of acquired social life, individuals will gradually form a process of stable psychological quality that can meet the needs of social life. The structure of mental maturity includes cognitive maturity, consciousness maturity, emotional maturity, self-consciousness maturity and personality maturity (Zhang 2000, Chen 2009). With reference to the research results of domestic and foreign experts mentioned above, combined with the basic data of the sample survey of undergraduate college students, this study summarized the mental maturity of college students into four levels: self cognition, psychological endurance, independence and inclusiveness, The 5 point Likert scale was used for measurement.

3 RESEARCH HYPOTHESIS

3.1 Online Action Learning and Personal Initiative

The impact of online action learning instruction on students' personal initiative can be reflected in two aspects: (1) The school's behavior of building an online course platform is a practice of action learning, which provides students with the required teaching resources and teaching environment. Taylor et al., proposed that action learning can be based on the needs of the organization itself to form a personalized social support network, which plays a positive role in the modular cross school integration and innovation of resources. Specific to the instruction practice process, online action learning can help them build a new framework for knowledge output in SPOC teaching design and environmental preparation (Li 2021, Wang 2020, Bock 2009, Jiang 2021). (2) The instruction process of online action learning is the process of developing students' learning habits. Lump-Kim pointed out that action learning can create a more efficient, transparent and open knowledge system, rapidly improve the efficiency of organizational resource management, and stimulate students' knowledge inte-

gration behavior on the basis of knowledge internalization (Bock 2009, Jiang 2021, Gao 2018, Zhang 2010). Therefore, online action learning behavior can gradually build a flexible curriculum system and deeply mine learning data. Thus, the following assumptions are proposed: **H1**. The application of "online action learning" helps to improve the personal initiative of college students in the daily learning process.

3.2 Online Action Learning and Mental Maturity

Online action learning instruction, through course alliances and course platforms, introduces heterogeneous resources between schools and within schools, and deals with students' basic knowledge in advance. It moves classroom learning from shallow to deep. It is a cross-school resource management activity. It is not only a simple combination of resources, but also a instruction method that contains the dual characteristics of exploratory innovation and utilization innovation. In the process of cross-school resource integration, lecturers' learning and transformation of resources will help to create new knowledge. Secondly, online action learning can improve the novelty of teaching materials. In the process of general and basic curriculum teaching, teachers often fall into the dilemma of solidification of teaching thinking, and it is difficult to innovate the teaching content only by innovating the teaching form. The online action learning classroom is different. As the main body of cross domain integration of learning resources, students can build new teaching content across industries and fields through the existing online learning platform, improve the novelty of teaching innovation, and improve students' knowledge mastering speed and learning ability. The mental maturity of college students can be summarized into four levels: self cognition, psychological endurance, independence and inclusiveness. Finally, online action learning classroom teaching can improve the construction speed of new undergraduate courses. However, online action learning teaching can use the dual innovation ability modular reorganization of internal and external solutions to help students quickly obtain the material and technical resources needed for learning, improve learning speed, and then make a breakthrough in students' dual learning ability (Li 2021; Wang 2020, Chris 1957, Chen 2009, Zhang 2010). Therefore, this study proposes the following assumptions: **H2**. online action learning is conducive to the mental maturity and healthy development of college students.

3.3 Mental Maturity and Personal Initiative

Personal initiative is not only the behavior of knowledge acquirers to seek knowledge, but also the behavior of knowledge providers to transfer and teach knowledge. Therefore, in online teaching, lecturers impart knowledge to students and improve their learning ability, which is also a psychological interaction behavior. Through the openness and flow of knowledge, students can realize the improvement of psychological interaction and cognitive ability in the systematic process of knowledge transfer, utilization and feedback. Online live teaching class is similar to offline class. It takes a small class group as a unit. Individuals who like group work are more likely to interact and share information frequently. This online teaching with students' cooperative learning as the core content is conducive to cultivating students' abilities of autonomous learning, communication and expression (Gao 2018, Fres 1994, Chris 1957, Chen, 2009, Zhang 2010). It can be seen that the mental maturity of college students is closely related to the initiative of individuals. In teaching reform, we should respect the psychological characteristics of students and create a good management environment in order to truly realize the independent management of students. Based on this, this study puts forward the following hypothesis: **H3**. the mental maturity of college students is helpful to improve the personal initiative of college students.

3.4 The Mediating Role of Mental Maturity

The mental maturity of college students is an essential factor for college instruction to gain competitive advantage. When mobilizing students to participate in classroom teaching activities, the ability to handle, understand and use information is as important as the ability to deal with problems on the spot. Undoubtedly, effective mental sharing behavior can not only help to form a strong learning atmosphere, but also promote students' autonomous and spontaneous participation behavior. When students' experience and skills are shared in the classroom, it creates an opportunity for interactive learning, thus stimulating the best learning practice, reducing the cost of ineffective learning, helping to create and update knowledge at the individual and team levels, and ultimately improving the effectiveness of teaching. In addition, the undergraduate colleges are implementing the national education concept of educating all the students. While paying attention to the improvement of students' skill

level, they pay more attention to the improvement of students' humanistic quality and mental health (Chris 1957, Zhang 2000, Chen 2009, Zhang 2010). In particular, in the context of the digital economy, it is believed that through the efforts of schools and families, the mental maturity of college students will gradually improve, so that they have a strong tolerance and adjustment ability to maintain a relative psychological balance, and promote the mental health and all-round development of students. Thus, this study proposes the following hypothesis: **H4**. the mental maturity of college students plays a mediating role between online action learning and personal initiative of college students.

3.5 The Moderation of Platform Quality

Platform support refers to the platform interface design and platform function design that support learners to interact with deep knowledge, it enables learners to have a good user experience, meets the learners' search and communication needs, and further makes learners perceive fewer barriers to in-depth knowledge interaction. When users feel that the platform is very easy to use and do not need to waste too much time to learn how to use it, they will think they can use the platform well and improve their sense of self-efficacy. And only when community members feel it is very convenient to participate in the online community, they are willing to communicate in the community. It can be found that platform support affects learners' views on the difficulty of deep knowledge interaction (Cao 2021, Chris 1957, Zhang, 2010). Thus, this study proposes the following hypothesis: **H5**. the quality of learning platform plays a moderating role between action learning teaching and students' mental maturity.

The stable and smooth quality of the platform directly promotes the development of learners' own knowledge and ability through in-depth discussion with other community members. In the online learning community, in order to acquire knowledge in the process of communication and discussion with community members, those learners with stronger motivation for knowledge often actively post. These learners will negotiate with others in the process of communication and discussion until they reach an agreement, verify the views again and transfer the new views. The negotiation, examination and application of views are all in the category of deep knowledge interaction, so it can be found that learners with self-development expectations will think that deep knowledge interaction is valuable (Cao 2021, Gao

2018, Chris 1957, Zhang 2000, Zhang 2010). Therefore, the following hypothesis is proposed: **H6**. the quality of learning platform plays a moderating role between college students' mental maturity and active behavior.

4 VERRIFICATION OF INTERNAL MECHANISM

4.1 Variable Preparation and Data Processing

This survey controls the gender, age, and expected earnings that may affect the relationship between online action learning, mental maturity, and active behavior. Therefore, the potential variables are online action learning, mental maturity, personal initiative and platform quality, among which mental maturity is the intermediary variable. Platform quality, gender, age, and expected revenue are moderating variables, as shown in Figure 2. In terms of data processing, anonymous survey method was used to distribute 421 questionnaires to students in business colleges of Guizhou Province, including 324 valid ones, with a recovery rate of 64.16%.

According to the 324 valid questionnaires collected, the average age of students is 21, including 178 males and 146 females. SPSS18.0 statistical software package and amos7.0 software were used to test the reliability of the processed sample data. The results showed that Cronbach's a coefficients of all variables were greater than the critical value of 0.7, and the revised item population correlation coefficient (CITC) was much greater than 0.35. Cronbach's a coefficient of all items after deleting the item is smaller than the total a coefficient of the subscale, which means that all items have good internal consistency and should be retained. Each variable table passed KMO sample measure and Bartlett sphere test, which is suitable for further factor analysis.

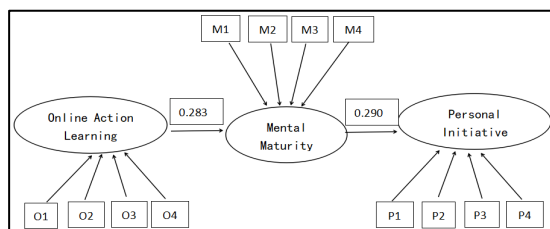


Figure 2. The Final Structural Equation Model [Owner-draw]

4.2 The Empirical Test

(1) Online action learning improves the test of personal initiative. According to the requirements of the conceptual model, Mplus7.1 software is used to establish the initial structural equation model based on the overall sample, import the data for fitting, and get the fitting results of the initial model shown in Table 1: the chi square degree of freedom ratio of the initial model fitting is 2.473, less than 3; The RMSEA value is 0.071, less than 0.08; The values of CFI, GFI, AGFI, NFI and NNFI are all higher than 0.9. The overall fitting effect of the model is good, but the fitting coefficient is only 0.014, which is not very significant in the economic sense. H1 has not been effectively verified. Online action learning cannot improve the ability of personal initiative. Whether this conclusion is scientific needs further verification.

(2) The mediating effect test of mental maturity. From the analysis of the model, we can see that the structural equation model excludes the influence among many variables, such as the intermediary influence of mental maturity, such as the adjustment of the quality of learning platform, and the adjustment of age and gender. Therefore, the structural equation model needs to be modified locally. In order to find the optimal structural equation model graph, after repeated comparison and local verification, it is found that the goodness of fit of the model is the best when mental maturity is added as the intermediary variable in the initial structural equation model graph.

(3) As shown in Figure 1, there are two significant variables, namely, "mental maturity ← online action learning" ($\beta = 0.283, p < 0.01$), "active behavior ← mental maturity" ($\beta = 0.290, p < 0.01$). The normalized path coefficients in the figure are significantly positive, indicating that the variables represented by these paths have a significant positive impact relationship. Use Bootstrap program to test the significance of mediation effect. The results in Table 1 show that the 95% confidence interval of the influence path does not contain zero, which means that there is a significant intermediary effect between mental maturity, online action learning and active behavior. It can be seen from this that H1, H2, H3 and H4 have been proved, that is, H2: online action learning significantly improves mental maturity, H3: mental maturity significantly improves personal initiative, and H4: mental maturity has a mediating effect between online action learning and students' personal initiative has been verified. Based on the above three assumptions, H1: online action learning improves personal initiative ability.

(4) The moderating effect of learning platform quality, age, gender and expected income on online action learning, mental maturity and active behavior interaction. Structural equation model was used to test the moderating effects of learning platform quality, age, gender and expected income. According to the median of learning platform quality, age, gender and expected income, the students were divided into four scales, and each scale was divided into two subsamples according to the score. The path coefficients of the two subsamples were estimated by the structural equation model for each group, and the joint t-test formula was used to test the moderating effect (see Table 1).

There are significant differences between the path coefficients of low-quality samples. Since the Z-value of the joint t-test is all positive, it means that the quality of learning platform will significantly positively regulate the relationship between online action learning, mental maturity and active behavior. From the

empirical results, it can be found that the high quality of learning platform will promote the path coefficient of “online action learning → mental maturity” and “mental maturity → personal initiative”, so that the path coefficient of online action learning → active behavior of high quality learning platform is significantly higher than the coefficient of low quality learning platform.

There are significant differences between the path coefficients of the male sample and the female sample. Since the Z-value of the joint t-test is all positive, it means that gender significantly positively moderates the relationship between online action learning, mental maturity, and active behavior. From the empirical results, it can be found that the path coefficients of online action learning → mental maturity and mental maturity → personal initiative of boys are significantly higher than those of girls, so that the personal initiative induced by online action learning of boys is significantly better than that of girls.

Table 1. Test Results of Moderating Effect

Route	High quality of learning platform Standard coefficient	Low quality of learning platform Standard coefficient	Joint T-test	Male student Standard coefficient	Female student Standard coefficient	Joint T-test	Senior grade Standard coefficient	Junior grade Standard coefficient	Joint T-test	High threshold of expected income Standard coefficient	Low threshold of expected income Standard coefficient	Joint T-test
Online Action Learning → Mental Maturity	0.351**	0.120**	3.158*	0.317*	0.253*	0.643*	0.303*	0.104*	-6.417*	0.197**	0.371**	5.001*
Mental Maturity → Personal Initiative	0.330**	0.153**	4.038*	0.286*	0.257*	0.014*	0.293*	0.113*	-5.938*	0.114**	0.251**	3.981*
Online Action Learning → Personal Initiative	0.11583	0.01836	2.577*	0.090662	0.065021	0.027*	0.011752	0.088779	-5.718*	0.093121	0.022458	4.624*

(Note: ** and * represent the significance level of 5% and 10%, respectively)

There are significant differences between the path coefficients of the upper grade sample and the lower grade sample. Since the Z-value of the joint t-test is all positive, it means that age significantly positively moderates the relationship between online action

learning, mental maturity, and active behavior. From the empirical results, it can be found that the path coefficients of online action learning → mental maturity and mental maturity → personal initiative of senior students are significantly higher than those of junior

students, so that the personal initiative induced by online action learning of senior students is significantly better than that of junior students.

In the sample with low expected return standard, there is a significant difference between the coefficients of each path and those of the sample with high expected return standard. Since the Z values of the joint T-test are all positive, this means that the expected return criterion will significantly and positively adjust the relationship between online action learning, mental maturity and personal initiative. From the empirical results, it can be found that a low standard of expected return will promote the path coefficient of online action learning → mental maturity, mental maturity → personal initiative, thus making the path coefficient of online action learning → active behavior with a low standard of expected return significantly higher than that with a high standard of expected return.

5 CONCLUSION

This report is the result of the "2022 School-enterprise Integrated Education Project of the Ministry of Education: Exploration and Research on the New Business School Enterprise Integration Instruction Mode in the Digital Economy" and the "Reform project of the teaching content and curriculum system of Guizhou's colleges: ecological civilization oriented teaching reform of basic courses of economics and management (No. 2022222)". By analyzing the process of online action learning instruction innovation and empirically testing the influence relationship and specific mechanism between the four variables of learning platform quality, online action learning, students' mental maturity and personal initiative, this study believes that online action learning is a very effective instruction model to improve college students' lifelong learning ability. The undergraduate business school actively improves learning platform quality and promotes the online action learning instruction mode, which can promote the mental growth of college students and have a positive impact on the personal initiative of college students.

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