Pursuing Effective Facilitating Strategies: The Effect of Facilitator's Leadership Behaviors on Online Learning

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Abstract: Based on various research of online teaching and learning, this study is aimed to establish a behavior system for facilitation in online learning based on a leadership theory – the Ohio State Leadership Studies – which classifies leadership behaviors into Consideration and Initiation of Structure. To test the effectiveness and adaptability of the behavior system in online education, we conducted a mixed-method study in an online teacher education program, combining case study and several quantitative techniques. We conclude that the leadership theory is adaptive to the study of online facilitation, and facilitating leadership behaviors in our system is significantly correlated to learning satisfaction, while its effect on engagement and perceived learning is not proved. This study might shed light on both designing online teacher education programs and preparing teachers or facilitators for online education.

Introduction

Online education has become the emphasis of educational development strategies and decision-making across the globe since the beginning of the 21st century. Many countries have endeavored to promote the development of online education, and international corporations in this area are subsequently booming.

Instructional interaction, which is regarded as a critical factor that contributes to the success of online instruction (Picciano, 2002), includes exchanges between students and the teacher, dialogues among students, and interaction between students and materials (Moore & Kearsley, 1996). Thanks to an overall improvement on the quantity and quality of instructional interaction, the reputation of online education got improved in recent years. An increasing number of studies indicate that, in comparison with the face-to-face education, online education can provide learners with learning contents of the same quality (Allen et al., 2002; Berenard et al., 2004; Reisetter et al., 2007) and equally satisfactory learning experience (Allen et al., 2002). Furthermore, some studies found that online education could help learners achieve even higher objectives (Billings et al., 2001; Reisetter et al., 2007) and provide learners with richer learning experience than face-to-face education (Mahesh & McIsaac, 1999; Mikulecky, 1998). Therefore, in order to improve the quality of online learning, it is of great importance to take full advantage of online environments to bring about abundant meaningful interaction in the process of teaching and learning.

So then, how could instructional interaction promote online learning? From what aspects could we improve instructional interaction? More specifically, as a crucial part of online instructional interaction as suggested by Moore and Kearsley's (1996) theory, what role should online educators play in enriching instructional interaction? This study will pursue possible endeavors of online instructors that have the potential to promote online learning.

Literature Review

Facilitating online learning

In the traditional classroom environment, instructors are regarded as content experts, knowledge disseminator, and the primary or unique evaluators of learning; each classroom, as an independent instructional unit, is the place where interaction happens (Kearsley, 2000). Learning content is usually linearly organized by instructors, and all students in a class will receive the same instruction with the uniform sequence in the same environment (Dabbagh, 1996).

In online learning, interaction supported by information and communication technology (ICT) is quite different from that in the face-to-face setting. New ways of interaction and discourse benefited from innovations of technology render online learning an increasingly social process (Dabbagh & Bannan-Ritland, 2005). Accordingly, community is more and more recognized as a significant factor that has impact on the success of learners (Concrad, 2005). In light of the community perspective, knowledge does not belong to any individual, but is distributed in a learning community (Scardamalia & Bereiter, 2003; Firdyiwek, 1999); the acquisition of knowledge is not through implantation or transmission, but is a result of enculturation. Knowledge is continually built in the learning process, and will represent new meanings in specific activities and environments (Brown, Collins, & Dugrud, 1989). Thus, the relationship in instruction and learning has changed dramatically from traditional classroom setting to online environment, and it calls for a change of the role of learner and instructor.

As a result of these changes, the responsibility and role of instructors in online learning has also evolved (Schofield, Melville, Bennet & Walsh, 2001). Dabbagh and Bannan-Ritland (2005) argue that the role of teacher in online learning had turned into scaffold constructor, participant, facilitator or coach of learning, and the teacher is no longer the knowledge authority and the center of learning activities, but becomes a sort of resource for learners. Collison and colleagues (2000) regard the teaching style of "guide on the side" to be more appropriate than the "sage on the stage" style in traditional instruction. They argue that, in online learning, the role of a guide could help students acquire a responsible attitude towards learning, and consequently maximize what they learn. From these arguments, the dynamics of teaching in online environment is distinct from that in traditional setting, and this makes "facilitator" (or moderator) a better title for instructors in the asynchronous and separated circumstance of online learning.

There is a lot of research on this transition of the role of instructors or, put it a new way, facilitators in online learning. Researchers are trying to define the new knowledge and skills that are needed by facilitators to adapt to the new role. Some research divided online facilitation into clear practical steps to help defining tasks, in order to summarize practical strategies and techniques that bring about good facilitation. Based on an analysis of distance education literature, Thach and Murphy (1995) identified the top ten competencies of distance education professionals in the US and Canada through a modified two-round Delphi process. Building on the division of instructional labor in distance education, Chen (2004) proposed and analyzed the competencies of lecturer and facilitators in this setting. To summarize, these competencies identified by researchers are based on literature and experiential perspectives in distance education, so they could be helpful in drawing a rough roadmap for facilitator training. However, in the absence of empirical studies, we know little about the effectiveness and inclusiveness of these competencies.

Youngblood et al. (2001) developed a list of 12 specific facilitator tasks from literature review, and identified four major themes in online facilitation: setting the scene, monitoring participation, facilitating critical thinking, and encouraging student collaboration. Gilly Salmon (2000) discussed different e-moderating skills in her "5 stage model", which carries description of facilitation tasks in each stage. Collison and colleagues (2000) from the Concord Consortium introduced principles, roles of facilitator, voice, tone, and critical thinking strategies in online facilitation in their book. Hanna et al. (2000) put forward 147 practical tips for teaching online groups according to the sequence of online facilitation. In summary, studies mentioned above are very practical – all task-oriented and sequence-based, so they will be meaningful for online facilitation in terms of concrete facilitating tasks and stages. However, there is a need for a theory, from other disciplines maybe, to organize these tasks or tips, in order to make them integral and structured. In addition, just like the studies by Thach, Murphy and Chen, no empirical evidence is presented to support the effectiveness of these facilitation tasks and tips.

Behavioral Leadership Theory

Leadership theories might be legitimate candidates for such a theory in need to organize online facilitating

praxis. Research interest in leadership arose at the beginning of the twentieth century and experienced a boom at the middle of the 20th century. Several important leadership theories, including Trait theories, Behavioral theories, Contingency theory, Situational theories, and Transformational theories, emerged and were applied in various settings (e.g. enterprise, schools, academia, army and governmental agencies).

What is the validity to introduce leadership theories into the study of online facilitation? First of all, leadership is a vital component in the job of online facilitators in essence. Classical leadership theories demonstrate that leadership's essential function is to produce adaptive and useful change (Kotter, 1990). In online learning, facilitators are expected to help learners make change towards learning targets. They moderate the learning process, motivating learners, organizing learning activities, examining learning status, keeping learners on the track, and providing guidance and assistance for learners. Accordingly, they are undertaking the role of leader in most circumstances. Secondly, leadership in online environments is not an absolutely untapped area; quite the opposite, leadership becomes an important perspective to look at online dynamics. Bock et al. (2008) investigated the critical role of leaders in motivating the members of virtual communities. They found a significant influence of two leadership styles – relationship-oriented leadership and task-oriented leadership – on the member's motivation. Research in online communities of practice, more specifically in open source communities, shows that leadership has a positive influence on member engagement (Kogut & Metiu, 2001). Therefore, a study of online facilitation from the perspective of leadership is not only valid, but quite promising.

Which leadership behavior is appropriate for the study of online learning? In comparison with the offline environment, the traits of leaders in online environments are manifested in a shorter-term relationship; this increases the difficulty for observation (Jarillo, 1993). So it is more feasible to focus on leadership behaviors rather than traits of leaders in online research.

Based on the argument above, this study introduces the Ohio State Leadership Studies (Hemphill, & Coons, 1957; Halpin, & Winer, 1957; Stogdill, 1963), one of the most influential behavioral leadership theories, into the pursuit of effective online facilitation. The Ohio State Leadership studies stemmed from a famous series of studies in Ohio State University, starting by Carroll Shartle in the 1950s. In the research process, John Hemphill and colleagues developed the Leader Behavior Description Questionnaire (LDBQ) to collect leadership behavior information from organizations. Based on massive empirical data accumulated in their research process, they found two critical characteristics – Consideration and Initiating Structure (later renamed to Initiation of Structure in 1962) – both of which could be high or low and were independent of one another. In the LBDQ 1957, they defined the two fundamental dimensions of leader behavior as following (Halpin, 1957):

> *Initiating Structure refers to the leader's behavior in delineating the relationship between himself and the members of his group, and in endeavoring to establish well-defined patterns of organization, channels of communication, and ways of getting the job done. Consideration refers to behavior indicative of friendship, mutual trust, respect, and warmth in relationship between the leader and members of the group.*

The LBDQ in 1957 included 40 items, 15 for each of the two dimensions and 10 unscored items. The LBDQ in 1962 (version XII) included 12 subscales and 100 items, respectively 10 items for Consideration and Initiation of Structure subscales, see [Table 1].

Table 1: Items of Consideration and Initiation of Structure subscales in the LBDQ 1962

Subscale	Items
Consideration	Is friendly and approachable
	Does little things to make it pleasant to be a member of the group
	Puts suggestions made by the group into operation
	Treats all group members as his/her equals
	Gives advance notice of changes
	Keeps to himself/herself
	Looks out for the personal welfare of group members
	Is willing to make changes
	Refuses to explain his/her actions
	Acts without consulting the group

Initiation of Structure	Lets group members know what is expected of them
	Encourages the use of uniform procedures
	Tries out his/her ideas in the group
	Makes his/her attitudes clear to the group
	Decides what shall be done and how it shall be done
	Assigns group members to particular tasks
	Makes sure that his/her part in the group is understood by the group members
	Schedules the work to be done
	Maintains definite standards of performance
	Asks that group members follow standard rules and regulations

Based on a literature study on online facilitation, this study will build a facilitating behavior system with referring to the Ohio State leadership theory and its LBDQ items. Further, we will try to validate of regarding the leadership as the theoretical basis of the behavior system we build, and to examine the effectiveness of behaviors we include in the system.

Method

Participants

Data was collected from a national online teacher education program sponsored by the Ministry of Education in China. The curriculum, composed of nine sections which demand 50 hours to finish as planned, is based on case studies about ICT application in K-12 schools. Trainees, teachers from elementary or secondary schools, were required to finish each section in accordance with the training schedule.

The participants of this research are 7 facilitators and 157 learners from two classes of this training program. Among the facilitators, one is a professor of educational technology, one is a staff at an educational technology research center, one is a 3rd year master's student of educational technology, and the other four of them are online instructors from a school of distance education.

All 157 learners are teachers from elementary or secondary schools in two different provinces. In the quantitative study introduced in the following section, we got 126 valid responses. Among the respondents, 51.6% were female and 48.4% are female. All of the respondents had an educational background above associate degree, and 88.1% of them held bachelor degrees. 57.1% of them had a low or none technical title (below or equal to secondary level 2 in teaching).

Procedure

A mixed-method design was employed to pursue effective online facilitating behaviors in this research. This study is composed of three distinct phases.

Phase 1. A literature study was conducted to extract various online facilitating behaviors from extensive relevant journal articles and books. We itemized every possible behavior stated purposefully or unintentionally in literature. Extracted behaviors were then analyzed, classified, merged, and reorganized, and were then incorporated into a behavior system based on the Ohio State behavioral leadership theory and the LBDQ. The behavior system we established is made up of two primary categories (i.e. initiation of structure and consideration, encoded respectively as F_IS and F_C), 10 secondary categories (encoded as f1, f2, … f10; f1 ~ f6 are secondary to the primary category of initiation of structure while f7 ~ f10 belong to consideration), and 66 online facilitating behaviors.

Phase 2. A case study was applied in one of the online classes, to inspect the adaptivity, applicability and inclusiveness of the system established in the first phase. The methods of participant observation and qualitative analysis were used in the case study. Data were collected from multi sources in the training, including daily announcements, posts in the discussion board, reflections of learners, corresponding between learners and facilitators, interview to facilitators and randomly picked learners, and training system logs. We used NVivo 7 to analyze the data, and wrote a narrative description according to Stake's (1995) case study methods to describe the

setting, incidents, and process of the case, in order to reveal factors that influenced learning experience in this training program. Based on the case study, revisions and adjustments were made on the facilitation behavior system, where the questionnaire in the quantitative study in the next phase stems from.

Phase 3. A quantitative study was implemented to examine the effectiveness and theoretical validity of the revised facilitation behavior system. We applied a survey in two classes. This survey asked questions about learners' ethnological information, learning purposes, expectations, perception of leadership facilitation behaviors, trust on facilitators and degree of satisfaction for this training. Based on a bulk of research (Barab, Kling, & Gray, 2004; Gunawardena, 1995; Rourke et al., 2001; Collison et al., 2000; Salmon, 2000), purpose, expectation and trust were introduced into this study as moderating variables. Descriptive statistics, bivariate correlation analysis, partial correlation analysis and factor analysis were incorporated with SPSS 13.0 in the quantitative analysis process.

Results and Discussion

Did behaviors in the system happened in the case study?

One of the purposes of the case study in our research is to revise the facilitation leadership behavior system according to the happening of behaviors in a practical setting. In the case we studied, a series of behaviors happened frequently, e.g. tackling technical problems for learners, detecting and notifying learning progress, answering questions about learning content, facilitating online discussion, using emoticons in corresponding with learners, activating learning motivations, greeting learners, being considerate on learner difficulties, praising learners, etc. We could find direct evidence for almost all of those behaviors in the leadership facilitation behavior system. In turn, most of facilitation behaviors in the case study were included in the system. Therefore, the facilitation behavior system we established has reliable completeness and practicability.

However, we also found a few facilitating behaviors that were not included in the system, including making explanation on scores, appeasing learners in difficulty, admitting the inadequacy of facilitation, and appreciating learners; there were also some behaviors that seldom happened in the case but were mentioned in literature.

In light of findings in the case study, we revised the behavior system, adjusting the former version composed of 66 behaviors into a newer system made up of 45 behaviors. In the quantitative study, a test on the happening of behaviors was made by measuring learners' perception of facilitating behaviors in their learning. Descriptive statistics of results from the 45-item Likert scale reflected that 80% of 45 leadership facilitating behaviors were labeled as "Always" (> 4.0) by learners. Meanwhile, all those items got an average score below 4.0 were Consideration behaviors, and the standard deviations of Consideration behaviors are bigger than those of Initiation of Structure behaviors on the whole. That means facilitators in the study were using Initiation of Structure leadership behaviors in a more stable way than Consideration behaviors. Anyway, most behaviors in the system happened in the cases we investigated; the completeness and adaptivity of the behavior system are satisfying.

Is the Ohio State leadership theory applicable in studying online facilitation behaviors?

This study innovatively introduces leadership theories into the discussion of online facilitation. Is the leadership theory applicable to the study of online learning? More fundamentally, Can Consideration and Initiation of Structure be two underlying factors that constitute online facilitating behaviors? Although we argued that leadership is a vital component of online facilitation, it is still of significance to testify the theoretical soundness of introducing the Ohio State leadership theory into the research of online facilitation.

A factor analysis process was applied on the score of ten secondary categories in the facilitating behavior system. The KMO and Bartlett's test yields a KMO measure of 0.906 and a significance in the Bartlett's test ($\chi2(45)=760.9$, $p<0.001$), which indicates that this data set is suitable for factor analysis. The factor analysis extracted two factors that respectively account for 46.1% and 28.3% of the variance of facilitating behaviors, and therefore can well represent factors affecting facilitating behaviors. From the "Rotated Components Matrix" shown in [Table 2], we can see that factor one includes six variables and factor two includes four, and the two groups of variables are precisely mapping to the secondary categories of Initiation of Structure and Consideration.

Table 2: Rotated Component Matrix

	Component	
	1	2
f1	.785	
f2	.878	
f3	.833	
f4	.862	
f5	.824	
f6	.841	
f7		.724
f8		.894
f9		.643
f10		.702

The results are positive in endorsing the validity of introducing the Ohio State leadership theory into this research. Initiation of Structure and Consideration, which are two underlying dimensions in leadership behaviors, could also serve as two fundamental factors in online facilitation behavior, and they can be significantly differentiated from each other.

Are behaviors in the system effective in promoting online learning?

The case study revealed some evidence of the effectiveness of facilitating behaviors on learning. However, more detailed information about the effectiveness of behaviors was still needed. Learning satisfaction, learner engagement, and final scores were selected to be the outcome variables in evaluating the effectiveness of facilitating behaviors. A series of bivariate correlation analysis between facilitating behaviors and outcome variables yielded significant correlations ($p<0.01$) of all primary and secondary behavior categories with learning satisfaction, while the correlations with engagement and scores were not significant.

However, as mentioned earlier, learning purpose, expectation and trust are important factors that affect online learning. In order to remove the effects of these variables, a partial correlation analysis was applied. Table 3 presents the partial correlation between facilitating behavior categories and outcome variables after controlling the influence of three moderating variables, i.e. learning purpose, expectation and trust. Having moderating factors controlled, we still found significant correlations ($p<0.05$) between all Initiation of Structure behavior categories (f1 ~ f6 and F_IS) and learning satisfaction; however, except for the partial correlation of f8 (Having a good impression) and learner engagement, correlations of other Consideration behavior categories with outcome variables are all insignificant. Hence, the Initiation of Structure behaviors are more closely related with learning satisfaction than Consideration behaviors in this study. Therefore, hopefully Initiation of Structure behaviors are more effective for online learning in terms of achieving better learning satisfaction.

Table 3: Partial correlation between facilitating behavior categories and outcome variables

Control Variables	Behavior Categories	Satisfaction	Engagement	Score
purpose & expectation & trust	f1	**.207(*)**	.179	.014
	f2	**.216(*)**	.093	-.010
	f3	**.269(**)**	.023	-.111
	f4	**.233(*)**	.005	.045
	f5	**.324(**)**	-.005	-.065
	f6	**.235(**)**	-.007	-.087
	f7	.088	.044	-.044
	f8	.166	**.181(*)**	.117
	f9	.156	.066	-.140

	f10	.095	.016	-.084
	F_IS	**.317(**)**	.054	-.050
	F_C	.179	.087	-.101

**   Correlation is significant at the 0.01 level (2-tailed).
*   Correlation is significant at the 0.05 level (2-tailed).

The reason why the correlation between Consideration behaviors and learning satisfaction was lost after controlling factors including learning purpose, expectation and trust could be explained by the nature of behaviors themselves. Consideration is relationship-oriented behaviors, while Initiation of Structure is task-oriented, so the effects of Consideration behaviors on online learning are more likely to be intervened by factors related to people than those of Initiation of Structure behaviors. Besides, data from the case study indicated a great importance of Consideration behaviors in helping learners address their problems during online learning process. Thus, the loss of partial correlation could not utterly negate the effectiveness of Consideration behaviors.

Conclusion

In light of a need for richer theory and models in the study of online learning (Wise, Chang, Duffy, & Valle, 2004), this exploratory study introduced the Ohio State behavioral leadership theory into the discussion of online facilitation. The behavioral leadership theory is appropriate for the study of online facilitation; however, the facilitating behaviors mainly take effect on learning satisfaction, but have little influence on engagement and perceived learning. More specifically, the partial correlation analysis yield a significant correlation between Initiation of Structure behaviors and satisfaction, while the correlation between Consideration behaviors and all outcome variables are not significant. Based on the results of quantitative and qualitative studies, we further revised the facilitating behavior system into a final version. The facilitating behavior system we conclude will serve as a basis of our further inquiry of online facilitation in the future.

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