Does Cognitive Style Affect Bloggers' Attitude In An Online Learning Environment?

Zahra Shahsavar
shahsavarzahra@gmail.com
Universiti Putra Malaysia

Tan Bee Hoon
tanbh@fbmk.upm.edu.my
Universiti Putra Malaysia

Abstract

The prevalence of using blogs among college students has great impact in online communication. It is therefore important to identify how learners with different characteristics use this technology. This study examines if bloggers' cognitive styles particularly field-dependency affects students' attitudes toward blogs. The subjects were a class of undergraduate students enrolled in an obligatory course. The Group Embedded Figures Test was administered which classified them as either field dependent or field independent. Then, they were requested to respond to a questionnaire designed to assess their attitudes toward blogs on three factors: blog anxiety, blog desirability, and blog self-efficacy. Although field-dependents had lower blog anxiety, blog desirability, and blog self-efficacy than field-independents in using blogs, the difference was not statistically significant. Moreover, conclusions drawn from the interview questions support the notion that both field dependents and field independents appeared to have positive attitudes towards using blogs in a learning environment.

Keywords: blog, bloggers' attitudes, bloggers' field dependency, online discussion.

Introduction

Nowadays, student technology preferences are not limited to a particular instructional tool. They are willing to use new technologies to collaborate in various channels of communication (Saeed, Yang & Sinnappan, 2009). Despite teachers' vague idea about teaching through technology and finding blogs a little risky and fearful, the rapid development of blogs in education is considerable (Martindale & Wiley, 2005). Blog is a technological tool that offers opportunities for users to organize information, post and share ideas, get feedback, give comments, evaluate others' posting, learn from others, take responsibility for their learning, and externalize their thoughts in writing (Wang & Woo, 2008).

Compared to other Web 2.0 tools like Facebook, wikis, and podcasts, blogs offer particular pedagogical affordances in teaching and learning environment. For instance, the blogs can encourage users to express themselves by posting on the Web such as weekly journal writing. In addition, blogs can be used as a platform to solicit ideas and

receive comments from others that may improve interaction and reflective and critical thinking. Therefore, when students use blogs as individuals, they have full control and ownership of the content. When they use blogs to collaborate with others, they work interactively. In either case, blogs give students increased flexibility (Wang & Woo, 2010). Blogs elicit interactivity to create a two-way communication between students or between students and the instructor to complete a task or to maintain a social relationship (Wang, Woo & Zhao, 2009). These interactions expose learners to authentic uses of the target language which can inspire and challenge them in ways that classroom experiences cannot (Campbell, 2005). However, to ensure effective application of blogs as an on-line learning tool, students' cognitive styles and technology preferences should be considered as two determinant elements (Saeed et al., 2009); if learners receive information that is inappropriate to their cognitive styles, learning performance is likely to be diminished (Riding & Sadler-Smith, 1997; Ke, Kwakkelaarb, Taic & Chenc, 2002).

This paper examines if there is a significant difference between individual cognitive styles and their attitudes towards blogs in asynchronous discussion forums.

Individual Differences and Online Learning

Learning style

Technological tools such as blogs are not likely to be equally effective for all learners. Learners do not learn different skills in the same way and do not show the same properties in their learning (Chen, 2010). One of the most significant factors that can influence learning processes and learners' performance is learning style that considers different learners' characteristics: cognitive, affective, and psychological behaviors. These characteristics are defined as nearly stable indicators that show learners' perceptions, interactions and responses to learning environments (Keefe, 1979). In view of this need, several learning style models have been developed: Kolb's Learning Styles, Dunn and Dunn Learning Styles, Grasha-Reichman Learning Styles, Gregorc Learning Styles (Saeed et al., 2009), and Myers-Briggs Type Indicator (Felder & Brent, 2005).

Literature shows that the most common learning theory in allied with information technology (IT) is Felder's learning model (Felder & Brent, 2005). In this vein, Saeed et al. (2009) used the Felder model to explore the impact of students' learning style on their preferences of using emerging web technologies: blackboards, blogs, emails, podcasts, vodcasts, and wikis. This model measures four learning style dimensions: active–reflective, sensing–intuitive, visual–verbal, and sequential–global. Active learners tend to retain and understand information actively; they enjoy group work such as discussing or explaining information to others while reflective learners prefer thinking about information and working alone. Sensor learners are defined as those who are more cautious of learning facts and solving problems; they like courses that are related to the real world. On the other hand, intuitive learners are defined as learners who are always ready to grasp novel ideas and invent new things. They prefer theories and mathematical models rather than memorizing facts and doing hands-on procedures; they tend to

discover possibilities and relationships. Visual learners are good at remembering visual things: films, pictures, diagrams, flow charts, and demonstrations whilst verbal learners get more out of words and prefer written and spoken explanations. Sequential learners prefer to gain understanding from linear steps by following each step progressively while global learners prefer to absorb materials almost randomly without considering connections; they tend to solve complicated problems and get answers by learning in large jumps without being able to explain how they did it (Felder & Silverman, 1988).

In the Felder and Silverman's study (1988), 204 students of Bachelor and Master of IT participated in a web programming course. Most students seemed to be familiar with IT and web-based e-learning technologies. The results indicate that podcasts, vodcasts, emails, and blogs were the preferred technologies for sequential, visual, sensing and intuitive learners respectively. The findings also suggest that student technology preferences are not limited to a particular instructional tool; they are flexible enough to experience different web technologies without sticking to a particular tool.

Cognitive style and field dependency

"Cognitive style is frequently included under the umbrella term learning style" (Riding & Sadler-Smith, 1997, p.200). Many researchers such as Altun and Cakan (2006) and Messick (1984) believe that cognitive style is more effective, constant, and deep rooted than learning style in students' academic achievements. Research also supports that learners' cognitive style satisfaction is the key role in an online learning environment. Therefore, identifying learner variables which affect learning behaviors has been considered the main area in an online learning environment (Oh & Lim, 2005). Within this area, one of the long-standing debates is the distinction between field dependent (FD) and field independent (FI) individuals in an online learning environment (Chen & Macredie, 2004; Brown et al., 2009).

Field dependency refers to the way people perceive and memorize information. As such, FD and FI are not considered two different types of people, but rather individuals who prefer a particular learning style which is almost stable during time. Generally FIs tend to be more autonomous, competitive, self-reliance and inner-directed (Witkin, Oltman, Raskin & Karp, 1971; Brown, 2007). They are more sensible in learning, relying on internal references, global-directed and self-confident (Chen & Macredie, 2004). Besides, they are better at solving cognitive problems analytically (Witkin & Goodenough, 1981).

Conversely, FDs have global perception which enables them to perceive objects as a whole and solve cognitive problems globally (Witkin et al., 1971). They learn better in an informal environment relying on more external references, and they prefer guided navigation (Chen & Macredie, 2004). That is, they prefer situations where learning is analyzed and structured for them. They pay more attention to social cues and they are better at getting along with other people. Thus, they tend to be more sociable, insistent and perceptive of others' feeling and thoughts (Brown, 2007), and they can easily recall social information like conversation and relationship (Altun & Cakan, 2006, p.290).

Some studies have demonstrated that learners with particular learning styles performed better than others (Swan, 2004). Cameron and Treagust, (1997) and Richardson (1998) claim that FI learners perform better than FDs in an online learning environment; they like non-linear programs more that allow them to explore topics related to their interest. In contrast, FDs are interested in following linear programs that allow them to follow the planned learning process in an online learning environment. In other words, as online learning methods are self-guided, FI learners tend to be more successful in seeking and organizing information in this learning environment compared to FDs who follow the indirect instruction (Chen & Macredie, 2004; Chen, 2010). This positively supports the perspective that FDs are not able to adjust themselves to the online learning environment as well as FIs (Oh & Lim, 2005; Chen & Macredie, 2004). FDs are not likely to succeed in distinguishing and reproducing information, distinguishing important clues and organizing information in an online environment as FIs are. Furthermore, it is mentioned that FIs are better than FDs in online courses because they are more successful in setting their own learning path (Chen, 2010). In addition, in a study carried out at the Florida University, the researchers indicate that most students who dropped out of online classes were FDs who need more approval than FIs who can control their learning. As such, learners' characteristics should be taken into consideration in online classes (Swan, 2004).

Individual differences and attitudes toward online learning

Defining attitude has been a perennial problem because of its construct. Attitude is a "mental and neural state of readiness, organized through experience, exerting a directive or dynamic influence upon the individual's response to all objects and situations with which it is related" (Allport, 1935, p.27). It is generally regarded as a learner's way of thinking positively or negatively (Lopper, 2006). Positive attitudes enhance learners' motivation to learn (Atef Al-Tamimi & Munir Shuib, 2009) and retain information in particular circumstances while negative attitudes may result in resisting learning (Duda & Garrett, 2008). Therefore, in an on-line learning environment, learners' positive or negative feeling towards online tools will influence their behavior in using those tools (Zan & Martino, 2007).

Literature shows contradictory results on FDs and FIs' attitudes toward online learning. Some studies such as Saracho (1998) claim that FI learners have more positive attitudes toward online learning than FDs. This view is supported by Chen and Macredie (2004). In this study, two groups of students took part in an online learning course. The result indicates that FIs were better and more interested in an online learning environment than FDs. However, another research claim is directly contrary to Chen and Macredie's (2004) research. It shows the relationship between 143 undergraduate students' field dependency and their attitudes toward using computer. The result reveals that FD students were more eager in using computers than FIs to pick up in-depth information, and they preferred to use the present material that had been organized in lieu of organizing it again (Abouserie & Moss, 1992).

In addition, Oh and Lim (2005) believe that students' field dependency does not correlate significantly with their attitudes toward online learning, while other factors like previous

online learning experience and computer competency correlate with their attitudes toward online learning. The finding is in line with another study that investigates the relationship between 130 university students' cognitive style, achievement scores and attitudes toward computers. The Group Embedded Figures Test (GEFT) was used to measure field dependency. The findings indicate that no relationship exists between students' computer attitude and field-related cognitive style. It seems that computer attitude and cognitive style act completely independent, even if students' achievement levels are controlled (Altun & Cakan, 2006).

In short, although using blogs as one of the e-learning tools is still in its infancy, each individual has his/her own voice in a conversation in a blog environment (Richardson, 2009). In other words, each individual has particular learning characteristics based on his/her own "prior skills, attitude, and experience, knowledge and learning style" (Maness-Gilliland, 2007, p.5).

Research Question

The following research question guided this study:
Is there a significant difference between bloggers' attitudes and field dependency?

Methodology

Participants

The participants of the study comprised 36 undergraduate students aged from 22 to 26 years old. They were from different ethnicities: Malay, Chinese and Indian. All of them had personal computers, and 85% of them had home Internet access. Most of them have used blogs before. Since all students were familiar with English as the second language, they used English for blogging. Students' names were changed for confidentiality.

Procedure

Students enrolled in an obligatory course which ran twice a week for two hours each and lasted for 14 weeks. A component or requirement of the course was the course blog that started from the fourth week until the tenth week. Students were told that the course blog was a compulsory assignment. They were asked to discuss four controversial topics by presenting their thoughts, solutions or recommendations to the topics, identifying gaps in arguments, providing justification, and offering viewpoints and opinions. The chosen topics were generally ill-structured problems that provoke students' thinking. Instead of having the usual face-to-face discussions done in the classroom, students engaged in online discussions using the course blog set up at www.blogger.com. All blog topics were chosen after consulting with some blog experts who had experience on course blog. Apart from that, we also considered the students' interest. After the students registered for the course blog, they were briefed on how to post, write, comment and share ideas through blogs. Subsequent to the briefing session that also included some hands-on practice,

students posted their blogs on the given topics independently from their networked laptops or home/university computers.

Instrumentation

Group Embedded Figure Test

To classify students' field dependency, after a comprehensive review of the related instruments, the Group Embedded Figure Test (GEFT) developed by (Witkin, et al., 1971) was deemed suitable for the present study because of several important reasons. Firstly, it has been used in many studies including Altun and Cakan (2006); Maghsudi (2007); Yamini and Rahnama, (2008); and Brown et al. (2009). Secondly, it has strong validity and reliability (Witkin et al., 1971). Finally, since the GEFT is a nonverbal test that requires minimum language proficiency for carrying out the task (Cakan, 2003), its psychometrical properties are practical and sensible for cross-cultural settings such as the context of the present study (Altun & Cakan, 2006).

The GEFT consists of 25 items in three parts. Each part has seven, nine and nine questions respectively. Part one is used for practicing; therefore, a participant's total score is based on a number of simple figures correctly chosen in part two and three of the test. Each section has a time limit of two, five, and five minutes respectively and participants are supposed to trace the simple figure embedded in the complex one. Raw scores range from 0 to 18, upper than 11.4 are identified as FI and the lower 11.4 as FD (Witkin et al., 1971). Figure 1 shows an example of GEFT question items.

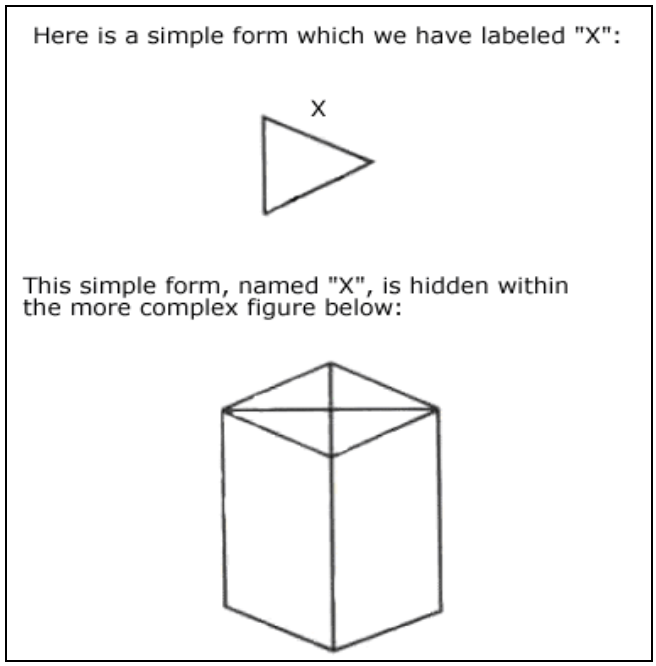

Figure 1: An example of GEFT items taken from
http://www.mindgarden.com/products/gefts.htm

Blog Attitude Scale

To evaluate learners' attitudes toward blog, we used a Likert-type Blog Attitude Scale (BAS) with four response categories: strongly disagree (1), disagree (2), agree (3), and strongly agree (4) (Shahsavar, Tan & Aryadoust, 2010). It comprises 14 items on three dimensions: blog anxiety (6 items), desirability (4 items), and self-efficacy (5 items). To validate the instrument an exploratory factor analysis (EFA) was performed followed by a confirmatory factor analysis (CFA) to confirm the extracted factors and loading patterns of items on factors (see Shahsavar et al., 2010, for a full report). Since all participants were proficient enough to understand the English statements, the items were not translated into other languages.

Data Collection and Analysis

This study uses a mixed method research design that allows the researchers to capture and synthesize data from multiple sources. We collected data quantitatively and qualitatively during the first semester of 2009.

In quantitative data collection, we administered the cognitive style test (GEFT) and the BAS at the beginning and at the end of the course respectively. Independent samples t-test was performed to determine if there is a significant difference between students' field dependency and their attitudes toward blogs through online discussions.

At the end of the course, we carried out qualitative data collection. Firstly, to gain more in-depth and comprehensive understanding about students' cognitive style differences particularly FD and FI's attitudes toward blogs rather than a quantitative summary, secondly, to solicit students' perceptions, views and their opinions in using blogs. In doing so, we conducted two focus-group interviews with a total of five students in each group. Based on the scores of the participants on the GEFT, five FDs and FIs were randomly selected to take part in the interviews. Among them, two FI participants were males and the rest were females. In terms of ethnicity, five of them were Malay, three Chinese, and two Indians. Each interview took approximately five to ten minutes. The interview questions were open-ended to allow the researchers to explore issues raised by the FDs and FIs.

Results and Discussion

The present study examines the effect of bloggers' cognitive styles particularly field-dependency on their attitudes toward blogs. In this section, results from quantitative data and the qualitative interview are discussed respectively.

The mean (M), and standard deviation (SD) scores of each subscale are shown in Table 1 and the correlations among the three subscales are presented in Table 2. The results indicate that blog anxiety (M= 2.94, SD=0.45) is rated highest among the three subscales, and blog desirability (M=2.56, SD=0.65) is less appreciated by the students. Table 2

shows the result of correlation analyses of three factors; most correlation coefficients reach the significant level. This result provides additional evidence for the high consistency of the entire scale and for the convergent validity of each subscale.

Table 1: Descriptive analyses of variables (N=36)

Subscale	**M**	**SD**
Anxiety	2.94	.45
Desirability	2.56	.65
Self confidence	2.74	.48

Table 2: Correlation analyses of variables

Subscale	**Anxiety**	**Desirability**	**Self confidence**
Anxiety	1.00	.245	.433**
Desirability		1.00	.550**
Self confidence			1.00

In addition, the independent-samples t-test on the three factors of BAS and field dependency reveals no significant differences between bloggers' attitudes and field dependency. However, FDs show lower blog anxiety, blog desirability and self-efficacy than FIs in using blogs, all these attitude factors: blog anxiety (t=0.50, p=0.62), blog desirability (t=1.40, p=0.17), and blog self-efficacy (t=0.62, p=0.56) are not statistically significant. In other words, students' attitudes toward blogs were not significantly associated with their field dependency (see Table 3).

Table 3: T-test results of field dependency on the BAS

Subscale	**M**	**SD**	**N**	**t value**	**Sig. (2-tailed)**
Blog anxiety				0.50	0.62
FD	2.93	0.49	28		
FI	3.02	0.31	8		
Blog desirability				1.40	0.17
FD	2.50	0.59	28		
FI	2.84	0.81	8		
Blog self-efficacy				0.62	0.56
FD	2.70	0.37	28		
FI	2.86	0.78	8		

As mentioned earlier, to provide additional evidence on FDs and FIs' attitudes toward blogs, a qualitative research was conducted. The interview questions and students' responses are summarized as follows:

Q1. What do you think of blog online discussions?

All FIs seemed to be comfortable participating in online discussions from the beginning. One of them further explained that online discussions gave her a chance to think better of the questions that she could not answer immediately in a traditional way. While most FDs expressed that at first they did not have the motivation to participate in online discussions, but they gradually found online discussions a pleasant way to communicate with other classmates. However, one of them stated that online discussions made her feel tedious and boring; she felt that she could use her mind more often in the class discussion than in asynchronous online discussion.

Q2. What are the main benefits of reading others' postings and comments?

A few FIs stated that giving comments to other students in online discussion was time-consuming and it did not affect their postings. One of them complained of a lot of assignments in an online class, and lack of time to read other students' comments because of their last minute updates. On the other hand, two FDs mentioned that they learned a great deal of knowledge from other students' postings and comments. One of them mentioned that she enjoyed receiving and giving comments to other students; she analyzed comments posted on the blog by her classmates rather than just accepting them. Also, other FDs stated that posting and giving comments to other students in online discussions is effective.

Q3. What is your idea about having another course blog?

The majority of FIs agreed with having another course blog. For example, one of them said the course blog was a useful learning experience and he was able to learn a lot through blogging. So, he would recommend it to his friends. Another one explained that she tended to be shy and feel isolated in traditional classroom, while online discussions provide her with learning opportunities: sharing knowledge with her classmates, arguing and discussing with others that she would not have had in traditional classrooms. All FDs except one were satisfied with the course blog and wished to have it in the future.

The interview results show slightly different responses to the questions from two different groups of FDs and FIs. For example, all FIs were positive about blog online discussions from the beginning of the course while most FDs did not have motivation to participate in online discussions at first but gradually they liked blogging. This may positively support Saracho (1998) and Chen's (2010) findings that FI students are better than FD ones in online courses because they are more successful in setting their own learning paths. In addition, all FDs found blogs more useful in different activities: reading others' postings and comments. They agreed that blogging was enjoyable and it gave them a chance to share their ideas easily. However, a few FIs found these activities boring and time-consuming. This finding supports the idea that FDs are more sociable than FIs in a learning environment (Brown, 2007). In addition, the results did not show

significant difference between FDs and FIs about having another course blog. Most students want to have another course blog in future. In sum, conclusions drawn from the interview questions reveal that both FDs and FIs have positive attitudes toward using blogs in a learning environment.

Conclusion

This study investigated if there was a significant difference between bloggers' attitudes and field dependency. Although FDs had lower blog anxiety, blog desirability and blog self-efficacy than FIs in using blogs, the difference was not statistically significant. Besides, a qualitative paradigm of the research shows that the majority of FD and FI students have positive attitudes toward using blogs in a learning environment. They found using blogs is a pleasant way to communicate with other classmates through online discussions.

A few recommendations can be made as a follow up to this study. Firstly, since this study is conducted with undergraduate students; a similar study could be carried out with other students. Secondly, this study predominantly included female students. As such, another study including gender-equal sample is suggested. Finally, to minimize the issue of respondent bias, students could be selected randomly to participate in the study.

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About the authors

Zahra Shahsavar is currently a Ph.D candidate at Universiti Putra Malaysia. Her research interests include online learning, interactive learning environments and Web 2.0 for teaching and learning.

Tan Bee Hoon (Ph.D) is Associate Professor at Universiti Putra Malaysia. Her research interests are related to CALL, CMC and language learning assessment.