

Instructional interaction development and its effects in online foreign language learning

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Abstract. This paper introduced the features of scaffolding to the development of instructional interaction in online foreign language learning, and testified their effects on learners' perceived usefulness, perceived ease of use, sense of community, and continuance intention by the integration of the Technology-Acceptance Model and the Organizational Framework of Online Learning Community. An instrument was developed, data were collected from 299 students, and the relationships among the variables of scaffolding features, learners' perceived ease of use, perceived usefulness, sense of community, continuance intention, etc., were examined by path analysis. The results showed that although instructional interaction developed in accordance with the scaffolding features cannot affect learners' continuance intention directly, it plays a partially mediating role by significantly affecting learners' perceived usefulness, perceived ease of use, and sense of community.

Keywords: instructional interaction, scaffolding, continuance intention.

1. Introduction

Instructional interaction refers to an event that takes place between a learner and the learner's environment inclusive of the instructor, other learners and course content (Wagner, 1994). Given that foreign language learning is greatly different from second language acquisition in learning context and learners' psychological process (Vroman, 1990), this study attempts at introducing scaffolding features to the development of instructional interaction in online foreign language learning.

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Scaffolding features have been applied widely in general education, such as direction maintenance, marking of critical features, demonstration (Wood, Bruner, & Ross, 1976), step-by-step directions, sortation of information (McKenzie, 2000), alignment, experiential value, collaboration, multiplicity (McLoughlin, 2002), channeling and focusing, modeling (Pea, 2004), occurrences in a collaborative context (Tuckman, 2007), and heuristic modelling (Radford, Bosanquet, Webster, Blatchford, & Rubie-Davies, 2014). With a view to pinpointing features which facilitate developing instructional interaction, this paper highlights the features of *continuity* (see McKenzie, 2000; McLoughlin, 2002), *contextual support* (see McLoughlin, 2002), *collaboration* (see McLoughlin, 2002; Tuckman, 2007), *modeling* (see Wood et al., 1976; Pea, 2004), *channeling and focusing* (see Pea, 2004), and *multiplicity* (see McLoughlin, 2002).

Continuity refers to alignment between the steps of instruction; *contextual support* to the provision of different means to expose learners to authentic experiences; *collaboration* to collaborative work with the instructor, other learners or online content for the perception of encouragement, confidence, or advance in study; *modeling* to the demonstration of an idealized form of the act to be performed to pinpoint discrepancies between the produced and the ideal solution; *channeling and focusing* to the indication of relevant sources to simplify the task and focus learners' attention; and *multiplicity* to the provision of multiple learning strategies, both direct and indirect (Zhao & Chen, 2014).

The Organizational Framework of Online Learning Community, which has been used to study the maintenance of online learning community, indicates that task, technological and social dimensions serve learners' requirements respectively on learning task fulfillment, technological convenience and social satisfaction (Carabajal, LaPointe, & Gunawarden, 2003). Thus, the scaffolding features listed above are examined in terms of task fulfillment, technological convenience and social satisfaction.

The Technology-Acceptance Model (TAM) has been applied to describe the impact of external variables on learners' intention towards e-learning. In the TAM, "perceived usefulness (PU) refers to the degree to which a person believes that using a particular system would enhance his job performance; perceived ease of use (PEOU) [to] the degree to which a person believes that using a particular system would be free of physical and mental effort" (Davis, 1989, cited in Chitungo & Munongo, 2013, p. 54). TAM is employed to test whether the suggested scaffolding features affect learners' PU in learning task fulfillment and PEOU in technological convenience.

A sense of community (SOC) underlines the feelings of connectedness, trust, etc., that community members have to each other and to their learning community (Rovai, 2002). In this paper, SOC is employed to study whether the scaffolding features can affect learners' social satisfaction.

Continuance Intention (CI) is a construct in the Expectation-Confirmation Model (ECM) (see Bhattacharjee, 2001), which has been widely applied to the studies of online education (see Lee, 2010; Limayem & Cheung, 2008). CI is defined as the "intention to continue using the information system" (Bhattacharjee, 2001, p. 351), and in this study, CI is applied to narrow down the behavioral intention in TAM, and to test foreign language learners' continuance intention towards online learning.

2. Method

2.1. Research model and hypotheses

Following TAM, this study hypothesizes that instructional interaction developed on the basis of scaffolding features can directly and indirectly affect foreign language learners' behavioral intention, that is, their continuance intention towards online learning. The scaffolding features, that is, continuity, contextual support, collaboration, modeling, channeling and focusing, and multiplicity work as the first-order constructs of instructional interaction.

On the basis of TAM, this study argues that (1) learners' PU and PEOU will affect positively learners' CI; (2) learners' PEOU will affect positively learners' PU; and (3) instructional interaction developed on the basis of scaffolding features will affect positively learners' PU, PEOU, and CI. This study, as seen in Figure 1, posits:

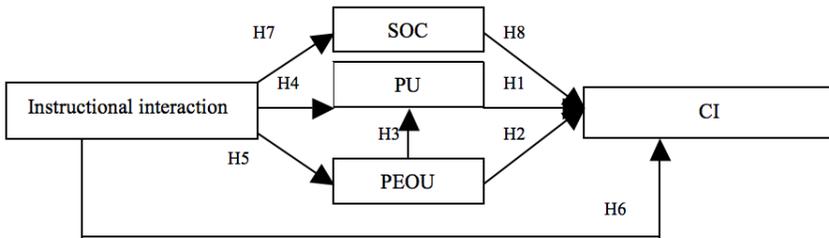
- H1. Learners' PU in online foreign language learning is positively related to their CI.
- H2. Learners' PEOU is positively related to their CI.
- H3. Learners' PU is positively influenced by their PEOU.
- H4. Instructional interaction is positively related to learners' PU in online foreign language learning.
- H5. Instructional interaction is positively related to learners' PEOU.
- H6. Instructional interaction is positively related to learners' CI.

According to the Organizational Framework of Online Learning Community, this study argues that instructional interaction will also affect positively learners' social

satisfaction which is represented by the SOC in this study, and the SOC will affect positively learners' continuance intention. Thus, this study further posits:

- H7. Instructional interaction is positively related to learners' SOC.
- H8. Learners' SOC is positively related to their CI.

Figure 1. Research model



2.2. Participants and procedure

This study picked adult learners at the age of 19/20 from three universities. Of 356 questionnaires sent out, 299 questionnaires were collected as available. Among the 299 questionnaires, 102 learners were of the Web Supplemented Mode where participation online is optional for students, 99 learners were of the Web Dependent Mode where some traditional on-campus component is retained but there is a compulsory online component, and 98 learners were of the Fully Online Mode where there is no on-campus direct contact component in this mode. For the convenience of instrument development, all the participants were freshmen and sophomores of an approximate English proficiency level, who intended to pass ECT-Band4 or 6. They were of different majors and were picked randomly within each of the three above modes.

In data collection, this study sent out and collected the questionnaires in the second semester of 2011 to ensure that the participants had already used the language learning information system for a substantial period.

2.3. Survey Instrument

The constructs of continuance intention, perceived usefulness, perceived ease of use, and sense of community were reflective latent variables; while the construct of instructional interaction was a formative composite variable. The online language

learning communities (OLLC) in this study were provided for the adult learners to master language points, including vocabulary and grammar. In the online language learning, the learners were instructed to learn written, visual or audial materials, and to complete various exercises and language tasks.

CI was measured with the items adapted from [Bhattacharjee \(2001\)](#):

- I will use the OLLC on a regular basis in the future.
- I will frequently use the OLLC in the future.
- I will strongly recommend others to use the OLLC.

PU was measured with the items adapted from [Davis \(1989\)](#):

- I feel that online study can improve my learning performance better than offline.
- The OLLC is effective and my educational needs are met.
- I find the OLLC is useful and promotes my desire to learn.

PEOU was measured with the items adapted from [Davis \(1989\)](#):

- Learning to operate the OLLC is easy for me.
- It is easy for me to become skillful at using the OLLC.
- Overall, the OLLC is easy to use.

SOC was measured with the items adapted from [Rovai \(2002\)](#):

- I feel learners of the OLLC care about each other.
- I feel, instead of alone, connected to others in the OLLC.
- I feel that this OLLC is like a family.
- I do not feel isolated in this OLLC.
- I trust others in this OLLC.
- I feel that I can rely on others in this OLLC.
- I feel that members of OLLC depend on me.
- I feel confident that others will support me in online language education.

Instructional interaction was conceptualized as a second-order factor consisting of six first-order constructs: continuity, contextualization, modeling, focusing and outlining, collaboration, and multiplicity. Each of the first-order constructs is important, but not individually sufficient, for reflecting the latent construct. With no established measures for the constructs, they were developed from the constructs' definitions.

The measurement items were proved and adjusted through interviews respectively with 6 adult learners, 3 university English teachers and an online language

education system designer, a group discussion of 6 learners and an evaluation of a 3-person expert panel (see [Appendix 1](#)).

3. Analysis and results

Since the research model contains both reflective and formative components, SmartPLS version 2.0 was chosen for data analysis. In data analysis, availability is usually assessed by AVE, which should be more than 0.50. Reliability is usually assessed by two indicators –Cronbach’s alpha and composite reliability. Both are supposed to be more than 0.70. In this study, of all the components, the lowest composite reliability (ρ_c) was 0.87, the lowest Cronbach’s Alpha (α) was 0.77 and the lowest AVE score was 0.68. An R^2 value of .606 indicates that the model explains a substantial amount of variance in continuance intention. All hypotheses are supported except H6 ([Table 1](#)).

As the test of hypotheses indicates, foreign language learners’ continuance intention is positively dependent on their PU, PEOU and SOC; learners’ PEOU is proved to influence PU; instructional interaction, which is developed on the basis of the scaffolding features listed above, plays a significantly positive role in influencing learners’ PU, PEOU and SOC.

Table 1. Test of hypotheses

No.	Hypothesis	T Statistics	P
H1	PU → CI	6.035915	***
H2	PEOU → CI	3.373664	***
H3	PEOU → PU	3.055354	**
H4	instructional interaction → PU	6.517316	***
H5	instructional interaction →PEOU	19.520094	***
H6	instructional interaction → CI	1.28048	Not supported
H7	instructional interaction → SOC	7.122064	***
H8	SOC → CI	4.041249	***

4. Discussion and conclusion

The results showed that although instructional interaction developed in accordance with the scaffolding features cannot affect learners’ continuance intention directly, it plays a partially mediating role by significantly affecting learners’ PU, PEOU and SOC. Thus, this paper suggests that with the conditions of foreign language learning

greatly different from those of second language acquisition, more emphasis should be laid on scaffolding features in developing online instructional interaction.

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Appendix 1.

Continuity:

- Online learning provides a series of related materials for learning relevant specific language points.
- I can get acquainted with a language point, after learning a series of related articles.
- It is easy for me to master a systematically repeated language point.

Contextualization:

- In the authentic context in online learning, my language knowledge is activated.
- The pictures, films or other authentic sensory contexts in the online language learning make the foreign language accessible and engaging.
- The online learning brings language points closer to the authentic world experience by interesting articles, pictures or other means.

Modeling:

- In learning a new language point (a new word, or some grammar), I am given clear examples as to how to use it.
- When I am introduced a new language point, I know what is requested of me to imitate.
- With modeling help, I know how to accomplish a particular language task.

Focusing and outlining:

- I am given a brief introduction of the topic and organization of the foreign language articles.

- The online learning highlights the important points of the learning materials.
- The highlighted outlines help me have a systematic idea of the related article.

Collaboration:

- In online learning, I am encouraged to work with other learners to fulfill a learning task.
- In online learning, I am encouraged in time to communicate and play a role in team work.
- In collaboration with other learners, I am encouraged to perform at my best.

Multiplicity:

- The online learning helps me to find and adopt proper learning strategies.
- The online learning teaches me methods to improve my foreign language learning.
- The online learning enables me to plan with learning strategies according to my learning performance.