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Interaction in Online Learning

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图书在版编目(CIP)数据

在线学习互动研究(英文版)/宋鸿波著. —北京：北京大学出版社，2007.8

ISBN 978-7-301-12697-4

Ⅰ. 在… Ⅱ. 宋… Ⅲ. 因特网－应用－语言－研究－英文 Ⅳ. H0.05

中国版本图书馆 CIP 数据核字(2007)第 135268 号

书　　名：在线学习互动研究(英文版)
著作责任者：宋鸿波　著
责 任 编 辑：孙凤兰
标 准 书 号：ISBN 978-7-301-12697-4/H・1826
出 版 发 行：北京大学出版社
地　　址：北京市海淀区成府路 205 号　100871
网　　址：http://www.pup.cn　　电子信箱：zbing@pup.pku.edu.cn
电　　话：邮购部 62752015　发行部 62750672　编辑部 62767315
　　出版部 62754962
印　刷　者：三河市新世纪印务有限公司
经　销　者：新华书店
　　650 毫米×980 毫米　16 开本　15.75 印张　252 千字
　　2007 年 8 月第 1 版　2007 年 8 月第 1 次印刷
定　　价：32.00 元

About the Author

Song Hongbo received his Ph. D. in Instructional Technology from Ohio University, M. Ed. in Special Emphasis from the University of La Verne, Diploma in Teaching of English as a Second Language (TESL) from Victoria University of Wellington, and B. A. in English & Literature from Qufu Normal University. Academically, he is interested in online learning, online instructional design, computer-assisted language learning (CALL), language teaching-learning assessment & evaluation, and language learning strategies. As associate professor of English, he teaches both language-related and technology-related courses in the School of Foreign Languages, Yantai University. He also directs the Research Center of Educational Technology for Foreign Studies at Yantai University.

Preface

To make the most of a hierarchy of interaction that ranges from low to high in online learning, Moore and Kearsley claimed (2005), "Effective teaching at a distance depends on a deep understanding of the nature of interaction and how to facilitate interaction through technologically transmitted communications" (p. 140). Interaction as an instructional approach (Bender, 2003; Kumpulainen & Wray, 2002; Salmon, 2003) must make best use of "Each level defines interaction that is social, instructional, technological, learner driven, and instructor driven" (Moore & Kearsley, 2005, p. 141). In view of that, social/rapport building designs for interaction, instructional designs for interaction, interactivity of technology resources, evidence of learner engagement, and evidence of instructor engagement are indispensable to online learning. Research on gender-related differences in mediated interaction also has important implications for online learning (Bender, 2003). This is because when mediated interaction is used as one major vehicle for enhancing online learning, mutual interaction requires the exchange of ideas and opinions with all the participants involved.

Against this background, investigating the interplay of mediated interaction that occurs in the asynchronous mode of delivery may provide insights into understanding the humanized features of interactivity needed for online learning. Moreover, examining the asynchronous online learning may broaden research into instruction at a distance to see how engaged group interaction and collaborative

learning activities that draw on social learning theory and constructive theory are facilitated through mediated interaction for expected learning outcomes. Specifically, understanding the effects of gender and learner perceived interaction about content, with instructors, and among peers on learner motivation, learner role, instructor role, socialization, and sense of community may have potential impacts on how online instruction can be more appropriately prepared, delivered, organized, and managed. This study can therefore be constructive for both online course designers and instructors to make rational decisions regarding how to incorporate the elements needed into the design of online learning courses, how to facilitate online instruction, how to motivate mediated interaction among participants, how to minimize gender-related differences in online learning, and how to optimize the asynchronous online learning environments in which both online learners and instructors can make the most of the mediated learning and teaching experiences.

This study consists of seven chapters in addition to references, appendices, and index. Chapter One introduces the background of the study and presents an overview of distance education and its theoretical foundations. Chapter Two discusses variables that may facilitate mediated interaction at a distance, emergent issues online, and poses the research questions. Chapter Three presents the concept of interaction, forms of online interaction relationship, and research on interaction in online learning. Chapter Four focuses on learner motivation, sense of community, socialization, roles of instructors and learners, and gender-related differences applicable to asynchronous online interaction. Chapter Five describes the quantitative procedures used to conduct this study. Chapter Six reports the results of the study in accordance with the process of statistical data analyses. Chapter Seven presents discussions of the study and recommendations for further research.

Acknowledgments

First of all, I am grateful to all the wonderful professors that I have encountered during my educational experiences in the College of Education, Ohio University, for their professionalism, pursuit of excellence, guidance, encouragement, support, and direction. Dr. Teresa Franklin inspires me to forge ahead both academically and spiritually. Dr. George Johanson enlightens me on statistics via his distinctively humorous presentation. Dr. Rosalie Romano improves my world outlook through her engaged wisdom of love and heart feeling. Dr. Xiaoshi Joy Bi updates my knowledge of online instructional design.

Secondly, I am appreciative of Zhang Bing and Sun Fenglan of Peking University Press for their assistance in getting this study ready for print.

Finally, I am deeply indebted to my wife Wang Yingchun for her support and willingness to undertake extra duties in my doctoral studies and research, and to my son Song Wei for his understanding during my journey to this sacred accomplishment.

Abstract

This study investigated the effects of gender and levels of low-, medium-, and high-perceived interaction about content, among peers, and with instructors on the combined outcome measures of learner motivation, sense of community, socialization, instructor role, and learner role in asynchronous online learning settings. Online survey via systematic sampling was sent to a large public Midwestern university in the United States by an email invitation (N= 6,200). Participants were 143 females, 58.60%, and 101 males, 41.40% (n=244).

Five identified outliers, when deleted, resulted in 239 for further analysis. Multivariate analysis of variance (MANOVA) results indicated that gender and learner perceived interaction significantly affected the combined outcome measures. Analysis of variance (ANOVA) results indicated that learner motivation significantly differed for gender and learner perceived interaction. Sense of community significantly differed for learner perceived interaction. There was a significant disordinant interaction effect between the level of perceived interaction and the gender of the person perceiving interaction on sense of community. Instructor role significantly differed for gender. Learner role significantly differed for learner perceived interaction.

Scheffé post hoc results indicated that low-leveled perceived interaction group significantly differed from high-leveled perceived interaction group; medium-leveled perceived interaction group signifi-

cantly differed from high-leveled perceived interaction group; and high-leveled perceived interaction group significantly differed from both low- and medium-leveled perceived interaction groups regarding learner motivation, sense of community, and learner role.

Examination of adjusted means indicated that high-leveled perceived interaction group, overall, had higher adjusted mean differences than both low- and medium-leveled perceived interaction groups. Learner role had the highest adjusted mean differences between high- and low-leveled perceived interaction groups. Female students had the highest adjusted mean differences in instructor role in comparison with their male counterparts. By examining means across levels of low-, medium-, and high-perceived interaction group by gender, overall, female students had a higher rating in means than male students for learner motivation, sense of community, instructor role, and learner role.

Implications of the study were discussed and recommendations for future study were presented.

Contents

Chapter 1

Background of the Study

Online learning as a subset of distance education facilitates the learning transaction via the Internet. Historically, distance education evolves from print-based correspondence courses (Holmberg, 1989) and develops into a highly interactive mode of learning over time. Geographically and/or spatially separated in the processes of teaching and learning, distance education is a paradigm of education that, for the most part, depends upon technologies for delivery of instruction (e.g., broadcast radio, satellite telecommunications, cable TV, audio or video teleconferencing, CD-ROM, computer conferencing, digital video, and virtual reality). The list can be extensive, suggesting that distance education has always used a variety of technologies as a certain delivery option to facilitate learning at a distance "in an effort to serve the educational needs of growing populations" (McIsaac & Gunawardena, 1996, p. 403), to improve the cost effectiveness of educational resources, to support the quality of existing educational structures, and to enhance the capacity of the educational system (Moore & Kearsley, 2005).

Technologies of delivery in distance education have evolved from very limited interaction to those that allow for sophisticated interaction. Correspondence, broadcast radio and TV, Open University, teleconferencing, and Internet or Web are five generations of distance education (Moore & Kearsley, 2005). Their emergence

and development are attributable to specific technologies ready for use at a given time. This, to some extent, suggests that levels of interaction relate to the use of state-of-the-art technology. That is, technology advancement may give impetus to promoting interaction among participants, "... from simple electronic mail (e-mail) to more elegant Web-forum communications, the way humans communicate with each other has continued to evolve along with technical developments..." (Hart & Mason, 1999, p. 147).

Accordingly, "Developments in communications technology are having a profound effect on both distance education and higher education in general" (Anderson & Garrison, 1998, p. 97). Universities that traditionally deliver courses face-to-face are also implementing Internet-based instruction to some extent, although its integration into traditional course design varies from very limited (i. e., downloading learning materials) to very extensive (i. e., full replacement of in-class meetings) (Caspi, Gorsky, & Chajut, 2003). Variation in instructional integration (e. g., Internet-supported, Internet-enhanced, and Internet-based) largely relies on how much instruction is delivered via the Internet and how such delivery of instruction is structured, organized, and managed. For the most part, the shift in instructional platforms enriches teaching and learning settings, and in the meantime reflects, "American higher education is in the midst of a virtual revolution" (Kriger, 2001, p. 5). Along with the emergence of course management systems (e. g., Blackboard Learning System, WebCT), this virtual revolution has been pushed onto a new phase. According to Green (2003), a third of all college courses (33. 60%) use course management tools, up from 26. 50% in 2002, 20. 60% in 2001 and twice over the level (14. 70%) in 2000.

The booming Internet-based instruction relates to geographic independence, time flexibility, and the need for lifelong learning. By allowing the teaching and learning process to occur at any time and any place, opportunities for learning online may not be confined to

schedule, fulfilling the diversified needs of learners (e. g. , academic, occupational, and personal). The extended learning opportunities online can be accomplished via either synchronous or asynchronous mode of delivery. The former requires both instructors and learners to respond at some place(s) at a particular time as is the case with Internet chat whereas the latter does not restrict instructors and learners to the given time and/or place. This flexibility allows learners to respond at their own convenience as with a threaded discussion board.

Asynchronous online learning "overcomes the temporal limitations" (Anderson, 2004, p. 278), reflecting the notion that "education need not be site- or time-bound" (Meyer, 2002, p. 2). Benefits of asynchronous online learning may go beyond learning at learners' convenient pace, anytime, and anywhere access. A major attraction is that it may create a unique setting (e. g. , virtual community of learners) where participants may have adequate time to critically think about and reflect on ideas, opinions, and resources that are exchanged and shared via online discussions, e-mail communications, reciprocal and critical feedback, collaborative learning projects, or browsing learning resources online (Bender, 2003; Hiltz, 1993; Moller, 1998; Palloff & Pratt, 1999). This study focused on asynchronous online learning that allows flexibility rather than synchronous online learning that requires real-time participation.

An Overview of Distance Education

Distance education, distance teaching, distance learning, asynchronous learning, open learning, distributed learning, telelearning, and flexible learning describe an educational process in which instructors and learners are physically separated (Picciano, 2001). Identical use of distance education and distance learning is evident in literature (Picciano, 2001). Distance education connotes teaching and learning at a distance but also "correctly describes a two-sided

relationship" (Moore & Kearsley, 2005, p. 2) when teaching and learning are both stressed. Distance learning "puts an emphasis on the 'learner'" (Picciano, 2001, p. 4). Historically, "the meaning of distance education, or learning, often varies depending on the context in which it is used" (Atkinson, 1999, p. 16); thus, it is context-specific. That is, it can signify correspondence courses, or programs delivered through the Internet. Even so, its major conceptual attributes remain unchanged over time, e. g. , physical or temporal separation, technology-dependent.

Theoretically, distance education can be studied and evaluated as a system that includes the subsystems of sources of knowledge, design of courses, delivery of course material and interaction via technologies, the role of instructors in facilitating interaction, learners in their different learning environments, teaching-learning management, as well as administration. In practice, the effectiveness of distance education depends upon the proper integration of all these indispensable subsystems (Moore & Kearsley, 2005). Overall, distance education represents a unique form of educational process or practice that is geographically separated, instructed synchronously or asynchronously, and operated via appropriate and corresponding media of technology (e. g. , microwave system, compressed video system, and Internet) and non-technology (e. g. , content/knowledge, instructional design, course design, online pedagogy, quality assessments, evaluation system, organizational management, and administrative support).

Distance Education Defined

"Distance has multiple meanings ... and distance education has been applied to a tremendous variety of programs serving numerous audiences via a wide variety of media..." (Schlosser & Anderson, 1994, p. 1). Due to the constraints of the times as well as human beings' understanding and mastery of technologies available and applicable to distance education at that time, how distance education is