



UNIVERSITY
OF WOLLONGONG
AUSTRALIA

University of Wollongong
Research Online

Faculty of Arts - Papers (Archive)

Faculty of Law, Humanities and the Arts

2009

Developing an Online Community of Learners for Second Language Students Using Design-Based Research

Mariolina Pais Marden

University of Wollongong, mpm@uow.edu.au

Janice A. Herrington

Murdoch University, j.Herrington@murdoch.edu.au

Anthony J. Herrington

Curtin University, a.herrington@curtin.edu.au

Publication Details

Pais Marden, M., Herrington, J. A. & Herrington, A. J. 2009, 'Developing an Online Community of Learners for Second Language Students Using Design-Based Research', in T. Bastiaens, J. Dron & C. Xin (eds), *Proceedings of World Conference on E-Learning in Corporate, Government, Healthcare, and Higher Education 2009*, Association for the Advancement of Computing in Education, Chesapeake, USA, pp. 1862-1867.

Research Online is the open access institutional repository for the University of Wollongong. For further information contact the UOW Library:
research-pubs@uow.edu.au

Developing an Online Community of Learners for Second Language Students Using Design-Based Research

Mariolina Pais Marden
University of Wollongong, Australia
mpm@uow.edu.au

Jan Herrington
Murdoch University, Australia
j.herrington@murdoch.edu.au

Anthony Herrington
Curtin University, Australia
a.herrington@curtin.edu.au

Abstract: This paper describes the design of a research project that adopted a design-based research (DBR) approach to create and implement an online community of second language learners of Italian. For one semester a group of sixteen intermediate and advanced level students of Italian, their teacher and seven Italian native speaker facilitators participated in the activities of an online community of practice and interacted with each other through the communication tools and resources of an online learning management system. This paper presents the four phases of the study using the DBR model outlined by Reeves (2006) and the methodology that informs the development of each phase. In particular the discussion focuses on the design of the overall study and the theoretical framework that supports the development of the online learning environment.

Introduction

Researchers and second language teachers have long recognised the limitations associated with learning a second language when students are not provided with sufficient opportunities to interact with native speakers of the target language and to participate in activities that are authentic and have real-world relevance. This lack of direct experience of engaging in meaningful and authentic dialogue with competent native speakers and taking part in rich and purposeful tasks, can result in a decrease in learners' motivation and engagement with the subject, as learners may feel that they are unable to create a meaningful connection with the target language culture. (Ellis, 2003; Mitchell & Myles, 2004; Lightbrown & Spada, 2006; Gass & Selinker, 2008)

A desire to address the problem of limited direct contact with Italian native speakers and to provide learners of Italian at an Australian university with an opportunity to engage in motivating and relevant activities, provided a reason for developing an online environment which supported students' interaction through participation in authentic activities in a collaborative and learner-centred environment.

Research approach

The practical problem of lack of opportunities to engage in meaningful interaction with native speakers of the target language and to participate in authentic, real world tasks in a second language classroom has been addressed using a design-based research approach. The solution proposed is informed by existing theories and design principles, and involves designing and implementing an online community of learners to enable students' interaction and collaboration among each other and with a number of native speaker facilitators through participation in two authentic activities.

The design-based research model is well suited for the development and implementation of the online learning environment of this study because it aims at solving a practical educational problem through the development and implementation of an innovative intervention that is based on and benefits from the theoretical principles derived from prior research. The iterative nature of the DBR model also allows the researcher to progressively test and refine the learning environment developed through a series of successive implementations. The final outcome of this approach is to establish new design principles that could guide other language instructors in the development of similar learning environments.

The four phases of the study are described below using the DBR model outlined by Reeves (2006).

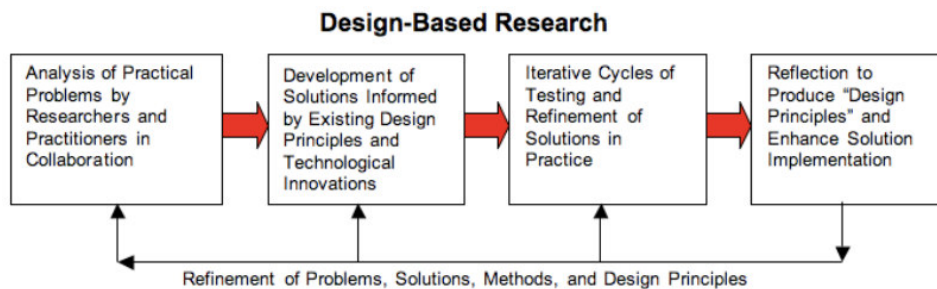


Fig. 1 Representation of the design-based research model (Reeves, 2006, p. 59)

Results and discussion

Phase 1: Analysis of practical problems by researchers and practitioners in collaboration

The first phase of the study involved identifying and analysing the practical problem of lack of authentic exposure to the target language through authentic interaction with native speakers in the second language classroom through participation in meaningful, real life activities. During this phase, the views of teacher-practitioners, that is, teachers of Italian to non-native speakers, were also sought and considered. An extensive literature review of research and examination of case studies that have addressed this problem and have provided successful solutions was also conducted.

Phase 2: Development of solutions informed by existing design principles and technological innovations

The second phase involved developing theoretically sound solutions to the problem described in the first phase. During this phase a learning environment was designed and developed to allow community members to interact and collaborate with each other through the communication tools and resources of an online learning management system. These resources included an online threaded discussion forum, email and chat.

Two authentic activities were designed to incorporate the defining characteristics of authentic tasks as described in Herrington and Oliver (2000), such as a real life task, opportunities for collaboration and articulation, multiple perspectives and authentic assessment. The first task required students to plan and organise a trip to Australia for a group of visiting Italian students, and the second one to organise a trip to Italy for the whole class. Both activities had to be carried out entirely in the target language and required students to present the final product of their work to the rest of the class. During this phase, seven native speaker facilitators were recruited to provide students with the appropriate support and scaffolding as they completed their work on the two assigned tasks.

In the words of Cobb, Confrey, diSessa, Lehrer and Shauble (2003), in design-based research 'the theory must do real work' (p. 10). The development of the learning environment drew upon a combination of theories and principles which included Vygotsky's sociocultural theory applied to second language learning (Donato, 2000; Thorne, 2005; Lantolf & Thorne, 2006 Lightbrown & Spada,

2006; Zuengler & Miller, 2006), theories of situated and authentic learning (Brown, Collins & Duguid, 1989; Collins, Brown & Newman, 1989; Herrington & Oliver, 2000; Herrington & Herrington, 2006; Herrington, Reeves, Oliver & Woo, 2007) and principles that guide the development of a community of practice approach (Lave & Wenger, 1991; Wenger, 1998).

Sociocultural theory applied to second language learning

Sociocultural theory, developed by the Russian psychologist Lev Semenovitch Vygotsky (1978) as a general psychological theory aimed at understanding and explaining higher forms of human mental functioning, sees the development of human mental functioning as socially situated. According to Vygotsky, the human mind develops and functions as a consequence of its formation in a particular social and cultural (sociocultural) context, through a process that involves interaction and collaboration with others (e.g., Lantolf & Thorne, 2006; Daniels, 20008).

According to Vygotsky, this process of social interaction and collaboration with other members of a community, such as teachers and more capable peers, allows learners to develop the skills that they need to advance through their zone of proximal development (ZPD), which has been defined as 'the distance between the actual development level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers' (Vygotsky, 1978, p. 86). The assumption that the range of skills that learners can develop with guidance and assistance from a teacher or more capable peers exceeds what they can achieve by themselves, implies that, in order to assist learners to advance through their zones of proximal development, it is essential to provide them with the opportunity to interact and collaborate with others.

Several researchers have applied Vygotsky's sociocultural theory and the notion of ZPD to second language learning. These researchers have argued that language learning goes beyond the acquisition of the formal properties of a second language and have highlighted the importance of the social and cultural context in which a second language is learned and of participating in concrete and meaningful collaborative activities with more capable members of a speaking community, such as teachers, peers and native speakers (Donato, 2000; Thorne, 2005; Lantolf & Thorne, 2006; Lightbrown & Spada, 2006; Zuengler & Miller, 2006).

Vygotsky's sociocultural theory applied to second language learning provides a useful framework for understanding the importance of designing learning environments that support learners' interaction and collaboration with more advanced speakers of the target language. This feature was incorporated into the learning environment through the support of seven Italian native speakers as mentors.

Situated learning

The theory of situated cognition or situated learning, developed by Brown, Collins, & Duguid (1989), is based on the notion that meaningful learning can only occur when it is situated in the social and physical context within which it will be used in the future rather than in formal instructional settings. According to Brown et al. (1989) a situated learning environment supports the development of learners' knowledge and skills by enabling them to carry out authentic and meaningful activities and solve complex problems in contexts that reflect 'the multiple uses to which their knowledge will be put in the future' (p. 487).

Brown et al. (1989) further developed the theory of situated learning and have emphasised the concept of cognitive apprenticeship. Through a process of cognitive apprenticeship learners have the opportunity to acquire and develop complex skills by accessing a variety of models of expertise and by observing other learners with varying degrees of skill. Learning in the apprenticeship model occurs through social interaction and collaboration with masters and other learners and through active participation in activities that are authentic and related to the tasks preformed by practitioners in their everyday work.

In the specific context of second language learning, situated learning occurs when learners have the opportunity to develop their communicative skills by actively applying their knowledge and engaging in the types of authentic and purposeful communication that are likely to take place in a real world

context with other learners and with native speakers of the target language. This was accomplished in the course by giving students the opportunity to engage with native speakers in the completion of realistic tasks.

Communities of practice and legitimate peripheral participation

The concept of community of practice proposed by Lave and Wenger (1991) is closely related to the theory of situated learning and refers to a group of people who engage in a common activity, interact with each other and develop a shared knowledge about a particular topic. Wenger (1998) describes the three defining dimensions of a community of practice. These are the mutual engagement of participants in community activities, the negotiation of a joint enterprise and the development of a shared repertoire. According to Wenger, these dimensions are the source of coherence of a community of practice and contribute to create relationships of mutual accountability among community members.

The process of becoming part of a community of practice takes place under the conditions of legitimate peripheral participation (Lave & Wenger, 1991). The notion of “peripheral” refers to the different ways in which a newcomer to a community, or learner, engages in social practice with expert community members and gradually moves from the periphery of the community to its centre. Through a process of increasing participation and engagement in the activities of a community and through interaction and collaboration with more experienced community members, newcomers become involved and absorbed in community practices, develop social relations with other community members and learn from them.

The concepts of community of practice and legitimate peripheral participation can be applied to a second language learning context where learners, by engaging in social interaction and collaborative activities with more competent speakers of the target language, such as peers, teachers and native speakers, gradually become part of a community of speakers of the target language and eventually reach the level of expertise of the members closer to the core of the community.

Phase 3: Iterative cycles of testing and refinement of solutions in practice

The third phase of the research consisted in the implementation of two iterative cycles of testing and refinement of the solutions proposed in the second phase of the study.

The first iteration was conducted over the first six weeks of the university semester with a group of sixteen second and third-year students of Italian and four native speaker facilitators. Students were required to complete the first of the two activities described in phase two of the study. In order to complete the activity students divided themselves into small collaborative groups and agreed on the geographical focus of the task. Each group was then assigned to a native speaker facilitator who participated in the individual groups’ online discussions and assisted students for the entire duration of the task by providing them with feedback and support as required.

During the course of the first iteration, data was collected through recording, note taking, class observation and focus group interviews with the students and then analysed in order to determine the effectiveness of the online learning environment developed, and to identify any issues or problems related to the design of the authentic activity, the role of the native speakers facilitators, the collaborative work among community members and the technology used to support this collaboration. The findings of the first iterative cycle assisted with the refinement of the second cycle of the study. A number of changes were made to the learning environment and all of the problems encountered were addressed before the commencement of the second cycle.

The second iteration was conducted over the last six weeks of the same semester with the same group of students and five Italian native speaker facilitators. Students were required to complete the second of the two activities described in phase two and to collaborate and communicate with other community members through the online resources provided, as they did during the first iteration. For the second activity each group was assigned to a different facilitator. Data was collected through recording, note taking, class observation and individual interviews with the students and with the facilitator, and then analysed.

Phase 4: Documentation and reflection to produce Design Principles

The fourth and final phase of the study is the documentation and reflection phase (the current phase of the study). In this phase, the data analysed in phase three of the research will be documented and reflected upon in order to produce a new set of design principles and guidelines that could be referred to and followed by other language instructors interested in addressing a similar problem and developing a similar learning environment within their specific educational context.

The design principles developed during this phase mirror the framework for analysis of the data used in Phase three of the study and will be organised into four main categories. The first set of design principles will focus on the defining characteristics of the authentic tasks and on how to develop learning tasks that provide opportunities for students' learning in a community of practice. The second set will focus on how to effectively support the collaborative work among community participants in order to assist them complete the learning tasks. The third set of guidelines will relate to the role of the native speaker participants in the online learning environment and will focus on how to effectively guide the native speaker facilitators in the task of providing students with the appropriate scaffolding during their work on the learning activities. The fourth and final set of guidelines will focus on how to effectively use the technology to facilitate the establishment of a community of learners and of a collaborative learning environment.

Conclusion

This paper describes a study that adopted the four-phase design-based research approach proposed by Reeves (2006) and others to design and implement an online community of second language learners of Italian at an Australian university, with the aim of providing students with the opportunity to interact with native speakers of the target language through participation in authentic and collaborative activities.

The design-based research model was chosen for this study because it is a powerful approach that aims at finding a solution to a practical educational problem through the development of an intervention that involves technological innovations and is based on theoretical principles derived from prior research. The design-based research model also allowed for the incorporation of successive iterative cycles to test and refine the learning environment developed, and for the establishment of design principles to assist researchers and teachers in the task of developing similar learning designs in their own educational setting.

References

- Brown, A. L. (1992). Design experiments: Theoretical and methodological challenges in creating complex interventions in classroom settings. *The Journal of the Learning Sciences*, 2(2), 141-178.
- Brown, J. S., Collins, A., & Duguid, P. (1989). Situated cognition and the culture of learning. *Educational Researcher*, 18(1), 32-42.
- The Design-Based Research Collective (2003). Design-based research: An emerging paradigm for educational enquiry. *Educational Researcher*, 32(1), 5-8.
- Cobb, P., Confrey, J., diSessa, A., Lehrer, R., & Schauble, L. (2003). Design experiments in educational research. *Educational Researcher*, 32(1), 9-13.
- Collins, A. (1992). Towards a design science of education. In E. Scanlon & T. O'Shea (Eds.), *New directions in educational technology* (pp. 15-22). Berlin: Springer.
- Collins, A., Brown, J. S., & Newman, S. E. (1989). Cognitive apprenticeship: Teaching the crafts of reading, writing, and mathematics. In L. B. Resnick (Ed.), *Knowing, learning, and instruction* (pp. 453-494). Hillsdale, NJ: LEA.
- Daniels, H. (2008). *Vygotsky and research*. London: Taylor & Francis.

- diSessa, A., & Cobb, P. (2004). Ontological innovation and the role of theory in design experiments. *Journal of the Learning Sciences*, 13(1), 77-103.
- Donato, R. (2000). Sociocultural contributions to understanding the foreign and second language classroom. In J. P. Lantolf (Ed.), *Sociocultural theory and second language learning* (pp. 27-50). Oxford: Oxford University Press.
- Ellis, R. (2003). *Task-based language learning and teaching*. Oxford: Oxford University Press.
- Gass, S. M., & Selinker, L. (Eds.), (2008). *Second language acquisition: an introductory course*. Hoboken, NJ: Taylor & Francis.
- Herrington, A., & Herrington, J. (Eds.), (2006). *Authentic learning environments in higher education*. Hershey, PA: ISP
- Herrington, J., & Oliver, R. (2000). An instructional design framework for authentic learning environments. *Educational Technology Research and Development*, 48(3), 23-48.
- Herrington, J., Reeves, T.C., Oliver, R., & Woo, Y. (2007). Designing authentic activities in web-based courses. *Journal of Computing in Higher Education*, 16(1), 3-29.
- Lantolf, J. P. (2000). *Sociocultural theory and second language learning*. Oxford: Oxford University Press.
- Lantolf, J., & Thorne S.L (2006). *Sociocultural theory and the genesis of second language development*. Oxford: Oxford University Press.
- Lave, J. (1988). *Cognition in practice: Mind, mathematics, and culture in everyday life*. Cambridge: Cambridge University Press.
- Lave, J., & Wenger, E. (1991). *Situated learning: Legitimate peripheral participation*. Cambridge: Cambridge University Press.
- Lightbrown, P. M., & Spada, N. (2006). *How languages are learned*. Oxford: Oxford University Press.
- Mitchell, R., & Myles, F. (2004). *Second language learning theories*. London: Arnold.
- Reeves, T.C. (2006). Design research from a technology perspective. In J. van den Akker, K. Gravemeijer, S. McKenney & N. Nieveen (Eds.), *Educational design research* (pp. 52-66). London: Routledge.
- Thorne, S. L. (2005). Epistemology, politics, and ethics in sociocultural theory. *The Modern Language Journal*, 89(3), 393-409.
- van den Akker, J. (1999). Principles and methods of development research. In J. van den Akker, N. Nieveen, R. M. Branch, K. L. Gustafson & T. Plomp (Eds.), *Design methodology and developmental research in education and training* (pp. 1-14). The Netherlands: Kluwer Academic Publishers.
- van den Akker, J., Gravemeijer, K., McKenney, S., & Nieveen, N. (Eds.). (2006). *Educational design research*. London: Routledge.
- Vygotsky, L. S. (1978). *Mind in society: The development of higher psychological processes*. Cambridge, MA: Harvard University Press.
- Wang, F., & Hannafin, M. J. (2005). Design-based research and technology-enhanced learning environments. *Educational Technology Research & Development*, 53(4), 5-23.
- Wenger, E. (1998). *Communities of practice: Learning, meaning, and identity*. Cambridge: Cambridge University Press.
- Wenger, E., McDermott, R., & Snyder, W. (2002). *Cultivating communities of practice: A guide to managing knowledge*. Boston, Massachusetts: Harvard Business School Press.
- Zuengler, J., & Miller, E. R. (2006). Cognitive and sociocultural perspectives: Two parallel SLA worlds? *TESOL Quarterly*, 40(1), 35-58.