

Developing and Evaluating a Blended Learning Course

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ABSTRACT Blended learning is developing and increasing the usage in all educational institutions especially in higher education. Blended learning have two components, online and face-to-face sessions. Online component needs very careful planning and preparing. The content must be planned before and prepared according to the needs of the students, capacity of the institutions and the subject matter. The main goal of this study was to develop a blended course in an undergraduate course and evaluate the implementation process and the satisfaction of the students. An undergraduate course is redesigned and developed in blended learning context. The course was implemented in 2012-2013 spring semester of a middle-size university in Turkey. Total 54 students completed the course in 14 weeks. Qualitative and quantitative data were gathered to evaluate the course and the satisfaction of the students. The findings revealed that an undergraduate course could be implemented in a blended learning model, students overall satisfaction was high and the content must be developed for all components of the blended learning. Students were mostly satisfied with the interactive content and online quizzes in each module.

INTRODUCTION

There is a significant movement towards online and blended learning in all educational institutions. Thousands of corporate training programs, institutions of higher education, and K-12 schools participate in blended learning (Picciano et al. 2012; Staker et al. 2011). Recent survey report in USA indicates that 70% percent of academic leaders say online learning is critical to their long term strategy. In USA, the number of students taking at least one online course increased by over 570,000 to a new total of 6.7 million (Allen and Seaman 2013). There is also significant increase in online course offerings in Turkish higher institutions and the students number taking online courses. Academic leaders, lecturers and policy makers in USA believe the success of online and blended learning. 77% percent of the academic leaders rated the learning outcomes in online education as the same or superior to those in face-to-face (Allen and Seaman 2013). There is a slightly larger percent of blended program offerings than online programs across all disciplines. Only in schools offering blended but not online courses were a majority

likely to strongly agree that blended holds more promise (Allen et al. 2007). Blended learning programs and courses are growing in all education levels.

Blended Learning

There have been many attempts to define the blended learning in the past (Mayadas and Picciano 2007; Oliver and Trigwell 2005; Picciano 2009; Vaughan 2007). The primary issue in defining blended learning is the question of what is being blended? Several analyses of existing definitions have been published. Graham (2006) identified the literature's three most common answers to the question: 1. Blending online and face-to-face instruction, 2. Blending instructional modalities or delivery media, and 3. Blending instructional methods. The last two is defined so broadly that they encompass virtually all learning systems. The most common use of the term blended learning denotes a combination of traditional face-to-face and online instruction (Graham 2013). This definition is assumed as a working definition and emphasizes the central role of computer-based technologies in blended learning (Graham 2006). A second issue in defining blended learning includes a reduction in face-to-face contact or seat time (Vaughan 2007; Picciano 2009; Mayadas and Picciano 2007). For example, Picciano's (2009) definition requires that "a portion institutionally defined of face-to-face time [be] replaced by online activity." A third issue commonly raised in defining blended learn-

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ing is how much online learning is required to define the experience as blended learning? Several authors have acknowledged this issue by defining the boundary between blended learning and other modalities as a proportion of content delivered online. For example, Allen and Seaman (2007) categorized *traditional* as having 0% of content delivered online, *web facilitated* as 1-29% online, *blended* as 30-79% online, and *online* as 80% or more. So the online proportion of the blended learning should be between 30-79% and generally it depends on the subject, student's qualifications and the teacher's skills.

Learning effectiveness is very important in blended learning models. Some meta-analyses were done in the effectiveness of the blended learning models on face to face instruction, web-based instruction and purely online instruction. Paul (2001) compared the effectiveness of Web-based training environments with blended environments combining face-to-face and web based training. The study reported a minimal difference in favor of blended over purely online courses. In 2005 Zhao et al. conducted a meta-analysis considering a dozen moderating factors, which found that of all the factors, instructor involvement had the most significant impact. A meta-analysis in 2006 by Sitzmann et al. compared the effectiveness of web-based instruction and blended learning with classroom instruction. Blended learning was determined to be more effective than classroom instruction, for declarative knowledge and for procedural knowledge outcomes. Most recently, in 2009 the U.S. Department of Education sponsored a meta-analysis looking at contrasts between online and traditional face-to-face learning (Means et al. 2009). The primary findings of the study claimed that "classes with online learning whether taught completely online or blended on average produced stronger student learning outcomes than did classes with solely face-to-face instruction. Blended learning recently emerged as an effective learning-teaching model in all educational levels.

Learner satisfaction is also very important in blended learning course design. Learner satisfaction is complicated, as it is influenced by the expectations, goals, and preferences of the learners as well as the course design and implementation (Graham 2013). Rothmund (2008) found a correlation between learner interaction and satisfaction in blended courses. Akyol et al. (2009) found that students valued both social presence and teaching presence in their blended learning

experiences. Rovai and Jordan (2004) conducted a study looking at the sense of community developed in fully online, blended, and traditional face-to-face courses. The findings suggest that blended learning experiences build a stronger sense of community among students than either fully online or traditional courses. Available evidence shows that many learners value both the richness of interactions in a face-to-face environment and the flexibility, convenience, and reduced opportunity costs associated with online learning (Graham 2013).

Blended learning is a combination of face-to-face learning and online learning. Both learning environments have unique features. One unique instructional feature of a face-to-face learning environment is that it provides direct, place-based, social interaction between students, the instructor and other students. This feature provides a synchronous mode of communication that fosters high motivation and engagement by allowing learners to test their understanding immediately through interactions with instructors and peers (Dennis et al. 2006). Online learning provides course materials and messages anywhere and anytime that allow students to study independently of time and space. In other words online learning environment provides flexibility to students at any time and from any location that is convenient and it shows the asynchronous nature of the online environment. Fidelity, measure of richness of communication, is an important aspect of learning environments. Face-to-face environment have very high fidelity, while online learning have low fidelity (Dennis et al. 2006). Consistency in course content is the other unique feature of the online environment. Online content doesn't change course to course where face-to-face content can change according to the lecturer and classes. The lecturer can forget or change the subject and the examples in different classes. Individualization is another unique feature of the online learning environment. In this environment student can complete learning activities at his own pace, while in face-to-face environment every student listen and learn the same things from the lecturer. It's difficult for an instructor to individualize classroom activities (Dennis et al. 2006).

MATERIAL AND METHODS

The main aim of this study is to describe the learners' views on blended learning, its ease of use for web environment, content of web envi-

ronment, face-to-face sessions and emotional feelings about studying on website.

Settings

This study is a part of dissertation research study about blended learning. The aim of the dissertation was to develop and evaluate an undergraduate course in blended learning model. The study conducted at faculty of education at Gaziantep University in Turkey. Instructional Technology and Material Design course was selected to study. This course was compulsory for all students in faculty of education. This course consists of two parts. First part of the course is related with the theoretical knowledge about designing and developing instructional materials, second part is related with implementing the theoretical knowledge to produce an instructional material for a specific course subject. Students were free to choose the subject and the lecturer distributes the specific learning goals. Students had to prepare an instructional material according to the learning goals. Elementary school teacher training department was chosen to conduct the study because the pilot study was done on that department in previous year. The researcher prepared the blended learning model 50 % percent online, 50 % percent face-to-face session. The course was transformed to 2 hours online, 2 hours face-to-face, total 4 hours. The data were gathered in 2012-2013 education year. The content was created in modules. Each module includes all the necessary information text, videos, interactive content and slides about a specific subject and each includes a practice quiz at the end of each module.

Website Design

The researcher developed a website on the university server <http://www1.gantep.edu.tr/~otmt/>. Moodle learning management system was selected to be used because it supports Turkish language. Moodle 1.9.14+ version was used in this study. The contents were created by some software programs such as Adobe® Captivate 5, Camtasia Studio, Hot Potatoes, Microsoft Word, Excel, PowerPoint. Also some Moodle activities such as creating course, quiz, links etc. used to create contents and quizzes.

The Content

Content was created by the researcher to assess the impact on the students. Some books,

book chapters and articles related with the subject were put on the website in PDF format. Some presentations were put on the website in PDF and PowerPoint format. Some content were created by Moodle course activity. With this activity content can be created with pictures, videos, links etc. But there is no interactive content can be created with this feature. To create interactive content, the researcher used Adobe captivate program. With this program one can create interactive content and interactive quiz. Quizzes are very important for the online content, because they give immediate feedback to the learners what they study. To create interactive quiz the researcher used Adobe Captivate, for non-interactive quiz the researcher used Hot Potatoes and Moodle Quiz activity.

Data Collection Tools

In this research mixed method was used to collect the data. The data were collected qualitatively and quantitatively. Qualitative data were gathered with interview at the end of the course by asking questions about the content and website. Sample interview questions: What do you think about the videos in the modules? What do you think about Moodle website? The main aims of the questions were to explore the views and the satisfaction of the students about the design and effectiveness of the content.

Quantitative data were gathered with "Learners' Views on Blended Learning and Its Implementation Process" developed by Akkoyunlu and Soylu (2008). The scale has 6 subscales in original form with 50 items. The researcher used 4 subscales with 29 item because the study doesn't include web based assessment and forum. The subscales are: Ease of use for web environment (5 items), web-content (6 items), face-to-face sessions (9 items) and emotional feelings (9 items). The Cronbach-Alpha reliability is calculated 0.86 in original Turkish version of the scale. The Cronbach-Alpha calculated 0.70 in this study. The data were collected in the second term of the 2012-2013 academic year.

Participants

The participants of the study were the students of Elementary School Teacher Training Program of Faculty of Education at Gaziantep University. The students were studying their first year in their department. Totally 54 students participated to the study including 36 female and 18

male. The age range of the participants was between 19 and 23 with mean 20.77.

RESULTS

Quantitative Findings

According to the findings, students mostly liked and showed satisfaction to the blended learning as seen in Table 1. Students strongly liked face-to-face sessions of the blended learning model $\bar{X}=4.21$. Totally it can be said that students liked blended learning model and the course satisfied them $=3.72$.

Table 1: Descriptive statistics of subscales

Sub-scales	N	Mean	Std. deviation
Emotional feelings	54	3.53	.38
Ease of use	54	3.56	.75
Content web	54	3.57	.56
Face-to-face sessions	54	4.22	.68
Total	54	3.72	.37

To find out the gender effect on blended learning satisfaction, independent t-test was used. According to the findings there was no significant difference between males $=3.69$ and

females $=3.73$ to the total blended learning satisfaction (Table 2). One-way Anova test was used to find out the age effect on the total blended learning satisfaction. There were no significant differences between age groups to the total blended learning satisfaction. All the age groups reported satisfaction with the blended learning (Total $=3.75$).

Table 2: Descriptive statistics of age groups to the total blended learning

Age groups	N	Mean	Std. deviation
19	3	3.66	.52
20	18	3.84	.32
21	23	3.58	.39
22	8	3.74	.30
23	2	4.10	.04

The researcher used different content creator programs such as Adobe Captivate, Adobe Presenter, Camtasia Recorder, Hot Potatoes, Moodle Content Creator Programs, and office programs. To assess the effectiveness of the contents, the number of students is important who used the content and the number of click of the students for the contents. The findings presented in Table 3.

Table 3: Statistics of webpage content

Content	Number of student	Mean	Percentage of students %	Number of click	Mean	Type of content
Slide 1	44	43	79.6	171	153	PDF
Slide 2	42			135		
Slide 3	47			124		
Slide 4	40			184		
Book Chapter 1	56	46	85	337	184	PDF
Book Chapter 2	47			191		
Book Chapter 3	51			189		
Book Chapter 4	37			91		
Book Chapter 5	44			161		
Book Chapter 6	40			149		
Book Chapter 7	41			159		
Book Chapter 8	53			202		
Web page	49	49	90	243	243	Web page
Video 1	57			171		
Video 2	47	44	81.4	166	923	Mp4
Tutorial 1	47			986		
Tutorial 2	39			436		
Tutorial 3	48			286		
Tutorial 4	41			379		
Tutorial 5	41			1384		
Tutorial 6	48	50	92.5	2069	1185	Moodle Content Creator
Quiz 1	57			1267		
Quiz 2	55			1885		
Quiz 3	51			1013		
Quiz 4	47			1287		
Quiz 5	47			772		
Quiz 6	43			886		

When Table 3 was examined, students showed interest mostly to the Quizzes (Click Mean: 1185) and secondly to the tutorials (Click Mean: 923) and webpage, video and slides respectively. There seems no difference between the types of the program used in creating the quizzes. But the quiz 3 is prepared interactively with Adobe Captivate program and students stated the importance of the interactivity. There is a huge difference between two tutorial click numbers Tutorial 5 and Tutorial 6. Students reported they used this content mostly because it's prepared as a summary with short explanations and pictures as well as links to the other websites and the opportunity to copy and print the content. When examined the percentage of the students in using the content, video content was the most used content by the participants (Percentage: 96%). The second most used content was the quizzes and web page, book chapter, tutorial and slides respectively.

Students mostly looked and used quizzes, secondly tutorials, web page content (created separately from Moodle but linked), book chapters and slides in PDF format and videos shown below the Table 4.

Table 4: Clicks per students

Type	Click per student
Quiz	24
Tutorial	21
Web page	5
Book chapter	4
Slides	3.5
Video	3

Table 4 represents the click numbers of the students on certain contents in Moodle website. Click numbers shows the interest of the students to a specific content. It can be concluded from the table that, students continually interested in with the quizzes mostly and the videos were the less reviewed content according to the click numbers.

Qualitative Findings

Qualitative data gathering technique is used in this study to get deeper understanding in the view of the students to the blended learning. 18 students agreed to interview with the researcher voluntarily about the blended learning course. Students were asked about the content such as "What do you think about the interactive con-

tent?", "What do you think about the non-interactive content?" Each interview completed between 8-14 minutes. 11 questions were asked about the content.

Positive Views about the Content

Students were asked about the quizzes, tutorials, webpage, book chapters, slides and videos. All students were satisfied with the content according to its type. That means the researcher prepared the content according to its nature. For example if tutorial needs interactivity, Adobe captivate software program was used to create the content. If content needs big pictures and big screen, webpage is preferred to create it. So all the students reported their satisfaction about the type the content created. There was no negative view about it. Students mostly liked the videos and emphasized its necessity in an online course. For example one student stated "*I think all the online courses need videos, because videos draw attention of the people*". Another student reported "*I like to watch videos, especially short ones in lesson*". Students emphasized the importance of existence of the videos in online course especially short ones such between 5-15 minutes. Student reported the importance of book chapters and slides to download and get the hard copy of the lesson. One student reported "*I downloaded the book chapters and slides in PDF format because I can't read too much on computer screen*". Students also showed their satisfaction with the content especially interactive ones. In one of the tutorial, content was supported with audio and pictures, interactively passing according to the audio. The content, picture and audio were synchronized. Some of the students also indicated their satisfaction about the online course prepared by the course lecturer. Some reported "*to hear my lecturer voice felt me like in a face-to-face lesson*." The lesson was presented by the lecturer with voice supported with PowerPoint slides. One student reported "*Our lecturer was not reading the slide, he was lecturing us, and it was very nice*". The students also reported their satisfaction about the content prepared by Moodle content creator, because this content was prepared with pictures and links in short form. There was not too much paragraphs, only the key points were emphasized and link were provided for deeper readings. Students mostly reported their satisfaction with the quizzes at the end of each module. They report-

ed their satisfaction *"It was perfect to have drill and practice at the end of the module."* The other stated *"It was very nice to learn if I understood the subject well or not by quizzes."* The quantitative findings strongly support this that students really liked the quizzes and used it too much in different times. Students also reported their satisfaction with the face-to-face sessions that they learn the key points of the subject and study in small groups with the other students.

Negative Views about the Content

Each module had the quiz, tutorial, book chapters, videos and slides. Students mostly reported their dissatisfaction with the book chapters. Because slides, tutorials and videos were short and book chapters were long. Students reported they really didn't know to study this material or not. Also the book chapters were long and they wanted to learn the key points of the chapters or the summaries. One stated *"Book chapters were too long and I didn't know where to study more."* Students mostly want to read the short paragraphs and be responsible with it in exams. The researcher provided different types of contents to learn the preferences of the students. Because flipped classroom model was used in this blended course, students wanted to see the key points of the subject online, and don't want to read book chapters because of their time on the other lessons. Students also reported their dissatisfaction with the access to the Internet web page of the lesson. They reported *"Many times we couldn't access to the lesson because of the internet connection problems"*. Some content prepared with SCORM standard, sometimes made problems on screening. Some contents were getting too much time 1-2 minutes in opening which was prepared with SCORM standards. Students were reported they can't open the content. Some students also reported their dissatisfaction about reaching the internet because some don't have Internet connection in their homes and in dormitory. The researcher provided Computer Lab for these students.

DISCUSSION

This study showed that overall satisfaction of the students to the blended learning course was high, and the most satisfaction was with the face-to-face session. Students strongly satisfied

with face-to-face sessions of the course and satisfied with the overall course. Many students prefer blended courses over their face-to-face counterparts and showed high level of satisfaction in some studies (Dziuban et al. 2004; Leh 2002; Willet 2002). That shows online and face-to-face components reflect the learning outcomes of the module and it shows a balance between components (Glogowska et al. 2011; Garrison and Kanuka 2004). The other interesting findings of the study there were no significant differences between age and gender of the participants according to the blended course satisfaction. All age and gender groups showed their satisfaction to the blended course.

Students mostly used quizzes and satisfied with it because of its nature of giving immediate feedback to the students about their success on learning the subject. The quizzes in this study were prepared with three different software programs Adobe Captivate, Hot Potatoes and Moodle Quiz Maker. Adobe Captivate provides opportunity for interactive and different questions (hot spot for example) to the students. The other two lets to prepare multiple answer question, short answer question and matched questions. One can prepare interactive questions such as Hotpoint questions finding the emphasis on a picture, matching questions by dragging the options. Students reported their satisfaction that kind of questions.

Students reported their satisfaction with the interactive content. The content in this study created interactively that content needs interactivity to continue. So student should click sometimes to listen or see the content. The aim of this activity was to prevent the drop of the student from content. Also some questions were put in the content randomly to get the attention of the student.

Using videos in the online course is necessary because all students reported their satisfaction with the videos and its necessity. But videos must be short between 5-15 minutes and should be in native language. Using PDF is also necessary in online lesson because it can't be changed by the downloader and easy to print. Students also reported PDF documents should be short to read and should be summarized by the lecturer for key points. Students reported they mostly studied to the exams by PDF slides, because they believe that lecturer uses key points in the slides. It seems very important to

learn the key points of the lesson for the students in flipped classroom. That's true because students should study before the face-to-face session in their homes or before the lesson starts and they don't want to lose time finding out the key points from very long paragraphs or book chapters.

Internet connection problems, opening problems for some SCORM packed tutorials and long book chapters were the issues and challenges for student dissatisfaction came into view in this study. Moodle as a Learning Management System used in this study as a content presentation and to monitor the students. The researcher satisfied with the Moodle system as it's free and supports the native language and usage in online lesson. Students also asked about the ease of use and usefulness of the LMS. Students mostly reported their satisfaction with the system about its usefulness and ease of use.

CONCLUSION

Overall this study proved that blended learning could be implemented in a higher education course. The contents should be prepared very carefully and should be prepared according to the content and the opportunities. Flipped classroom technique could also be used as a teaching technique in a blended course. But flipped classroom needs very high responsibility of the students. At the face-to-face sessions students were not very prepared before the lesson. Students reported that they were not accustomed to study in this model, so it was hard to study.

RECOMMENDATIONS

This study could be done with different courses in university level. Also the other authoring programs could be used to create content and quizzes. The researcher used Blended Learning Scale for quantitative data; the other scales could be used to assess the satisfaction of the participants.

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REFERENCES

- Akkoyunlu B, Soylu MY 2008. Development of a scale on learner's views on blended learning and its implementation process, *Internet and Higher Education* 11: 26-32
- Akyol Z, Garrison DR, Ozden MY 2009. Online and blended communities of inquiry: Exploring the developmental and perceptual differences. *International Review of Research in Open and Distance Learning*, 106: 65-83.
- Allen I E, Seaman J 2007. Online Nation: Five Years of Growth in Online Learning. Sloan Consortium report. From <http://sloanconsortium.org/publications/survey/online_nation>. (Retrieved on May 22, 2013).
- Allen IE, Seaman J, Garrett R 2007. *Blending in: The Extent and Promise of Blended Education in the United States*. Massachusetts Babson Survey Research Group
- Allen IE, Seaman J 2013. Changing Course Report, Babson Survey Research Group Report. From <<http://www.onlinelearningsurvey.com/reports/changingcourse.pdf>> (Retrieved on May 12, 2013).
- Dennis A, Bichelmeyer B, Henry D, Cakir H, Korkmaz H, Watson C, Bunnage J 2006. The Cisco Networking Academy: A model for the study of student success in blended learning environment. In: CJ Bonk, CR Graham (Eds.): *Handbook of Blended Learning: Global Perspectives, Local Designs*. San Francisco, CA: Pfeiffer, pp. 3-21.
- Dziuban C, Hartman J, Moskal PD 2004. *Blended Learning*, ECAR Research Bulletin
- Garrison R, Kanuka H 2004. Blended learning: Uncovering its transformative potential in higher education. *Internet and Higher Education*, 7: 95-105.
- Glogowska M, Young P, Lockyer L, Moule P 2011. How 'blended' is blended learning?: Students' perceptions of issues around the integration of online and face-to-face learning in a continuing professional development (CPD) health care context. *Nurse Education Today*, 31: 887-891. doi: 10.1016/j.nedt.2011.02.003
- Graham CR 2006. Blended learning systems: Definition, current trends, and future directions. In: CJ Bonk, CR Graham (Eds.): *Handbook of Blended Learning: Global Perspectives, Local Designs*. San Francisco, CA: Pfeiffer, pp. 3-21.
- Graham C R 2013. Emerging practice and research in blended learning. In: MG Moore (Ed.): *Handbook of Distance Education*. 3rd Edition. New York, NY: Routledge, pp. 333-350.
- Leh A 2002. Action research on hybrid courses and their online communities. *Education Media International*, 39(1): 31-38.
- Mayadas AF, Picciano AG 2007. Blended learning and localness: The means and the end. *Journal of Asynchronous Learning Networks*, 111: 3-7.
- Means B, Toyama Y, Murphy R, Bakia M, Jones K 2009. *Evaluation of Evidence Based Practices in Online Learning: A Meta-Analysis and Review of Online Learning Studies*. U.S. Washington D.C.: Department of Education, Office of Planning, Evaluation, and Policy Development.
- Oliver M, Trigwell K 2005. Can "blended learning" be redeemed? *E-Learning*, 21: 17- 26. doi:10.2304/elea.2005.2.1.2

- Paul DS 2001. *A Meta-analytic Review of Factors that Influence the Effectiveness of Web Based Training within the Context of Distance Learning*. Doctoral Dissertation, Unpublished. Texas A and M University, College Station, TX.
- Picciano AG 2009. Blending with purpose: The multi-modal model. *Journal of Asynchronous Learning Networks*, 131: 7-18.
- Picciano AG, Seaman J, Shea P, Swan K 2012. Examining the extent and nature of online learning in American K-12 education: The research initiatives of the Alfred P. Sloan Foundation. *The Internet and Higher Education*, 15: 127-135.
- Rothmund C 2008. *Correlation between Course Interactivity and Reported Levels of Student Satisfaction In Hybrid Courses*. Doctoral Dissertation, Unpublished. Capella University, USA.
- Rovai AP, Jordan HM 2004. Blended learning and sense of community: A comparative analysis with traditional and fully online graduate courses. *International Review of Research in Open and Distance Learning*, 52: 13.
- Sitzmann T, Kraiger K, Stewart D, Wisher R 2006. The comparative effectiveness of web-based and classroom instruction: A meta-analysis. *Personnel Psychology*, 593: 623-664. doi:10.1111/j.1744-6570.2006.00049.x
- Staker H, Chan E, Clayton M, Hernandez A, Horn MB, Mackey K 2011. The Rise of K-12 Blended Learning: Profiles of Emerging Models Innosight Institute Report 2011. From <<http://www.innosightinstitute.org/innosight/wp-content/uploads/2011/01/The-Rise-of-K-12-Blended-Learning.pdf>> (Retrieved on May 15, 2013).
- Vaughan N 2007. Perspectives on blended learning in higher education. *International Journal on E-Learning*, 61: 81-94.
- Willet HG 2002. Not one or the other but both: Hybrid course delivery using WebCT, *Electronic Library*, 20(5): 413-419
- Zhao Y, Lei J, Yan B, Lai C, Tan HS 2005. What makes the difference? A practical analysis of research on the effectiveness of distance education. *Teachers College Record*, 1078: 1836-1884. doi:10.1111/j.1467-9620.2005.00544.x