Abstract.
The continuing improvements in the worldwide access to the Internet are rapidly improving the capacity of universities to engage in international collaborative eLearning. In this paper we evaluate some of the evolving strategies that University of Kansas (KU) and University of Costa Rica (UCR) are using to advance eLearning strategies designed to establish meaningful and sustained relationships between individuals, classes and our universities. As part of this investigation we consider: 1) how to effectively use technology and pedagogy to enrich social interaction and learning, 2) strategies and technologies for engaging students in collaborating on issues of mutual interest, 3) understanding how the quality of relationships can improve learning, 4) institutional issues and barriers related to implementing coursework, certifications and academic programs across international institutions. The analysis indicates that student collaborate more when they can meet in live teleconferencing as opposed to relying solely of asynchronous email or threaded discussions for collaborative project. Participants reported that strategies that scaffold activities by beginning with clearly stated problems and achievable common goals, such as locating and ranking relevant web resources, contribute to richer collaborations.

Key words: Open source, collaborative group work, asynchronous and synchronous communication, eLearning, teleconferencing, online teaching, co-teaching, teamwork

Resumen.
El crecimiento continuo del acceso al Internet a nivel mundial está promoviendo rápidamente convenios entre universidades para el aprendizaje internacional colaborativo en línea. Este es el caso de la Universidad de Kansas (KU) y la Universidad de Costa Rica (UCR). Ambas universidades están desarrollando estrategias de aprendizaje en línea para establecer relaciones significativas y sostenible en línea. Los objetivos del estudio acerca del aprendizaje colaborativo en línea busca investigar los siguientes aspectos: (1) la integración de la tecnología y la pedagogía para enriquecer la interacción social y el aprendizaje, (2) la integración de estrategias y tecnologías para incorporar a los estudiantes en actividades de colaboración acerca de temas de interés común, (3) entender como la calidad de la relaciones sociales pueden mejorar el aprendizaje, y (4) los eventos y barreras internacionales relacionadas con la implementación de los cursos académicos, certificaciones y programas entre instituciones internacionales. El análisis indica que los estudiantes colaboran más activamente cuando tienen encuentros reales en teleconferencias y no así simplemente con la interacción asíncrona o discusiones en línea para los proyectos colaborativos. Los participantes reportan que las estrategias que facilitan las actividades y
Introduction

Online learning, eLearning, or web based training are names given to a wide range of education and training strategies through the Internet. Effective international eLearning environments provide learners with opportunities for a high degree of interactivity with authentic speakers who are engaged in meaningful tasks. In these environments, learners are engaged in creative problem solving that promote both learner autonomy and opportunities to mentor and support team members in international collaborations.

One factor that appears to influence the success of international collaborative eLearning is the ability of the team members to identify common meeting times for synchronous sessions. Our initial investigations indicate that the quality of international collaborations and jointly produced products are best served when schedules overlap using “Any Place but Same Time” communication strategies and technologies. The initial university partnership between the University of Costa Rica (UCR) in San José and the University of Kansas (KU) in Lawrence is designed to establish meaningful and sustainable collaborations among faculty, students and academic programs.

We have conducted several collaborative sessions with students from KU and UCR that have involved both virtual and onsite collaborative project development. We are investigating user interfaces and tools for developing affordable community-based Web frameworks that can be easily implemented to advance collaborative learning in international settings (see figure 1).

This paper addresses the implications of teaching and learning collaborations. It describes the practical application of international collaborative eLearning and provides sample projects as evidence.
Literature Review

Teaching and Learning Collaborations

Teaching and learning international collaborations can be seen from a transnational perspective involving several nations or nationalities. Recently, researchers, scholars and practitioners have come to understand that not only is the world increasingly globalized, but transnational (Portes, 1997; Pries, 2004). That is, resources and people cross boundaries: a) to get better access to education; b) to provide knowledge for cultural awareness and competence among educators; c) to reach impact on local higher education systems; d) to gain foreign qualification without moving from their country of residence; e) to look at options for human resource development; f) to expand course offerings, among others. (McBurnie & Pollock, 1998).

International collaborative eLearning falls into the trend of Transnational Education (TNE) when distance learning or virtual education is involved. Through international collaborations, students have clearly recognized the value of collaborating with students from different cultures in investigating different topics. Students who use multiple communication technologies in properly scaffolded challenges that culminate in meaningful knowledge artifacts, such as web reports, Wikis, and PowerPoint slides, have demonstrated significant growth in their knowledge and awareness of critical transnational issues.

Collaborative eLearning

According to Salmons (2006), collaborative eLearning is defined as “constructing knowledge, negotiating meanings, and/or solving problems through mutual engagement of two or more learners in a coordinated effort using Internet and electronic communications” (p.2). Collaborative eLearning thereby becomes a means for integrating efforts of international participants into unified outcomes. In international collaborations, participants learn from each other as transfer knowledge and new ideas
from diverse perspectives while gaining a greater understanding of their partners’ culture and language.

Several levels of collaboration are needed for effective application and implementation of group activities. Salmons (2006) explained that each level of collaboration is built upon the previous one in order to create multi-stage projects and to construct competencies and teamwork. These levels include dialogue, peer review, parallel review, sequential collaboration, and synergistic collaboration. At the dialogue level, participants exchange ideas in discussions or shared learning events. As they reach the peer review stage, teamwork involves mutual critique and the comments made on the on-line projects or assignments are based on peer input. Parallel collaboration proceeds by giving more responsibilities to the participants. Each student must complete a component of the collective project or assignment. In the sequential stage, the project is built upon each student’s contributions as they offer unique ideas to create products.

In the last level of collaboration, synergistic, students integrate all contributions and use collaborative strategies at the fullest for the creation and presentation of an original product for online learning (Salmons, 2006). These levels of collaboration have been experienced by students from KU and UCR in culminating papers or technology projects in the targeted themes such as global warming, aging, transmigration and e-commerce.

**Constructivist Approaches to Collaborative Learning**

Active constructivism approaches to learning describe learning as a social process that takes place through ongoing communication with others. Constructivists describe learning as an interactive process with students constructing knowledge, formulating ideas into words, contributing and reacting to others. A central concern of this investigation is to consider the design of interactive learning environments that will most effectively engage learners from different countries in working together to construct knowledge and solve problems of international significance. This type of pedagogy focuses on the role of peer relationships in educational success rather than the direct-transfer or one-way knowledge transmission in typical traditional direct instruction. Some examples of collaborative learning activities are seminar-style presentations and discussions (in which students are the teachers), debates, group projects, simulation and
role-playing exercises, web pages, or other artifacts that demonstrate the knowledge and skills that are the subject of the course (Hitz, 1986).

According to Stahl (1994), one of the critical attributes to collaborative group learning is that the cooperative behavior requires trust-building activities, joint planning, and an understanding of team support conduct. In addition, the grouping practices include procedures such as forming homogeneous or heterogeneous groups in terms of skills, levels or interests, assignment of roles within the group and the nature of short or long term group assignments. It also involves the setting up of interdependence structures like goal achievement resources as well as division of tasks. Evaluation procedures cannot be disregarded from collaborative learning in order to reach levels of peer evaluation and self-reflection. According to Duffy and Cunningham (1996), the rationale of students working together is “to promote dialogical interchange and reflexivity among learners” (p.186).

Students from KU and UCR have engaged in collaborative on diverse topics that involved all group members in constructing knowledge that reflect their mutual understanding on common themes. For example, students in the Integration of Technology partnership explored question of: Rainforest Destruction, The Debate Concerning Bilingualism, and Central American Free Trade Agreement (CAFTA). Once the teams are organized, they use email, threaded discussions and Skype teleconferences to explore the issues, collect knowledge resources and to create knowledge artifacts that reflects their understandings. Depending on their technical skills and preferences these products included research articles, and media rich description of topics using powerpoint decks, video, wikis, and web sites. Collaborative eLearning demands organization and responsibilities by the instructor and the students involved in the projects.

This is an example of a social awareness project group that is formed by two students of the University of Costa Rica and two students from the University of Kansas. Each member of the group makes a description of their profile (their hometown, major, working experience, hobbies ...). The students also add information about their email or skype account to communicate on line.
Each group provides the evidence of the artifacts they have created. The group presents a document that describes the project including the development environment, the project objectives, collaborations, description and issues.

E-books (eMail Group)

a. Descriptions and Critical Issues
   How are e-Books being used? How the changing patterns of ebook and physical book is affecting learning? How available are eBooks worldwide?

b. Participants

UCR: Irene Marin - irene.marin@gmail.com - SKYPE: irenemarin
I am currently finishing my M.A. in TESL at UCR. This is my second year as a Graduate Assistant of the Master's program. Besides, I work for the Program "Conversation Courses" teaching youngstars and adults. Right now, I am also learning Portuguese. As part of my hobbies, I love swimming and reading books in English and Spanish. Poetry is one of my favorite genres. I enjoy solving jigsaw puzzles at home. I believe that I am very curious regarding language; that is probably the reason why I love teaching. It gives me the opportunity to do constant language research.

UCR: Juan Pablo Zurita - vigiliaul@ymail.com - SKYPE: vigiliaul
I am an English teacher/student. I am enrolled at the M.A. in English teaching at UCR. Besides, I work as a teacher at public English conversation course program at UCR. I love music; I am a singer in Lau Deo Choir (www.laudeo.com). My teaching philosophy is simple: both student and teacher can learn from each other, for learning is reciprocal.

KU: Bandar Almatari - may1977@ku.edu - SKYPE: razan1977
My name is Bandar Almatari. I am from Saudi Arabia. I have been in the U.S since 2005. I am working on my M.A in Curriculum and Instruction and I am also a GTA; Graduate Teaching Assistance. I am teaching Arabic as a second language and I am enjoying reading, writing and teaching.

KU: Rachel Magario - magario@gmail.com - SKYPE: magario
I am a Brazilian graduate student at Technology Education and Interaction Design. My background is on communications and geography. I concentrate in accessible materials online and that is why e-books is a great topic of interest to me.

c. Evidence
   • Web and Other Resources
   • Description of the Student Activity (Word File) (Accessible Word File)
   • Student Project 1 powerpoint (Powerpoint)
   • Student Project 1 movie (Movie)
   • Student Project 2 Web (Ebook Web)

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Figure 1: Online International Student Group

In order to develop the collaborative projects successfully, students engaged in threaded discussions. A "threaded discussion" is simply a chronological listing of people's comments (with their names linked to their comments). Threaded discussions organize class discussions into an easy-to-read thread of message posts and replies so that learners can see how the discussion has evolved. Some software allows users to "compile" messages so an entire “thread” can be scrolled through without the need to open individual messages. A learner can start a new thread by posting a message that is not a reply to an earlier message.
There are many uses for asynchronously threaded discussions. Students can respond to an ongoing discussion about a set topic (graph, chart, equation, image, chapter reading, article, etc.) among themselves in the target language or with native speakers in a different place. The threaded discussions can support class announcements, problem solving, or frequent questions and project planning. As students discuss their projects, they keep a record of their comments, ideas, opinions, and suggestions.

The following is an example of a threaded discussion. As you can see in this threaded discussion, students can thread, can respond to threads, add comments to other comments, and thus, create a thread of opinions. They can also see who posted the comment, the date of the post, and the number of persons who checked the post.

Re: Group 7: How do I Choose a Healthy Diet

Posted By: John <chiyang@ku.edu>
Date: Wednesday, 8 November 2006, at 9:33 a.m.

In Response To: Group 7: How do I Choose a Healthy Diet (Ana Marta Arguedas)

Lynette and I have been working on a brief proposal entitled, "Mom isn't here, how do I choose a healthy diet?" I am sure that it would be done by today's class and then we would be able to send you guys the initial ideas. I have a hunch that it's gonna be a great turnout.

Messages In This Thread

Group 7: How do I Choose a Healthy Diet (views: 44)
Ana Marta Arguedas -- Tuesday, 7 November 2006, at 3:54 p.m.
Re: Group 7: How do I Choose a Healthy Diet (views: 34)
John -- Wednesday, 8 November 2006, at 9:33 a.m.
Re: Group 7: How do I Choose a Healthy Diet (views: 11)
Lynette Hosek -- Thursday, 9 November 2006, at 10:03 p.m.
Re: Group 7: How do I Choose a Healthy Diet (views: 6)
John -- Friday, 10 November 2006, at 1:02 a.m.
As students collaborate in the development of their final or original artifacts, they have the opportunity to share alternative viewpoints, support each other's inquiry processes, and develop critical thinking skills that include the ability to reflect and improve on their own learning. That is the purpose of teleconferences and that is exactly what students from KU and UCR have experienced in their online collaborative projects. For example, students collaborate on developing social awareness projects using a process that includes:

1) selecting topics that will enhance social awareness.
2) forming international collaboration groups who wish to investigate the topic.
3) defining the critical issues related to the topic.
4) locating and ranking web resources related to the topic.
5) developing a project and an evaluation rubric to engage students in the topic.
6) producing an artifact (web site, wiki, PowerPoint slides) that represents the teams investigations.

Students present these projects under guidelines that specify advanced preparation and presentation structure and Q&A (questions and answers), time in a time and place where the students from both UCR and KU classes can observe and participate synchronously. These presentations will involve the distribution of papers, PowerPoint slides, web sites or other knowledge products and the use of synchronous teleconferencing software, such as Skype.

One of the assets of developing an international collaborative eLearning project is having multicultural participants from partner universities. For example, those participants from UCR are Costa Rican, even though one of the students is American. Students from KU come from different countries: Saudi Arabia, Perú, China, Brazil, Taiwan, South Korea, Turkey, Puerto Rico, Canada, Panama, and most of them from the United States. Indeed, eLearning creates multicultural awareness and encourages the
formation of new social relationships or e-communities with new ideas that strengthen the development of e-projects.

The methodology of international collaborative eLearning deals with the production and presentation of collaborative final projects and the feedback provided by the participants. It also describes the procedure for expertise exchange through online co-teaching. In regards to the latter, organization between colleagues is paramount. This organization and preparation occurs prior to the online presentation of the educator. The following steps should be considered for a successful outcome: a) Open the presentation web page; b) Download the presentation (PDF) file; c) Launch SKYPE and connect to presenter; d) Set Screen Orientation as shown:

![Image](image.png)

*Figure 3: Faculty Presentations Using Video Conferencing*

Before the online presentation itself, both the online professor and the instructor of the course should practice beforehand in order to ensure that content and delivery are in optimal conditions.
Procedures for Team Work

As part of the completion of the different projects, students from both UCR and KU follow procedures in five parts:

Part 1: General Guidelines

a. Students work in Teams of 2-4 (ideally 3) persons and demonstrate their ability to work collaboratively in establishing goals and delegating responsibilities.

b. Students choose a topic to work on a collaborative learning activity. Students become involved in working in a group to collect, organize, analyze and express information. The topic should be related to the content area that at least some members of the group aspire to teach. The topic should also engage students in a collaborative discussion that relates to current social issues in their community and can be generalized globally. The global topics should be comparative in nature and allow group members to contribute their own unique local perspectives. Sample topics: food, family, traditions, holidays, entertainment, comedians, economics, careers, global climate change, environmental protection, tourism, pop culture, poverty, diseases, music, musicians, sports, athletes, habitation, natural disasters, evolution of languages, accessibility for individuals with disabilities, different cultures, and languages.

Part 2: Communicating decisions and role assignment

Using email, threaded discussion, Skype or other communication tools, students communicate with the other members of their team and determine how they will collaborate. They meet online with their project team to discuss the nature of the student activity and the example they will create and the roles that different team members will adopt. This might include:

1. Decision on time and dates for communication as well as the communication tools they will use
2. Decision on the format they will use for the team project (a web site, a PowerPoint deck, a Wiki Site)
3. Roles each member will adopt or play:
Part 3: Description of the Social Awareness Activity

Students give a brief description of the following aspects in about 1/2 page to 4 page total. The description should include the following:

1. The Activity Title: The team works together to develop a brief and descriptive title.

2. The Development Environment:
   For example, This project involves students in developing a series of Web pages.... The school must have at least 12 computers that are connected to the Internet and are capable of running a Web browser. Students may check out digital cameras overnight...

3. The Student Collaboration:
   Describe how the students will work together. This description might include the average group size, the collaborative activities, the communication methods and tools and the roles that different students might adopt. Student roles might include graphics/media coordinator, content expert, programmer, data collector, data analyzer, instructional designer, power point designer, coordinator (realize that some students may play multiple roles).

4. Describe the Student Problem and Activity:
   Describe the problem or issue the students will address. It includes a description for the students of a general problem or issue that they will be addressing, and that is relevant to the curriculum that is being taught and that is preferably to the students’ personal experiences and preferences.

   This section should include a description of the media requirements and a time frame for completing the activity. For example, one of the groups will investigate
and report the recent actions that a business or governmental agency within the community has taken to improve the environment. The report should include a presentation using PowerPoint and include authentic first hand reports with photos and direct quotes from representatives of the organizations and/or environmental agencies. Students should be prepared a month after starting the project. Note: This is a possible example for science or social studies curricula.

Part 4: Presentation of the Proposal

This presentation is designed to assess the planning for the project and the quality of communication.

a. The title of your project.
b. The short description; 150 words of the project
c. A prioritized list of web sites and/or other resources that you will use in researching your topic: (1= best; 2 = second best…)
d. The proposed student project(s) and tools that you will use to create the sample student projects. Students may end up changing their topics but they should begin discussing their topic ideas. Groups of 4 or more should create two sample student projects using 2 different tools. For example, a student project might compare human factors that are influencing a coral reef on the east coast of Costa Rica at Cahuita National Park coral and the Carysfort Reef of Miami Florida. We will create two wikis, one for a reef on the West Coast of the Costa Rica and the west coast of the U.S.
e. Group communication, which includes tools for communicating, quality of communication and ways to improve communication

Part 5: Example of the Project

Students can create an illustrative example that is designed to help students understand the nature of what they will be creating. It might be in the form of a web page, a PowerPoint project, a wiki site or other internet resource.

Part 6: Presentation

This section is divided into preparation, presentation and questions:
• **Preparation**
  Collaborative groups prepare the items for posting to the web site at least 2 days in advance of the presentation date. These items should include:
  1. A Word file describing the activity that students will participate in.
  2. A list of links to web resources that students will use to investigate their topic.
  3. A link to an example of a project that the students might create. (This might be PowerPoint slides, website wiki sites ...)

• **(Presentation)**
  The presentation of the Group Project should include:
  
  1. The name(s) and current positions for each member of the group.
  2. Description of the Activity
     1. The Activity Title.
     2. The Development Environment.
     3. Description on how the students will collaborate
     4. Description of the Student Problem and Activity.
     3. Presentation of the artifact or final project
     4. Questions: Students are engaged in questions and answers regarding the process, ways for communications, and the development of the final artifact.

**Conclusion**

We found that the international collaborative projects are most successful when we follow specific stages that contribute to effective organization, preparation and presentation. As the procedure involves collaborative students from another university, there is a need for communication tools and resources to collect, organize, analyze and share information among the members of the different groups. In addition, the development of an artifact on social awareness with the help of a web site, a PowerPoint deck, a Wiki Site increases communication among both teachers and students on the application of the projects in their everyday curricula.

The roles and competencies of students participating in international collaborative eLearning programs as the one addressed in this paper are new and demanding.
Goodyear, Salmon, Spector, Steeples & Tickner (2001) have described these roles as content facilitator, technologist, designer, manager/administrator, process/facilitator, advisor, assessor and researcher. As the participants collaborate and enrich each other’s programs, the quality of these distance education programs increases.

**References**


Appendix 1

Sample e-Books Social Awareness Activity

Title: The Role of eBooks in the World of Technology Education

The Development Environment:

In this project, graduate students from the University of Kansas (KU) and the University of Costa Rica (UCR) will develop a wiki page and a power point presentation to explore the world of E-books and its impact on learning, especially in the area of English as a second language and the accessibility for those with reading disabilities. It will require one computer lab in each location with high speed internet capabilities, browsers, Power Point, Web development tools, and some sort of chat or voice conferencing software to be use as needed.

Project Objectives:

- Promote online collaboration learning
- Encourage multicultural understanding and team building beyond classroom
- Enhance research abilities
- Increase technology proficiency in web development tools and presentation software
- Develop knowledge about the background, problem-solving, applications and resources of e-books.
- Provide experience on aural and written abilities

Collaboration:

The students will work in groups of four, each with two students from Kansas and two from Costa Rica. The group will communicate through e-mail and set up a weekly meeting to convey their resource findings and decide on the components of their presentation as well as assisting each other with any difficulties they may have.

Two students will be in charge of using the web development tools, and the other two will design a power point presentation. All students must research, evaluate resources, and share information for both the wiki and the power point presentation. Students will be allowed to decide which instant communication software they will use.
Issues and Student Responsibilities:

Each group will address the e-book phenomenon, its advantages, disadvantages, history, formats, availability, and future. Each student will rank a top ten web resources on e-book discussion, downloads, or information.

Students will have approximately one month to work on the project and they will present on November 28 in collaboration with their Costa Rican partners via video conferencing.

Students might describe:

- How e-books can impact learning
- How e-books relate to language learning
- Financial implication of e-books versus printed books.
- Potential repercussion of e-books on education

The group also provides evidence of the project’s artifacts. For example, the group above created three artifacts about their e-Books topic: a PowerPoint presentation, a movie, and an e-Book website.

Figure 4: Sample Powerpoint Project by the e-Books Group
Appendix 2

Student Project on Rainforest Destruction

Snapshots of an example of a collaborative Project related to Rainforest. This project was designed with a PowerPoint deck, and the objective was to analyze the cause and effect of the destruction of the tropical rainforests around the world. Students wanted to look at the species and plants that are affected as well as the effects on the land and the people due to this change. The collaborative group tried to seek a topic that pertains to both of fields: Earth Science and Health Education. There were two members from KU and four members from UCR in this collaborative project.

Figure 4: Sample Powerpoint screens from the Rainforest Destruction Project