Electronic, Web-based Surveys for Research with International Scope: Do they reflect the actual events and concepts?

Research Proposal

Submitted by

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Research Paper Topic

International collaboration in distance education is an increasingly common phenomenon. Online courses are distributed internationally, professional learning communities serve users from different ethnic and linguistic backgrounds and in location scattered around the globe (Thach & Murphy).

Education professionals are also participating in this trend and have a variety of formal and informal distance education opportunities available, in particular educational web portals, which reach across national boundaries and are sometimes designed in several languages, serving a multi-national and multi-linguistic target audience.

Increasingly, designers of educational web portals administer surveys to research the use of these online professional development tools. Since the educational web portals reach across national borders, a multi-national and multi-lingual population will necessarily take the surveys.

The issue is, can electronic and web-based surveys, translated into several languages, ascertain accurately the teachers’ use of educational web portals for their teaching practice, if the teachers are from different cultural, linguistic, and national backgrounds and work in schools in different countries?

Proposed is and in-depth analysis of the cultural and linguistic implications of the use of survey research tools and methods in an online environment with participants from various national, ethnic, and linguistic backgrounds.
Literature Review

The literature review discusses survey research consideration in cross-cultural and international settings for the purpose of evaluating the use of educational web portals by teachers. In order to demonstrate the international reach of educational web portals, literature about such portals and a brief description thereof is included in the review.

The Internet, Learning, and Online Teacher Education

Online teacher education programs come into being and are established with relative cost effectiveness. The Internet lowers the cost of entry for new educational institutions and allows accommodation of a larger number of students. The boundaries between institutions become blurred, resources can be pooled, or educational activities easily replicated (Tschang, 2001).

The blurring of institutional and other boundaries is a characteristic of educational web portals, also described as unstructured online professional development for teachers (Moon & Robinson, 2003, p. 98). These portals can serve teachers in several countries from various linguistic and ethnic backgrounds and are often developed through cooperative efforts of several institutions.

Educational Web Portals

A web portal is a gateway to a specific domain. A web portal dedicated to a specific audience, topic, or product is named a vertical portal (Portal Research, Definitions). A community of people with similar interests could use such a vertical portal and the portal serves as a facilitator for building an Internet community. This
community building is a central feature that distinguishes a vertical portal from simple web sites or horizontal portals such as web browsers (Yahoo, Google etc.). Two key functions of a portal need to be the ability to identify members, and the ability for members to communicate. To facilitate communication, discussion forums, free e-mail, or chat rooms are made available. For a sense of ownership and belonging, secure services such as calendars and other personal record keeping devices are offered (Portal Research, Characteristics).

Designers of professional development for teachers are taking advantage of the relatively new phenomenon of web portals as facilitators of learning communities and gateways to resources. Professional development courses, resources for teaching, discussion boards, and news about educational research and events are available to educators, who can take advantage of those offerings at their discretion. Some portals feature formal training opportunities, others are simply a collection of resources and opportunities for self-directed, unstructured, and informal learning.

Educational web portals, despite of their newness, seem to be proliferating. Butcher, in an attempt to develop best practices for education portal design, assessed the structure and layout of forty-five portals. Included in this survey are only English language sites and the research project does not claim to be an exhaustive survey of all existing sites (Butcher, 2002), more exist as a quick web browse can prove. A variety of institutions are involved in design and maintenance of educational web portals. Companies with commercial interests, such as Houghton Mifflin maintain some portals (Houghton Mifflin Education Place), or Intel who launched a major training program for teachers in the use of computer technology, mainly for science and math education.
(Intel® Innovation in Education). Non-profit private entities or foundations, for example
the George Lucas Education Foundation (GLEF) who designs and maintains Edutopia
figure amongst the sponsors (GLEF). Governmental entities such as school districts,
departments or ministries of education, at times in collaboration with international
governmental and non-governmental organizations or corporations, are also players in
the provision of educational web portals. SchoolNet South Africa, Europe, and the
Canadian SchoolNet (COL International, 2000) are examples in that category.

These networks are not exclusively designed for teacher training, but they
certainly play a role in it. Apart from taking structured distance education courses, the
electronic support network can be used by teachers for non-formal, self-directed
professional development and for communication with other professionals in the field, or
as a resource bank for course design and classroom activities.

Research on Educational Web Portals

Educational web portals for teachers have proliferated but research about their
effect and use by teachers is just beginning. Questions such as how many people
actually access the web portal, how they use the resources, what kind of communication
takes place, arise.

The main question should be, do the educational web portals actually improve
teaching and learning at the classroom level? How do educators translate content,
resources and learning experiences they had using educational web portals into classroom
practices and do their students ultimately? For this purpose interviews, surveys, or
observations would have to be conducted to find out if classroom practices changed and
improved because of the training and resources made available by the portals. So far, few attempts to actually evaluate the effect of educational web portals at the classroom level, were found.

Guidelines exist for evaluating online learning communities by analyzing the quality of computer-mediated communications in synchronous and asynchronous modes. These guidelines suggest that in order to find out, if participants benefit from the process and develop new understanding and practices, an interaction analysis for examining this process of computer mediated communication (CMC) can be employed. The analysis is performed on transcripts of CMC (Gunawardena et al., 1997).

While these guidelines could be helpful, no examples of their use applied to the communication happening on educational web portals could be found. To date only one systematic evaluation of portal use could be located, which is of the Intel® Innovation in Education site. The evaluation of the Intel® site is quite substantial and offers an initial insight into the potential of web portals in teacher professional development. The other research found in relation to educational web portals, is a document prepared for the Commonwealth of Learning and SchoolNet Africa. The research intended to develop recommendations for best practices based on the analysis of the structure and design of most educational web portals currently accessible on the Internet. The author establishes recommendations and guidelines for good design, but does not actually look at the use of such portals by teachers and their effect of changes in teaching practices (Butcher, 2002).

A reason for the dearth of research on web portals ought to be the relative recent emergence of these sites. Collins and Jung mention several ICT projects with the characteristics of educational web portals such as LearnLink, a recently established
online professional development program for teachers in Guatemala, Morocco, Namibia, Uganda, and Brazil, Uganda’s Connectivity for Educator Development (Connect-ED), or the US Brazil Learning Technologies Network (LTNet). They remark:

These projects are still in their early days and the outcomes are not yet available but it is anticipated that they will increase collaboration and interaction among educators nationally or between countries, and provide institutionalized support for learning technology, greater ICT access, ICT-based curriculum reform and enhanced pedagogy” (Collins & Jung, 2003, p. 180/1).

Implications for Survey Research

The wide reach of educational web portals across national, ethnic, and linguistic boundaries brings up the need to consider the implications for survey design when those surveys are used with a multi-cultural and multi-lingual target population. The Intel® Innovation in Education site is designed in several languages and used in numerous countries (Intel® Innovation in Education, global reach map). If surveys about the use of the site are translated and administered in many different countries, regional differences in language use, culture, educational philosophies, and teaching practices would have to be ascertained and the meaning given to a terminology or concept, determined. To exemplify this further, van de Vijer and Leung raise the issue that bias can be introduced into cross-cultural research at different stage of the research process and that constructs can have different interpretations in different cultures. They use the example of “being a good son or daughter”, which has a different connotation in American culture that it would have in Chinese culture (Van de Vijer & Leung, 1997, p. 5)

On the same issue, Temple states:

When different cultures and language are involved epistemological problematics in constructing similarity and difference are compounded. If there is no one meaning to a text, then there can be no one translation of it (Temple, 1997, p. 610).
This statement can certainly discourage any researcher who attempts to construct a survey for a multi-lingual, international audience. Statements such as “cross-cultural research is threatened by the failure to produce culturally and linguistically appropriate survey instruments for minority populations [or majority populations across national boundaries]” (Rand Corp., p. 25) add to the hesitancy to conduct such research.

Compounding the potential for bias is the fact that a large part of the research is conducted by Western social scientists from either North America or Western Europe. This in increasingly being criticized. Behling and Law mention the *Indigenous Psychology Movement*:

> The Movement represents a needed and overdue challenge to the naïve assumption that American social and behavioral science can be exported around the world without considering unique aspects of target culture” (Behling & Law, 2000, p. 2)

In this context Behling distinguishes between *etic* constructs, constructs that can be generalized across cultures, and *emic* constructs, which are specific to one culture (ibid. p. 3).

It is not only the language and the translations that can introduce bias, but also the manner in which the target population relates to the researcher. Direct and open expression of opinions in common for some, others prefer voicing those in an indirect manner. Being suspicious or welcoming and hospitable towards strangers, or even enjoy playing some jokes with the researcher and intentionally misinform the interviewer, figures in the validity of the research results (ibid. p. 42 ff.).
Limiting Bias in Multi-lingual and Multi-cultural Survey Research

In order to minimize the distorting effect of translations and potential cross-cultural misunderstandings, a thorough process for the development stage of the survey instrument is suggested by various researchers.

For the translation the process, Beaton and colleagues recommend a process that involves five stages:

1. Two translations into the target language, one by a translator with knowledge of the subject matter to be researched and one by an uninformed translator.
2. Synthesis of both translations and resolving of discrepancies.
3. Back translation into the original language
4. Review by an expert committee
5. Pretest.  

(Beaton et al., 2002, p. 3)

For the CAHPS® survey, a survey that collected health data on minorities in the United States, several steps were integrated into the development of the instrument. For the translation stage the researchers used forward translation by professional translators, if available by native speakers, back translation by another group of translators into English without consulting the original English version, and an independents review and comparison process by bilingual reviewers.

In the translation process it is important to choose wording that is understood by all speakers of a language and avoid regional terminology or dialect.

After translation, the instrument is tested through qualitative analysis, which identifies universal (etic) and culture specific (emic) constructs (Rand Corp, p. 33).

Focus groups serve to pretest the instrument to make sure that the target audience would interpret the questions in the manner intended by the researchers. Cognitive interviewing methods could be used for this purpose (Rand Corp., pp. 39 ff.).
Behling and Law point out the need to cross-check data through multiple forms of data gathering and possibly triangulate results, which is a method that can diminish bias in cross-cultural research as well as with a homogenous group (Behling & Law 2000).

Hurtado researched the influence of similarities between the person of the interviewer and the interviewee when conducting the interviews and if similarities and differences of ethnicity, race, social economic status, and education between interviewee and interviewee influence the attitudes of the interviewer towards the interviewee. The results are based on observations by the interviewer and show a marked influence for social and economic status (Hurtado, 1994). The observations are important for those interviews conducted in face to face settings, which would apply to a limited extend to the proposed research, since the target populations would all be teachers and web surveys were used. Nonetheless, teachers too can come from diverse social and economic backgrounds and have different levels of education, which has to be accounted for.

The Research Purpose

The literature review demonstrates that educational web portals reach users across national, linguistic and ethnic boundaries and that therefore considerations for the cross-cultural and linguistic appropriateness of survey instruments needs to be included in the design of the instrument. Translations of surveys and misunderstandings of questions by diverse research populations can introduce bias into the research.

In education various terms and concepts are used in the literature and discourse with frequency and across national boundaries. These are in particular constructivist learning environment, active learning, student-centered learning, teacher-centered
Learning, project-based learning, inquiry learning, higher-order thinking skills, to name just a few. They crop up in the educational literature and in educational policies of various countries. Even within the same culture, these concepts can be interpreted in different ways. A study on teachers’ beliefs about issues in the implementation of a student-centered learning environment notes that different teachers or designers of instruction and educational materials can have quite different understandings of such a concept (Pedersen & Liu, 2003).

If designers of educational programs, such as the ones offered on educational web portals, make their programs available internationally, there is a likelihood that the use of the programs can be quite different in different settings and that instructions on the use could be interpreted in many and varied ways. Once surveys on the use are administered, questions could potentially also be interpreted in many different ways. These different interpretations would have to be analyzed in order to reduce misleading survey outcomes.

Benefits of the Research

The research would benefit survey designers who analyze the use of internationally available resources with survey research. It would help researchers to determine the different nuances given to educational terminology and concepts by educators from different linguistic, ethnic, cultural and national backgrounds.

The research would also benefit the designers of educational web portals and help them to interpret and understand the results of surveys on portal use by an international audience. Designers would be able to determine more accurately, how the provided
resources are used in a culture-specific fashion and how they are adapted to different settings.

The proposed research would also be of interest to those in the field of comparative and international education and working in education in multi-national settings for multi-national or international organizations. The research could help them gain comparative insights into the interpretation and application of internationally available educational resources at the grassroots level.

Research Design

The Setting

The research is based on surveys already carried out about the use of certain resources provided by the Intel® Innovation in Education web portal.

Intel® Innovation in Education is an educational web portal provided by a company that specializes in the manufacturing of electronics. Intel’s training focuses on the curriculum areas of science and math. The site is published in several languages and is geared towards an international clientele.

The Intel® Innovation in Education site is structured in five categories:

1. Learning with technology: This section offers math and science teachers suggestions for projects and unit plans, downloadable resources, and tools they can use in the classroom
2. Professional development: Offers training courses in continuing education format on topics such as: integrating technology into instruction, algebra teaching, improving the effective use of technology in the classroom, and implementing education standards for teachers and students, including technology standards.
3. Science and math: Gives information about the science and math fair organized by Intel and recruits science and math talents
4. Learning anytime: Offers an online community for after-school community-based technology learning programs and a curriculum in design and engineering for middle-school age youth.
5. **Learning about technology**: Offers information about emerging technologies and the design of computers. (Intel® Innovation in Education)

Teachers are provided with workspace within specific units and are encouraged to submit projects and units they have developed for publication on the site. There is no bulletin board where teachers can directly communicate with each other. The professional development is either offered in face-to-face format or for self-study with online resources.

The research on use of the *Intel® Innovation in Education* site was commissioned by Intel and carried out by the Center for Children and Technology. This initial study asked the following questions:

- Who is finding specific resources at the site?
- How do educators become aware of the resources and why do they seek them out?
- What positive perceptions do teachers have of the resources?
- What factors may impede extensive use of the resources?
- Are practitioners using the resources in their teaching?
- Are participants in other Innovation in Education programs making use of the resources?
- Do curriculum specialists and technology coordinators find the resources to be worth while their professional development efforts (Pasnik & Keane, 2002 p. 1)

Surveys were used for data collection. The findings, collected between October 2001 and August 2002, are based on an e-mail survey with 157 valid responses, an electronic survey, which collected 3,759 valid responses, and small group and individual face-to-face interviews at the National Education Computing Conference (NECC) (ibid.). The e-mail and face-to-face interviews were given to teachers and professional development specialists. The electronic survey was embedded in the main page of the site for one month and at a later date one geared towards one specific educational resource was embedded on that page. A web-based survey was distributed to educators who had previously answered surveys, towards the end of the research period.
The findings include that the majority of users (70%) are classroom teachers who had learned about the site from colleagues (ibid. p. 3). A significant minority of the teachers reported that they used the tools and resources provided at the site for their own learning and in the classroom with their students (ibid. p. 8). The majority reacted favorably to the tools and resources provided and could integrate them to their courses (ibid. p. 4).

This initial survey was conducted in English, but with the fast growth of the program and the intended global reach, surveys in other languages would follow, based on the model of the English-language survey.

The research question

Some of the themes of the initial survey are ambiguous and open to interpretation. Two central questions arise, one related to the actual survey questions and the other to answers given by survey takers:

Question 1: How do survey takers understand those survey questions that are open to interpretation, based on their cultural and linguistic background?

Question 2: What do the answers given actually describe. For example, if an answer states that the user integrates a resource into the course, what does it mean for the daily classroom activities, and how do these classroom activities differ based on the cultural context and prevailing teaching practices in each cultural setting?
Sampling

The proposed research is based on the previously conducted surveys and would be conducted once those have been completed with different linguistic and cultural groups. Therefore the pool of potential research subjects is limited to those who participated in the survey. In order to achieve a linguistically and culturally diverse sample, three linguistically and culturally diverse regions with sufficient survey participants would be determined. A sample of research participants would be recruited from amongst survey participants in those three settings. The sample would be taken from those participants who had previously agreed to participate in the web-based survey conducted by Intel. These participants are known and can be contacted.

Since the goal of the research is to find diversity of interpretation of concepts, the approach chosen for sampling is the one developed within the framework of grounded theory, referred to as initial sampling, followed by theoretical sampling (Strauss & Corbin, 1998; Glaser & Strauss, 1965). Sampling is an ongoing process and is interwoven with coding. Sampling and coding continues until variations in answers become insignificant.

An initial round of telephone interviews in the three cultural setting will help determine some key concepts that could emerge in the course of interviews. The results from these initial interviews will prepare the process of on-site, in-depth interviewing. According to Strauss and Corbin, coding of approximately ten thorough interviews, in this case three or four from each region, tend to be sufficient to develop a skeleton of a theoretical structure (Strauss & Corbin, 1998).
On-site interviews and classroom observations in each region will follow the initial sampling and coding of interviews. The onsite research will continue until no more significantly different variations in data occur, and within reasonable time limits. Constraints of time and resources could potentially limit the amount of data available and the researcher would have to make the judgement when sufficient saturation is reached to allow for drawing conclusions.

**Instruments**

The data collection strategy consists of face-to-face, semi-structured interviews. Participants would comment on those questions from the Intel survey that are open to interpretation and comment on the answers, they gave. Guiding questions would ask to describe the actual classroom events related to selected concepts. Methods of cognitive interviewing will be used to bring to light the thought processes of the interviewee behind the interpretation of the survey questions and the rationales for answers. Cognitive interviewing “focuses on the cognitive processes that respondents use to answer survey questions; therefore, covert processes that are normally hidden, as well as overt, observable ones are studied” (Willis, 1999, p. 1). In essence, the research subjects would revisit and reflect on the survey they took.

The interviews will be recorded with an audio recording device and transcribed at a later point.

A number of classroom observations will be conducted in relation to the description of classroom activities given by teachers. The classroom observations will allow the researcher to compare descriptions by teachers and actual events. The number
of observations will be determined by the variations in data found through interviewing. Observation notes will be taken by hand.

Data analysis

The data analysis will be a continuous process and occur hand in hand with data collection. Open coding of the initial sample will break down data through analysis, comparison, and categorization. Description, opinions, interpretations, and events are grouped together through constant comparison. Similar and different interpretations of survey questions and answers will be coded.

This grouping process will continue through the onsite theoretical sampling phase. Theoretical memos will be developed to produce written records containing deep analysis of the observations and interview transcripts. This deep analysis will also serve to make decisions about further data gathering.

Axial coding, the process of relating categories to subcategories will allow the observation of relationships, which will then be related to a core category (Strauss & Corbin, 1998).

This process of data collection, note-taking, coding, memoing, and sorting will continue until outcomes can be described.

Anticipated outcomes

The surveys administered in relation to educational web portals do have a specific target audience, here education professionals somewhat familiar with communication and information technologies (ICT). It is expected that these educators have at least a
minimal global experience, even if it is only virtual, through using the Internet. Also, pedagogy, as a science, has certain elements that are universally taught. Despite these commonalties, educators from different national, ethnic, and linguistic backgrounds might have a different understanding of certain terms and practices, which would lead to different interpretations of survey questions and different meanings given to terminology used to describe educational concepts.

Possible limitations of the study

The study is limited to three linguistically and culturally diverse regions and a target audience with the same professional background. The results would apply to the settings in which the study was conducted with limited transferability. While it would potentially be possible to draw some general conclusions about the use of surveys in different cultural and linguistic settings such as that different interpretations of survey questions do occur, the specifics of the interpretation are related to the cultural and linguistic context in which they were given. Even within the boundaries of a nation, cultural and linguistic plurality exists. Therefore the specific background of the research participants has to be taken into consideration. The study can generate suggestions for assuring validity of internationally used surveys and strategies for supporting survey research in diverse settings. But whenever a survey is conducted with diverse cultural and linguistic groups, the nature of the meanings and interpretations given to specific survey questions by the participants, would have to be determined for that specific situation.
Organizational details, time and personnel requirements

The research sites will be approximately nine to twelve schools, where a substantial number of mathematics, science, and technology teachers use the web portal. Three to four will be located in Germany, three to four in Costa Rica, and a similar number in Pennsylvania, United States. The sites are chosen because of the widespread training conducted by Intel in those regions and the well-established use of the web portal. They will be located through the training network already established by Intel.

It is estimated that this number of schools will allow for approximately twenty interviews in each region, which could lead to a saturation of data. If necessary, the researcher can decide to locate and visit more sites and conduct more interviews.

The developer of this research proposal will serve as the lead researcher. She is familiar with schooling in several German and Spanish speaking regions. She had previously conducted research on innovative schools in southern Germany and Switzerland, worked with non-formal education projects in South America and as a teacher in the K-12 system in the Puerto Rico and Pennsylvania. As a teacher she integrated technology into her courses as soon as it became available and observed innovative uses of technology at different levels of schooling. Fluency in the languages spoken in the three regions and direct experience with the culture will allow this researcher to understand the subtleties of expression and meaning likely to occur in the course of the interviews and observations. She will conduct the interviews and
observations, code the data in collaboration with a second research support person for each language group, and write the research report.

At each site a contact person will be found whose main task would be to help recruit research participants. This could be a school administrator, interested senior teacher, or Intel trainer.

In addition one native speakers of each language, trained in qualitative research and familiar with the coding process, will be employed as support researchers with the main task of coding the interviews and observations. A second opinion in the coding process would increase the validity of data analysis through co-rater agreement. The coding process can be conducted through electronic communication, so the support researcher can possibly be recruited at the sponsoring research institution, and does not have to travel to the sites.

The estimated timeframe for organizing conducting the field research is as follows:

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<tr>
<th>Phase</th>
<th>Time spread over number of weeks</th>
<th>Average hours on task per day</th>
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<tbody>
<tr>
<td>Recruit in-county contacts and support researchers</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>Recruit research participants</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>Telephone interviews and coding of interviews with initial sample</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>On-site interviews, observations, and coding of data</td>
<td>9</td>
<td>8</td>
</tr>
</tbody>
</table>

The table only lists the time estimate for the actual organization and the conducting of the field research phase of the study. In addition the theoretical framework would have to be established and the research report written.
References


