

GIS Technology and E-Learning for Exposing College Graduates to Transcultural Education

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Globalization and Education

The world we live in has become a global village where each nation and region is connected, interdependent and dependent upon exchange of information for promoting rapid development. In order to participate in this global development process, six university students need to prepare to work closely with the work force originating from different parts of the world (Stutz & Warf, 2012). To adequately prepare academically diverse students (Davis, 2009) to compete, survive, interact and become tomorrow's leaders in business, academics, industry and political affairs they need to be exposed to '*transcultural education*'. The term transcultural education can be broadly defined as an experience gained by college students that goes beyond making a trip to Latin America or Western Europe. This construct implies that active participants in the labor market need to think of themselves as global citizens in addition to developing an identity of belonging to a certain nation, region or city. Transcultural education is an approach to teaching and learning that brings teachers and students closer to an unfamiliar culture through direct observation, engagement, and a shared dialogue rather than learning about it from a distance by methods such as reading a textbook, listening to a lecture or watching a film. Students and teachers participate in the learning process as co-partners and not as passive observers. For example, if students from the US were provided the opportunity to interact directly with students in Asia, South Asia or Middle East, they would manifest an enhanced perspective on contemporary issues such as: the Middle East crisis, the economic miracle in Asian economies, poverty in South Asia, and famine in Sub-Saharan Africa. Providing U.S. students and their counterparts around the world with information about shared problems such as: terrorism, global warming and financial meltdown would be of limited value unless they are brought into contact for exchange of views, interaction, and participation. They would develop an expanded worldview and would be able to make decisions that are more informed on regional problems of business and politics than without knowing the place, people and culture intimately.

In the past decade, there have been several technological developments in promoting higher education using technology such as e-learning. It is strongly argued that e-learning can foster the goals of higher education by leaps and bounds. It is not a substitute for the traditional classroom model of student and teacher interaction in the university. But e-learning can enhance the overall learning experience of the student in a university environment. It includes different forms of electronically supported learning and teaching. The e-learning includes a variety of technologies such as: web-based learning, computer-based learning, and digital collaboration. The educational content is transmitted via the Internet, audio, video, satellite, and or CD-ROM. The teaching modulation can

be self-paced or instructor-led and includes media in the form of text, image, animation, streaming video and audio.

Need for Transcultural Education

In the mainstream literacy studies, literacy is approached from an ‘essentialist’ perspective - a set of decoding skills that are necessary for ‘taking meaning’ from a text. Literacy is viewed in decontextualized and dissocialized terms, and represented abstractly as the acquisition of the codes of the dominant social group (think “white, male, Anglo” codes). This view locates meaning-making in the individual mind, and evokes the value neutrality of texts and the singularity of meaning. It is based on an ideology of homogeneity of meaning, and reproduces cultural homogeneity, giving only lip service to diversity. It also promotes pedagogies that stress instructor-led knowledge transmission based on abstract and theoretical concepts, and summative means of assessment.

Over the recent years, there has been a shift in the perspective about education and literacy. In the new literacy studies (a phrase coined by Street, 1993), literacy is understood from an “interpretivist” perspective - a set of socially and relationally constructed, critical, and ecologically-aware skills that allow recognition of the multiple contested meanings based on a text. Literacy is problematized into ‘multiple literacies’ that are nested into the diverse meaning-making practices of different cultures, professions, and organizations. In this view, literacy is also not value-free: some meaning-making practices are more dominant, visible, and influential than others, because they are situated in presumably more legitimate and rational cultures, communities, or organizations. The role of literacy is not confined to providing a sense of access to the exclusive and elite citizenship of these selected and visible groups, but is extended into connecting to other diverse and invisible groups as well – in other words, to educate for ‘global citizenship’. As global citizens, the students must understand the sources of power that legitimize some meaning-making practices over the others, and acquire the freedom and the ability to deconstruct these sources and their influence, and to examine the alternative meaning-making practices. Only then will the students avoid a tendency of regression to the known, of feeling safe only in the local, visible, and dominant literacy or meaning-making practice that appears to be endorsed by a majority in the context where the literacy education is taking place. And, only then will the future citizens be able to recognize, transform, and stop reproducing the discriminatory, exclusionary codes based on gender, racial, ethnic, urbanization, income, and other markers of identity, inequality, and dominance. The new literacy studies expand the range of pedagogies to those that allow multiplicity of meanings. Next, we discuss one important technology that can contribute to the emerging new literacy studies.

GIS and E-learning in Higher Education

Technology has advanced at such a pace that it provides several alternative ways to access information. Mobile technologies offer an excellent way to create dynamic, interactive learning inside and outside the classroom. Further the current generation of wireless, computing and portable communication devices includes laptops/tablets, PDAs, mobile phones, digital cameras, MP3 players, iPods, I pads, and other similar devices that have advanced the arsenal of tools which allows us to consume information readily.

In recent years, one form of technology that has become quite popular in schools and higher education is the Geographical Information Systems (GIS). GIS is one kind of management information system. It includes both the hardware and software components

and includes programming of real world problems. It provides support to managers in day to day business decision-making. GIS is the depiction of spatially referenced data on a computer generated map. The map displays variations over time and geographical space of any phenomenon taking place on the earth surface such as: scarce resource allocation for siting police station location, environmental monitoring, vehicle navigation, real estate sales and development and market research, fire spreading, AIDS distribution, foreclosure maps, bank, hospital and school locations. The GIS carries out different management, storage, retrieval and analytical tasks of data manipulation including their input and output. It provides a quick and easy access to large volumes of data. The system has various capabilities such as to: select detail by area or theme, link or merge one data with another, analyze spatial characteristics of the data, search for particular features or characteristics in an area, update data quickly or cheaply, and model data and assess alternative scenarios (Heywood et al. 2006). GIS can be used to enhance transcultural education in a university campus since it is a tool, concept and methodology that allow a student or a group of students to understand the problems facing a community, domestic or international, and think of potential solutions.

The Environmental Systems Research Institute (Esri) has developed an information system called the Esri-Business analyst online. It is a web-based solution that makes site evaluation and market analysis very effective. The database contains extensive demographic, income, and business data, which reveals the spending and consumption behavior of the population and provides information on business establishments, store location, and sales data. Business analyst online is an excellent way to provide our students an understanding of the changing socio-economic pattern of the society and insight into factors affecting consumer behavior, so that customers could be targeted scientifically to enhance sales. It is an excellent tool for students to use to analyze market data so products can be sold, inventory scheduled, and demand analysis conducted (Miller, 2011).

An essential requirement for providing a successful transcultural education is expanding geographic knowledge of students from different cultural backgrounds. This knowledge is fundamental to the understanding of places, their characteristics, and problems. It is important that students from different cultures have an understanding of the region, place and its environment before embarking on the complex task of understanding the politics, business climate and economic condition of a place. Spatial pedagogy is important since it allows us to teach our students how society and environment are related, and how they impact each other to produce and reproduce various urban and environmental landscapes. It is very important that environment and geographic concepts such as: space, scale, spatial pattern, spatial diffusion, externality, climate change, ecosystem, ecology, environment and natural hazards enters the lexicon and world view of our students. The natural hazards in Haiti, Chile, New Zealand, and Tsunamis in East Asia and Japan, water crisis in Southern California, housing market collapse, and financial meltdown in the US, Euro crisis are examples of physical, environmental and economic disruptions. These disruptions are an outcome of long-term processes and can be explained by utilizing geographical concepts that are engrained in the space-time trajectories of regions. Similarly, we must introduce the notion that an understanding of variations and scales of human-environment interaction improves the appreciation of nature-society interactions. Students often enroll in geography classes with the conception that it is a study of place names and memorizing the capital of countries. This misconception is changed after studying environment, physical, urban geographic courses since geography becomes a lens to a better understanding of different places, environment, physical landscapes,

different societies and economies.

The GIS technology can be utilized to understand place characteristics, regional problems and determine spatial solutions. The real world is very complex and so to understand the interrelated social, economic and physical phenomenon, it is appropriate to simplify a region's development into various layers or components and address how the physical and human components interact to produce and reproduce the regional development of landscapes. For instance the urban development process consists of layers of information such as: location, land uses, zoning, elevation, street network, utilities, vegetation, population distribution, landmarks, employment centers. These tiers of information can be superimposed to understand not only the impact of changes in one tier upon another but also the urban land development process in communities. This helps in answering 'What If?' questions directed towards addressing public policy options for planners and citizens.

Since the financial meltdown, state of California budget crisis and housing market collapse, the average family in the US and in particular California is finding it difficult to financially keep afloat and send their children to college. The private sector and several large research universities are promoting a business model of higher education tilting towards online education programs, virtual campus, job-oriented study programs and emphasizing on e-learning. This is a more cost-effective strategy for students to obtain higher education. GIS knowledge and training can improve the skills of students since it is both a tool and a skill set, and is highly applicable to everyday problems in industry, government offices and the private sector. GIS education can be provided via e-learning to a globally dispersed audience, reducing publishing and distribution costs, as web-based training becomes a standard. GIS education can be imparted more easily with e-learning to an audience composed of students of different cultural backgrounds. Many of these students have varied skill sets with respect to knowledge of computer tools, programming and quantitative skills. E-learning can provide individualized instruction at reduced cost whereas an instructor-led training would cost more. This mode of teaching can target individual learning preferences. Further, synchronous learning is self-paced as it is inclusive of the maximum number of participants with different backgrounds, learning preferences, learning abilities and needs. Thus, e-learning of GIS education is a better approach given the financial constraints of students and the flexibility it provides to students to learn the course material at their own pace. This learning model has advantages such as: reduced cost reduced learning time, increased retention, on demand availability, self-pacing, interactivity and confidence and moral boosting. But this approach has limitations as well since: some learners are fearful of technology, it is not portable like a book or print media, and this mode of teaching provides limited face to face social interaction with peers and instructor. Part of the learning experience is to interact, exchange views, and network with peers who might become business partners in future.

ICC and E-learning in Higher Education

The GIS technology can be used across different disciplines for supporting transcultural education by building intercultural competence (ICC). There are three ways in which GIS can contribute to ICC in a collaborative e-learning environment: First, by building linguistic competence (skills for interpreting and communicating with a dominant discourse and alternative discourses); second, by building discourse competence (skills for knowing how discourse is organized in different cultures and sub-cultures); and third, by building sociocultural competence (skills for knowing the influence of socio-cul-

tural context on the discourse in a culture or sub-culture).

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GIS and Discourse competence: Critical pedagogy (Freire, 1970) theory suggests that exposure to diverse viewpoint through dialogue and discussion cultivates growth through a deeper understanding of critical issues, by examining one's own understanding of an issue, as well as how society has influenced those beliefs. Students need the opportunity to articulate and defend their ideas, theories, and beliefs, as well as have the opportunity to hear other's ideas and criticisms of their thoughts. There are two major objectives of critical pedagogy:

- a. To help develop critical thought patterns in everyday life, so students do not simply accept norms of a single discourse as absolute truth. This is done by creating a challenging environment, where students participate in energetic and engaging manner through discovery and reasoning skills and begin to realize the multifaceted and complex nature of the issues. For example, a student might suggest that universal government health care would improve people's health, without considering the cost and the bureaucratic aspects, as well as the issues of informed decisions regarding medical advice. The GIS technology can help analyze these multiple layers of data together, and provide a visual picture that vividly brings home the fallacy of the single story.
- b. To promote change by unraveling the regressive and oppressive norms of each discourse. Critical pedagogy offers a critique of what society considers the norm and promotes a critical analysis of its causative factors using an alternative to the narrative or banking approach (Freire, 1970). The narrative or banking approach presents the teacher with the knowledge and the students with insufficient knowledge, whereby students receive and memorize facts to later be reproduced in a robotic fashion. Such students lack creativity, imagination, and critical thinking skills, and are robbed of being human. Critical pedagogy uses a problem-posing approach to promote a continual process of unmasking reality (Freire, 1970). Educators as well as students begin to see issues as problems to be solved rather than things to be accepted (Freire, 1970).

GIS and socio-cultural competence: Socio-cultural theory (Dewey, 1916; Gee, 1998) suggests that the development of one's competence is interconnected with social experience to form meaning: the more unique and diverse the social experiences one encounters, the more development may occur through greater novelty and intellectual challenge. The emphasis is put on authentic learning tasks within the context of active collaboration with relevant informants of alternative, under-represented, and silent cultures.

Traditionally, cross-cultural student exchange was the dominant mode for advancing socio-cultural competence. However, with the growth of digital collaboration technologies, many studies are reporting growth in transcultural literacy through cross-cultural e-learning. Students' investment and sense of accountability tends to

increase when students engage with real audience through digital technologies, such as video conferencing, collaborative blogging, and writing on a Wiki (Godwin-James, 2003). Through writing, listening, rhetorical analysis, and collaborative presentation, students develop intercultural competence in the form of discerning how best to work across differences, even when they lack comprehensive knowledge of other cultures' languages, histories, values, and practices (O'Brien & Eriksson, 2008).

Cross-cultural collaborative e-learning offers a tremendous opportunity for transcultural education. Asynchronous collaboration, that is supplemented with simple forms of synchronous mode, such as chat, may hold the greatest promise in the contexts of limited technology infrastructure and support, and for selectively using cross-cultural collaborative e-learning in some sessions of a course. Synchronous collaboration is likely to be more effective in contexts that offer appropriate technology infrastructure and support, that include video and collaborative authoring platforms. In such contexts, there may be benefits of reduced faculty lecturing load as well as enhanced student transcultural literacy if cross-cultural collaborative e-learning is woven into the entire course curriculum. The role of the faculty in this scenario will shift more towards intercultural collaboration and resourceful and supportive instructional design.

Conclusion

GIS –based pedagogy offers immense opportunities for promoting intercultural competence, and building transcultural literacy. This pedagogy can be particularly powerful in an e-learning context, where student teams from different cultures collaborate and negotiate multiple meanings embedded in the spatially referenced data. As a recommendation, it would be useful to build a repository of assignments and assessment best practices, including disciplinary-specific materials, to help faculty members consider and incorporate cross-cultural collaborative e-learning using GIS into their courses. In addition, training workshops will also help promote greater awareness and build skills for adoption.

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