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The Coming Revolution in Competence Development: Using Serious Games to Improve Cross-Cultural Skills

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Abstract. Approaches to competence development have tended to focus on training to reach a required level of performance in simple and reproducible contexts, rather than in the more complex and hard-to-replicate contexts that characterize real-world projects, especially projects that involve people from other cultures. This paper explores how the Serious Games approach can be exploited to create skills in dealing with cross-cultural issues in project management. The degree of difference this can make to real-world performance is so dramatic that managers who have experienced it are seeing it not as a way to add Incremental Improvements to TEL (Technology Enhanced Learning) but as more of a Radical Innovation – a revolutionary change. Some of the main skills required in project management are reviewed, and different models of cross-cultural analysis applied to understand how the challenges of managing projects are increased by cultural issues. Our testbed for this is an EU project TARGET that is developing the next generation TEL approach. We describe its approach and look at how the TARGET serious game can be designed to achieve enhanced cross-cultural skills in users.

Keywords: Serious games, inter-cultural, role playing, competence development environments.

1 Introduction

“In French and Spanish offices, it takes the first hour to kiss everyone, the second to discuss local gossip and the third to pop out for a coffee and croissant. In Britain, these activities would count as sexual harassment, time-wasting and absenteeism.” (Reeves, 2003)

The above observation captures one of many examples of how work environments are shaped by national culture, and also the kinds of inter-cultural challenge that face any designer of a Serious Game whose audience is global. How should such a game take account of such differences? Academic definitions of culture highlight how we may discuss the abstractions of culture, but it is not immediately obvious which aspects to bring out in a game.

With globalization phenomena, enterprises have been thrust into a cosmopolitan mix of different cultures where individuals need to avoid stereotyping others; to have the sensitivity to overcome culture shocks; and to have insights that allow them to devise mechanisms to bridge the cross-cultural differences thereby enabling an increased effectiveness in their overall work performance.

Whilst there is anecdotal understanding of key cultural differences (e.g., "Americans have individualist culture whilst the Japanese have more of a collectivist culture"), any Serious Game that addresses issues of culture must be based upon models of societies that allow more complexity than a single individualist-collectivist continuum. Of particular interest is the impact of culture on work environments, thus we draw from the seminal work of Hofstede (1984) on a theory that characterises cultures using five dimensions: Individualism/collectivism, power distance, uncertainty avoidance, masculinity/femininity and long-term vs short-term orientation.

The process of cultural assimilation is a costly venture where mistakes may have strong repercussions. This is where competence-development environments play an important role: managing cultural gaps by providing individuals with an environment that combines soft-failure with opportunities to explore both how a foreign culture looks to you, and how your culture looks to others. This paper will contribute to insights into those issues by presenting the importance of cross-cultural impact on project management, and will in passing discuss innovations in the TARGET project that address cross-cultural challenges.

2 Project Management

Project management is the task of directing a project from start to finish, with on-time, on-budget delivery of the planned outcomes. It is recognized as one of the more challenging tasks in business and one that requires multiple skills to master. Even projects being run in a mono-cultural environment can pose massive problems to the project management team. Add to this the component of cross-cultural issues, and one quickly realizes that the increasing trend toward "globally-based projects" means even more skills are needed. According to Milosevic (2002), most project managers recognize that managerial styles in their own culture are difficult to handle effectively, let alone reflect upon and externalize and share with people in one's own culture. When facing managerial styles used by partners or other players in projects from a different culture, this further escalates the difficulties. Enshassi (1994) claims that when ignored, cultural diversity causes problems that diminish the project team's productivity.

Much research in project management has focused on general success factors, but it is difficult to identify research on the extent of cross-cultural projects and their innate problems. Arguably, the world lacks a sufficiently-rich body of knowledge to even describe, let alone manage, the complexities of globalization, and this affects projects as much as other areas of business, with companies and public bodies developing projects across the globe, hiring global and local contractors, employing people from a wide range of countries and cultures. Just consider some examples; a Canadian government agency employs a German software company to develop a new administration system, the German software company predominantly uses Indian and other Asian nationals as programming resources, while the writing of user manuals has been outsourced to a Maltese company. A construction project in Australia is developing a shopping center for a Saudi-Arabian holding company, using a French construction company to build the center designed by a Danish architect, and at any given time the construction site is home to at least 40 nationalities. Or consider the project to develop the TARGET learning system; encompassing eleven partners from all over Europe, with project advisors from an additional two continents. In such settings, the presence of numerous different cultural backgrounds undoubtedly adds to the complexity of managing the projects. The question is, can learning systems like the one being developed by the TARGET project be deployed to enhance the skills required in such projects?

We think so, and this section of the paper will discuss the skills required in project management, both in general and with the added complexity of cross-cultural issues. Let us first consider the general question of which managerial skills are needed to be a successful project manager. Different organizations (e.g., Project Management Institute (PMI), International Project Management Association (IPMA)) have developed so-called bodies of knowledge (BoK) that outline competence areas within project management. As part of the development effort to create the TARGET learning system, an exercise has been undertaken to extract from BoKs and other sources various skills that should be taught to project managers:

- “Core” project management; defining WBS, developing cost estimates, network planning, schedule development, follow-up of cost/time during execution.
- Design and engineering; managing the processes for designing the project deliverables (can involve architectural designs, technical designs, software architecture, etc.) and engineering the detailed solutions, including drawings, specifications, user interfaces, etc. Typically, this involves coordinating several actors, both internally and externally, and representing different technical disciplines.
- “Construction”; all activities involved in producing the project deliverables, e.g., physical construction of a building/bridge/ship/etc., programming of software code, conducting research experiments, etc. This typically also involves coordinating among several actors.
- Testing; all activities involved in testing and verifying the quality and performance of what is being produced in the project.
- Quality management; to some extent linked to testing, but represents a more overall set of activities for planning and ensuring quality of project deliverables and all work executed in the project.

- Scope definition; framing the scope of the project right from the beginning.
- Procurement and supplier management; in many projects this is an extensive set of tasks as large portions of the budget are spent buying products and services from external suppliers.
- Change management; handling requests for changes in what is to be delivered and ensuring that the changes can be accommodated with the plans.
- Project shaping; the entire front-end of the project, covering skills like stakeholder analysis, defining clear and realistic goals, creating a governance structure, securing financing and support, etc.
- Project start-up; specific activities involved in formally establishing and kicking-off the project, e.g., achieving goal understanding and alignment, establishing common project management practices, motivating the team, etc.
- Human resource management; issues like composing well-functioning teams, managing teams, motivating team members, ensuring cooperation across organizations/disciplines, handling conflicts, etc.
- Project communication; an extensive area covering communication with various stakeholders, ensuring an informal flow in information inside and between teams, creating an open atmosphere where issues are raised early, etc.
- Risk management; everything from identifying risks and opportunities to developing actions to handle them to ensuring continuous monitoring and management of risks and identifying new risks regularly during the project.
- Stakeholder management; an extensive set of skills related to identifying and handling all types of stakeholders throughout the life of the project.

Most will agree that this is a rather extensive set of capabilities to master, even in mono-cultural projects. How do cross-cultural issues increase the complexity of these skills? Preceding Hofstede's work on cultural dimensions, Kluckhohn and Strodtbeck (1961) researched cultural dimensions and proposed nine (including some identical to Hofstede's dimensions of power distance, uncertainty avoidance, and focus on responsibility which in essence is the question of individual vs. group accountability). Of these, we find the following to extend Hofstede's dimensions with aspects particularly interesting to this discussion:

- Relationship to the environment, ranging from subjugation by it to harmony with it to mastery of it, i.e., differences within cultures about the extent to which people can influence events and outcomes or feel they are preordained.
- Time orientation, especially two distinct views (polychromic and monochromic: one sees time as endless, to be wasted, and allows doing things in parallel, while the other is present-oriented and focused on the short-term).
- Activity orientation, with the extremes being doing vs. being, i.e., focusing on action and making things happen as opposed to experiencing life and achieving immediate fulfillment of desires.
- Affectivity, the extent to which displaying emotion is sanctioned by society.
- Specificity, meaning how easily members of a society establish close relationships without involving privacy in them as opposed to needing a long time to build personal relationships based on gradually getting to know one another.

These different cultural dimensions profoundly influence how people perceive, act, and evaluate projects. Milosevic (2002) discussed how scope, cost, and time management are affected by variations in cultural maps. Scope definition (using a WBS) will in subjugation culture tend to be implicit and ambiguous (since everything is preordained) whereas a domination culture values specific and measurable goals. Some cultures view budgets as an “elegant practice” that prepares a project for the future, but does not really count; many consider the budget to be factual, essential, and the yardstick against which they are measured afterwards. Schedules are particularly challenging; to present-oriented project managers, the so-called “rolling wave approach” (Harrison, 1995) is preferred, making detailed plans for the near future and only detailing longer-term plans when more information is available. In past-oriented cultures, the schedule is of less importance and on a “God willing” nature with little detail (Al-Arjani, 1995). According to Hamel and Prahalad (1989), future-oriented project managers view the project as a marathon race with the start and finish line known, but everything in between is seen as uncharted terrain.

A third possible way of classifying cultures, which was proposed by Richard Lewis (Lewis, 2005) based on how cultures view various aspects of business *and resulted in three types*:

- Multi-active; dialogue-oriented, showing emotions, and valuing relationships.
- Linear-active; data- and fact-oriented, sticking to planned agendas, working fixed hours, etc.
- Reactive; polite listeners, appreciating time to reflect over what is said, live in harmony, important not to lose face.

Consider how some of the traits of these influence the project management task:

Active cultures	Multi-active cultures	Reactive cultures
Confront with logic and reasoning	Confront with emotions and experiences	Avoid confrontations
Careful when it comes to making promises	Shows good intentions, even when promises are impossible to keep	Shows hesitantly good intentions, likes to be seen as helpful and positive
Contract = binding document	Contract = ideal document in an ideal world	Contract = summary of intentions, can be negotiated
Makes compromises to reach an agreement	Seeks to win arguments even when it negatively affects the outcome	Makes compromises to take care of future relations
Answers communications quickly (often in writing)	Responds slowly to written communication, prefers verbal communication	Responds slowly to written communication to have time to reach sideways consensus

No wonder that cross-cultural projects can become hotbeds of conflict! The main contribution of Milosevic (2002) was to outline different strategies for dealing with cultural differences depending on two factors; how well the project manager understands the counterpart’s cultural “script” and vice versa. In cases of imbalance, possible strategies include persuading either party to adopt or adapt to the other’s approach and working through middlemen as “translators”. The most fruitful strategies can be implemented when both parties possess a deep understanding of the

other's cultural singularities and can navigate the other's business culture. This supports our ambition of using a serious game to allow project managers and participants the opportunity to immerse themselves in multi-cultural settings or even as outsiders in projects in a different culture, and thus learning how to fruitfully relate to people from other cultures and how their own approach is likely to be perceived by those people. Other empirical evidence also recommends cross-cultural training for developing important skills, in facilitating cross-cultural adjustment, and in enhancing job performance (Black and Mendenhall, 1990).

Based on this discussion, we believe the most fruitful contribution to be made by serious games in this context is to provide learners with an environment where they can "live and breathe" in a setting of cross-cultural issues. This is achieved by creating a virtual world where actors from a large range of different cultures must work together to develop and execute projects. To some extent, scenarios in the game can define certain cross-cultural challenges, e.g., in the way project teams are composed or how project goals are defined. However, we believe the main means for achieving exposure to true cross-cultural difficulties is simply by bringing together people from different backgrounds and allowing them to "be themselves" in a virtual business setting.

3 TARGET

TARGET ("Transformative, Adaptive, Responsive and enGaging Environment") is a multi-country project sponsored by the European Commission that aims to research, analyze, and develop a new genre of Technology Enhanced Learning (TEL) environment that supports rapid competence development of knowledge workers within the domains of project management and innovation. Addressing cross-cultural issues in more effective ways is one of its core goals. It is exploring ways to impart poly-contextual competences as an alternative to the usual "emulate-me" method.

TARGET addresses the growing need to reduce the time-to-competence of human resources within organizations and to facilitate the transfer of knowledge within a community and organizations. The TARGET environment consists of the TARGET Learning Process supported by the TARGET platform, which consists of a set of tools and services. As such, the TARGET platform provides tools and services to support the definition and implementation of a personalized cognitive learning plan taking into account both the personal and organizational requirements. The devised cognitive learning plan consists of a series of complex situations captured in the form of game scenarios that the user engages with by means of an emotionally engaging serious game. These game scenarios are the core of what is considered a knowledge asset, which may be carefully crafted with specific learning objectives or may result from the capture of a running TARGET session. Around the core game scenario, additional data and meta-data is generated by the TARGET communities, thereby contributing to the maturing of a knowledge asset. Within the TARGET platform, the user's activities are continuously monitored, correlating with their cognitive learning plan, competence profile and performance outcome, thus contributing to the refinement of the user's cognitive learning plan. Consequently, TARGET achieves a step change in

what can be done through TEL, by integrating five significant developments into the TARGET integrative framework: Threshold Concepts (Meyer and Land, 2003), Multimedia Learning Theory (Sweller, 2005), Knowledge Ecology (here, in a form that can handle Accelerated Change as well as Linear Change) (Qvortrp, 2006), Learning Communities (Wenger, 1999) and Experience Management (using serious games) (Baxter, 2008).

3.1 Conceptual Framework

The TARGET conceptual framework is depicted in the block diagram of Fig. 1 and the focus is to help individuals identify how to regulate their learning to increase their effectiveness within their current work environment and increase their opportunities.

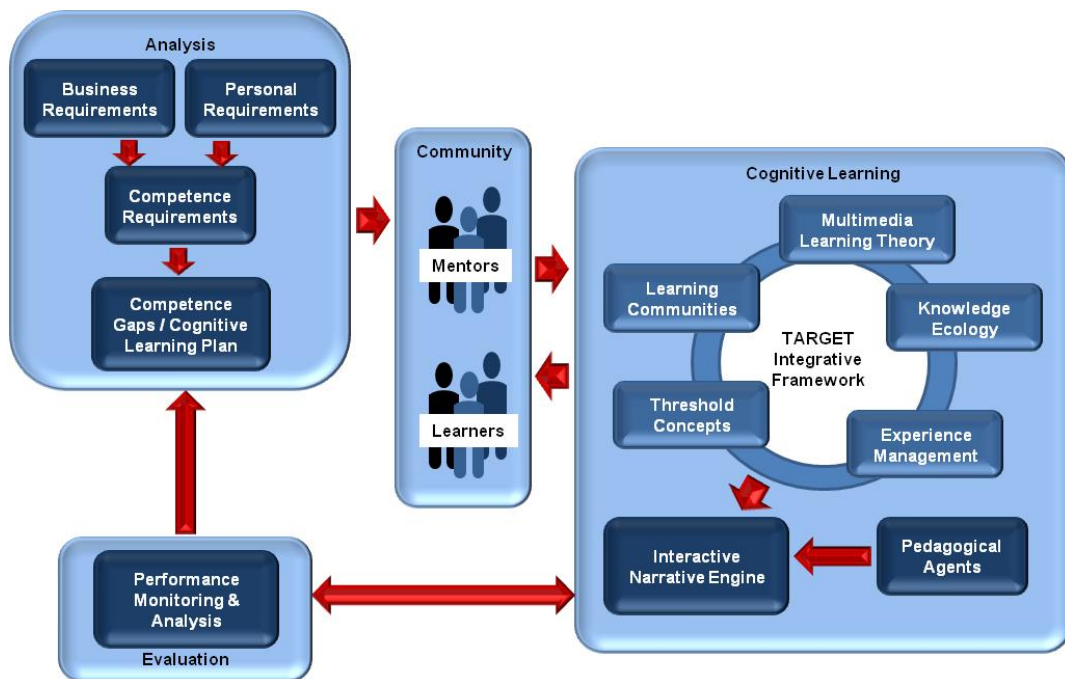


Fig. 1 - TARGET Conceptual Framework

This is achieved by identifying the core competencies that a person currently lacks and needs to develop. The TARGET process begins with the Analysis, which takes into account both the Business Requirements (what the organization requires) and the Personal Requirements of the individual, thus outlining the required competence profile to achieve. This profile is subsequently analyzed to identify the competence gaps and build the personalized cognitive learning plan for the individual, which minimizes the cognitive path to reach the desired competence profile.

In TARGET, the cognitive learning process is based on the TARGET Integrative Framework, which combines the following:

- **Threshold Concepts**, as an essential conceptual building block in progressing in the knowledge of a particular domain. A Threshold Concept has the following characteristics:
 - ✓ **Transformative**. A conceptual and ontological shift in the individual's understanding;
 - ✓ **Irreversible**. Once acquired, an individual cannot forget a threshold concept, neither return to their previous understanding of the knowledge domain;
 - ✓ **Integrative**. A threshold concept reveals hidden knowledge and the inter-relationships between existing concepts;
 - ✓ **Troublesome**. On first encounter, a threshold concept is counter intuitive and alien to an individual's common sense;
 - ✓ **Bounded**. A threshold concept usually connects knowledge spaces.

Conceptually, one may perceive a Threshold Concept as gateways in a knowledge domain, which once mastered, leads to emergent new knowledge as the individual's understanding is expanded and transformed.

- **Knowledge Ecology** (Qvortrup, 2006) implies that knowledge is seen as a dynamic, polycentric system corresponding to self-organizing knowledge ecosystems that provide the infrastructure in which information, ideas, and inspiration can travel freely to cross-fertilize and feed on each other.
- **Multimedia Learning Theory**, states that a learner's attention and working memory is limited. This limited amount of attention can be directed towards intrinsic, germane, or extraneous processing. Therefore, it is necessary to minimize the load on an individual's working memory to optimize the learning process.
- **Learning Communities** based on the seminal work of Wenger (1999) on communities of practice as the underlying framework can be thought of as shared histories of learning.
- **Experience Management** with Serious Games. Serious Games can be deployed as testbeds for Experience Management that are highly motivating and emotionally engaging, causing high and long knowledge retention. In TARGET, serious games are combined with digital storytelling techniques, thus enabling the community to store and share experiences reflecting complex situations.

The Learning Community will assess the outcomes of the competence development cycle to identify and formalize emerging behaviors in the form of patterns (and anti-patterns) to support successful competence development, thereby facilitating the process of knowledge management. In addition to mentoring, the Learning Community ensures the sustainability of the TARGET process by contributing to TARGET repositories. This is achieved through the use of the TARGET platform to capture the current state of a game session as a new knowledge asset, which gains in value in its lifecycle, beginning by emerging in sharable form (possibly multi-variate) through group processes that include being annotated by both learners and mentors (externalization). Next, the asset is refined through analysis of its elements, followed by integration of different viewpoints, and re-annotation. Even intractable problems (wicked problems) can be handled in this way, becoming knowledge assets. All content generated becomes part of the infrastructure, being easily accessible, open,

modifiable, and re-distributable using multiple interchangeable formats to ease integration in external digital libraries. However, in some cases, the ownership of knowledge restricts the scope of accessibility and TARGET supports the necessary security model to foster the trust of organizations and individuals. The TARGET platform provides the Learning Community with a set of social tools and services.

4 Conclusions

In the past, the need to have a theoretical framework to accommodate cultural issues (and authentic contexts to address those issues) was rarely made explicit in TEL or its predecessor, e-learning. It is not surprising that many students had difficulty in applying the knowledge they had acquired in simplified examples, to the more complex cases they encountered in real-world projects, especially projects whose participants came from unfamiliar cultures. However, the landscape of deployed e-learning solutions is full of mixed results, with plenty of failures and only a handful of successes (Romiszowski, 2004), leaving unclear the extent to which cultural issues caused the failures of e-learning.

The emerging competence development platforms, which integrated serious games, have significant key advantages over other e-learning tools, such as the ability to successfully engage and motivate the user so they are immersed into the flow (Csíkszentmihályi and Csíkszentmihályi, 1992). Moreover, serious games serve the needs of the “Nintendo generation” or the “digital natives” who grew up on “twitch speed” computer games, MTV, action movies, and the Internet. Marc Prensky (2001) argues that the exposure to such media has emphasized certain cognitive aspects and de-emphasized others.

How is this relevant to cross-cultural issues? We think as follows. Navigating a cross-cultural project environment requires deep insight into how people from other cultures think and act. What truly characterizes culture is that it dictates reflex responses to events and requests, often without our being aware of it. Facing people who treat goals, deadlines, contracts, etc. differently from oneself can often be highly frustrating, unless we are sensitized to it and understand why it happens.

The knowledge and skills required to successfully work in such an environment are both explicit (being able to put words to one's understanding of various aspects of culture), but not in the least tacit; seasoned project managers with extensive experience from cross-cultural projects can surmise what response a certain initiative will elicit or how to deal with a problem of some type. This comes from having experienced similar situations many times before and thus instinctively knowing how the next will play out, even if she or he cannot in advance explicitly describe it.

This kind of tacit navigational skill can only be developed through experiencing different types of situations over and over and gradually building the capacity to improvise. For many, the only path to this level of experience is time; working in such settings for decades. We believe serious games like TARGET can offer a fastest route; the kind of virtual world offered to users in serious games can condense significantly the times required to build sufficient experience to master this type of setting. Much like flight simulator training offers pilots the opportunity to train for

thousands of situations not even a lifelong career would ever present to them, a few months' use of a serious game can give project managers experience of thousands of situations marked by cross-cultural challenges. And since both allow the learner to experiment with different approaches and solutions without risking more than losing the simulation/game, this way of building experience normally leads to an even richer set of lessons learned.

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