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**SOCIAL MEDIA AS A LEARNING RESOURCE FOR BUSINESS STUDENTS OF
THE ‘NET GENERATION’: USING ACTIVE LEARNING PRINCIPLES TO
EMPOWER CREATIVE AND CRITICAL THINKING**

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Abstract

Purpose: This paper discusses the increasing impact of the ubiquitous social media technologies in business teaching and learning.

Design/Methodology/Approach: Using a combination of Google Sites, Youtube and Facebook, we have created an interactive case study platform which allows content to be enriched with relevant videos, images and collaborative inputs (comments, links, tags, etc). The case, which we called “Organixis”, described a fictional software start-up company that created games for mobile phones. The students were given two weeks to navigate the dozens of pages on the Google Site page. They were asked to collaborate at a distance on specific forums of discussion which were set up using a Facebook page, and they were encouraged to share their insights, additional materials concerning specific questions or problems, links, videos, etc on that platform. After a full day of workshops to discuss the Organixis case, we interviewed students and professors in order to better understand how they felt about the active learning elements of this pedagogy, its potential and shortcomings.

Findings: We present some preliminary evidence that even though media-enriched collaborative learning environments may help foster creative and critical thinking in net-generation business students, there are barriers to the adoption of these tools both from the perspective of teachers and students. Teachers are reluctant to change their traditional pedagogy, which they deem more productive and cost-effective, while students found that some of the space / time barriers imposed were somewhat artificial and would have preferred to work face to face. In spite of these objections, most students enjoyed the non-linear, multi-media nature of the innovative learning environment and wished we could develop more such activities in the future.

Research limitations: This study is mostly propositional. It is based on the observation of a limited sample in a Parisian business school and interviews with participants in a very small experiment with a virtual learning environment. Even if the findings seem to confirm the main trends in the existing literature, further qualitative and quantitative studies should be developed to better understand how to make the best use of social media in higher education.

Practical implications/originality/value: If further evidence can confirm the assumptions, arguments and conclusions in this article, the implications for higher education policy and pedagogy are manifold. More hybrid learning spaces should be created, students should be more empowered in their learning process and teachers should gradually move from a role of information givers to that of collective intelligence animators.

Keywords: Social Media, Active Learning, Higher Education, Net Generation.

JEL classification: A23, I21, I23, J24.

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1. Introduction

Information-space is the great symbolic accomplishment of our era. We will spend the next few decades coming to terms with it. (Johnson 1997)

After the introduction of papyrus writing in the third millennium before Christ and the invention of the printing press in the 15th century of our age, the emergence of computer networks is arguably the most important transformation in the history of media as supports for collaborative thinking (Lima, 2003). One of the crucial steps into this new realm was the popularization of Graphic User Interfaces (GUIs) in the early 1990s. Indeed, GUIs allowed non-specialist users to operate a computer less as a complex logical-mathematical device but rather as an intuitive tool for day-to-day tasks (Manovich, 2001). The graphic language of the interfaces includes words and icons of everyday life, used as metaphors for processing commands and data entry. For Manovich (2001), interfaces provide different models for interacting with the world and thinking about it. Through the mediation of these interfaces, it is possible to focus only on the graphical representations in the form of condensed light spots on the screen bonded to form symbols and other visual manifestations rich in meaning (Johnson, 1997). Since the power of GUIs has been amplified by the widespread availability of broadband connections, Social Media has become so ubiquitous that it now conditions the way several users, particularly among the younger generations, perceive the world.

This paper argues that, because web-based interfaces are so appealing to younger generations of Business students who are immersed in a world of computer mediated communication, and because business relations are increasingly permeated by such tools, it has become imperative to consider how to incorporate them in everyday learning in business schools. Constructivist, active learning principles seem to be the most suited for this goal. However, there are many barriers to the adoption of these new learning tools, both from the perspective of teachers and students. The text is divided in three parts: the first aims at defining interchangeably used terms such as “Online Social Networks”, “Web 2.0” and “Social Media”, as well as giving a few current examples of their use in higher education. The second section characterizes the so-called “Net generation” and how they think and learn. We finally discuss the principles of active learning and how they were put into practice in a concrete example of social media-based case study in our own business school. The latter experience sheds some light on the potential as well as the limits of these technologies.

2. Social Media and its use in higher education

Social Media or “Web 2.0” may be defined as Internet services that particularly allow and encourage users to create and share content which may be “copied, moved, altered, remixed, and linked, based on [their] needs, interests, and abilities” (Alexander, 2008). This content creation

often takes the form of commentaries, reviews, updates, tagging and short messaging, sometimes called “microcontents”. Examples include:

- **Social Networks** (Facebook, LinkedIn, Viadeo): creates a virtual sharing space for people to post their photos, biographies, hobbies and professional interests, and relies on the proximity of nodes to connect indirectly related people.
- **Blogs** (Blogger, Wordpress, TypePad): a list of chronologically posted pages, usually focused on a theme aimed at a specific target audience that will keep track of updates by using “RSS feeds” (content aggregating applications).
- **Microblogs** (Twitter, Facebook Messages, Google Buzz): allow users to instantly and effortlessly share their insights, preferences, opinions and actions with an audience that chose to participate in (or “follow”) daily short text messages (usually less than 140 characters long) about common interests.
- **Social Bookmarking** (Instapaper, Digg, Delicious, Facebook Like): based on a logic of “social filtering” which relies on the principle of the “wisdom of crowds”, this type of service consists of offering users the possibility to make the contents they appreciate more visible to others by bookmarking (i.e. “liking” or “digging” them). Likewise, “low quality” content will be overlooked by the crowds if several individuals choose to tag it negatively (“burying” it or simply ignoring it).
- **Wikis** (Wikimedia, Ietherpad, Meetingwords): consist of collaborative writing spaces that can be edited simultaneously and in real-time by several users.
- **Video and multimedia sharing** (Youtube, Viadeo, Slideshare): sites where multimedia content can be posted and shared indiscriminately or through the creation of specific channels.

Some authors (such as Frankin and Harmelen, 2007) argue that before the advent of these on-line tools, content creation was restricted to a few authors aiming at “wide audiences of relatively passive readers”. However, the idea of Internet as a means of collaborating and sharing ideas is not so new. Even in its “1.0 version”, the web in the 1990s already offered collaborative services such as listservs, groupware and web-based communities for users with common interests. The novelty of the later services, it can be argued, consists in the fact that these new applications allow anyone to modify, re-purpose and redistribute micro-contents as part of their daily routine of navigating through cyberspace (Ajjan and Hartshorne, 2008).

The use of the collaborative potential of web-based learning also pre-dates the hype recently created by the above mentioned “Web 2.0” applications. There are numerous examples of web-based collaborative tools for higher learning developed before the appearance of blogs and wikis, such as Webquest – created in 1995 (Barnes et al., 2007) and Panteon – originated in 2002 (Lima et al. 2004; Lima and Wanderley, 2010). It is clear, nonetheless, that the availability of online resources for learning has dramatically increased over the last decade. Barnes et al. (2007) document the widespread use of wikis, social networks and user-created video sites and blogs. Since then, the growth curve has exploded. The amount of data uploaded to Youtube skyrocketed from 5 hours of content *every minute* in January 2007 to 100 hours of content per minute in

December 2013 (this is number is constantly updated on Youtube's official statistics page at www.youtube.com/yt/press/statistics.htm).

Higher education cannot remain oblivious to these dramatic changes and the expectations they entail. Indeed, there seems to be an increasing consensus concerning the need for digital literacy, experiential learning, interactivity and immediacy on all areas of course design and delivery (Williams and Chin, 2010). This seems to be confirmed by a recent study conducted by Ajjan and Hartshorne (2008) concerning the uses and attitudes of social media (and more specifically social networks, wikis, blogs and social bookmarking services) in higher learning. They conducted a survey with 136 faculty members of a university in southeastern United States, which produced the following conclusions concerning the respondents' perception about the usefulness of these new technologies:

- blogs were viewed as the most useful Web 2.0 application in terms of improving student learning (47%), increasing student-faculty interactions (46%), improving student writing (52%), and ease of integration (46%);
- in terms of increasing student–student interactions, social networks were viewed as being the most beneficial (56%). Social networks were also viewed as useful tools for improving student satisfaction in courses (32%).
- wikis were viewed as also having significant potential to improve student learning (42%), increasing student–faculty (23%) and student–student interactions (20%), improving student satisfaction with courses(22%), improving student writing (29%), and ease of integration (38%).

Even though the uses of social media in higher education remain restricted to a minority, the potential benefits are widely recognized. Examples of use of social media in higher learning institutions include (Alexander, 2008; Bisoux, 2008):

- Wikis as facilitators of collaborative activities as alternatives to traditional Learning Management Systems and e-mail (case in point, Eller College);
- Social bookmarking sites as a means of incrementing student-to-student interactions based on collaborative information filtering (as for example Penntags at the University of Pennsylvania or H20 at Harvard)
- Blogging on the open web as a stimulus for developing writing and understanding an audience. Contrary to the “walled gardens” of Learning Management Systems, blogging encourages the students to construct their own rich-media content and expose them to an informal “peer-review” system through the comments and tagging they receive.

A more comprehensive list of Web 2.0 uses in higher education was carried out by Grossek (2009), as reproduced in Table 1.

Bisoux (2008) argues that particularly concerning business students, social media skills will increasingly be part of their future professional lives and as such must be considered as integral part of their education. In the domains of innovation and knowledge management, these tools have become a strategic resource. Ajjan and Hartshorne (2008) cite how Motorola has more than 2600

internal blogs and 3200 wikis to help develop knowledge sharing and collaborative problem solving within the organization.

The gap between the way Business is taught by means of traditional resources and the ways innovative companies use internet-based tools to reach their audiences is increasing (Tapscott, 2008a; Williams and Chin, 2010). Not surprisingly, several reports show that the Net Generation has unprecedented levels of dissatisfaction with their higher education experience (Hartman et al., 2005).

Table 1: Models of integrating social media technologies in Higher Education (Grosbeck, 2009)

Social media	Educational application
Blogging	<ul style="list-style-type: none"> • use blogs for real-world writing experiences; • pull class blogs together into one area for easy tracking; • quickly give feedback to students, and students to each other; • students use peer networks to develop their own knowledge; • update new information such as homework and assignments; • using comments in blogs can encourage students to help each other with their writing, and get responses to a question without getting the same answer twenty times etc.
Micro-blogging	<ul style="list-style-type: none"> • classroom community, exploring collaborative writing, reader response, collaboration across schools, countries, project management, assessing opinion, platform for metacognition, conference or as part of a presentation or workshop, for reference or research, facilitating virtual classroom discussion, creating a learning experience, a Personal Learning Network; • use for dissemination of teachers’ publications and materials, locating original sources of ideas, quotes, allows for very focused and concrete feedback to students to refine their thinking and improve their skills, fostering professional connections, informal research, for storytelling, follow a professional, get feedback on ideas, event updates, live coverage of events, build trust, build a community etc.
Wikis	<ul style="list-style-type: none"> • use for student projects; use for collaborating on ideas and organizing documents and resources from individuals and groups of students; • use as a presentation tool (as e-portfolios); as a group research project for a specific idea; manage school and classroom documents; use as a collaborative handout for students; writing: student created books and journaling; • create and maintain a classroom FAQ; as a classroom discussion and debate area; a place to aggregate web resources; supporting committees, working parties and university projects etc.
Photo / Slides / Video sharing	<ul style="list-style-type: none"> • share, comment, and add notes to photos or images to be used in the classroom. • inspire writing and creativity; create a presentation using the photos; • use tags to find photos of areas and events around the world for use in the classroom; • post student presentations to an authentic audience and get feedback from around the world; share professional development materials and have it available anywhere, anytime, to anyone; post presentations of special events; • video professional development on own terms; create an own subject specific videos with students; use video sharing sites to find videos on current issues etc.

Table 1: Models of integrating social media technologies in Higher Education (Grosseck, 2009) – continuation

Social media	Educational application
Syndication of content through RSS	<ul style="list-style-type: none"> • professional development, time saving; updated information in teaching area • information coming from constraining sources; sharing work with other educators • RSS feeds can potentially replace traditional email lists, reducing email overload • RSS feeds can be used to keep course specific web-pages current and relevant etc.
Social bookmarking	<ul style="list-style-type: none"> • create a set of resources that can be accessed on any computer connected to the internet; conduct research and share that research with peers • track author and book updates; groups of students doing a classroom project sharing their bookmarks; rate and review bookmarks to help with students decide on usefulness of resources; setup a group tag in order to share educational resources • share one del.icio.us account between a number of different subject specific educators in order to share resources with each other etc.
Social networking	<ul style="list-style-type: none"> • event support and continuation, team and community support, aggregation of social media applications, personal learning environments etc. (Cobb, 2008)
Other tools	<ul style="list-style-type: none"> • instant messaging increase the sense of community and accessibility which is required for collaborative learning; VoIP can promote international collaborations and understanding; calendars make calendar events, homework, anything you want available on mobile devices connected to the Internet • survey and polls, online diagrams and web-based word processor, on-line spreadsheet, social search, mind mapping; virtual worlds - virtual conferences and seminars, team meetings and collaboration spaces, simulations etc.

According to a study conducted by Kvakik (2005), 64.3% of business students from thirteen different institutions in the United States “prefer extensive technology” use in the classroom, compared to 28.2% which “prefer limited technology” and only 1.3% which “prefer no technology” at all. This score indicates a much higher proportion of technology enthusiasts among business students than among students of other fields such as Life Sciences (56.3%, 35.5% and 4.8%, respectively) or Social Sciences (44.2%, 44.4%, 7.9%). It is second only to the levels of engineering students’ expectations (67.8%; 24.4%; 4.8%). As seen earlier, these results indicates that business students are not looking for a replacement of lecturer-centric classes but its diversification using other methods and technologies as a support.

Of course, along with the potential benefits of using these technologies for higher learning come a series of challenges and criticisms. Barnes et al. (2007) report how some educators perceive that the hyperlinked connectivity of new technology may lead to an ever shorter attention span in younger generations, making it difficult for them to concentrate on traditional in-depth learning sources such as books and scientific articles. The immediacy of Internet would have made students less likely to accept delayed gratification in learning, creating a generation of students who are easily bored with traditional classroom environments and sources.

Furthermore, Franklin and Harmelen (2007) state that the habit of content sharing and re-purposing developed by the use of social media might create a “copy-and-paste culture that runs counter to traditional notions of plagiarism”. Issues such as how much can be copied and how credit is given seem to be shifting. A necessary adjustment would have to take place by either redefining

plagiarism or by explicitly helping students overcome these habits as part of their higher education training.

Besides, several logistical problems need to be solved in order to create a social media pervasive environment. These challenges include the integration of supporting systems with existing resources, the establishment of hosting, accessibility, visibility and privacy policies, as well as data ownership and intellectual property guidelines for material created and modified by university members and external contributors (Franklin and Harmelen, 2007). Other issues involve the control over content, backup and maintenance solutions, development of information literacy competencies of the personnel and appropriate teaching and assessment methods.

With so many hurdles, it is no wonder that the widespread use of social media tools in higher education remains confined to a minority of adopters. But infra-structure and support difficulties are easier to overcome than cultural resistance (Williams and Chin, 2010). In this regard, the barriers to the widespread adoption of social media in higher learning seem to be rather on the side of teaching personnel than on their much younger and web-savvier students. Indeed, according to Ajjan and Hartshorne’s previously mentioned study (2008), even though faculty members admit that social media has evident benefits (improve students’ learning, facilitate interaction with the faculty and their peers, stimulate writing skills and the degree of satisfaction with the course), only a few actually choose to use these technologies in the classroom. For the most part, faculty do not use and do not have plans to use blogs (62%), wikis (56%), social networks (74%), or social bookmarks (80%). Only 14% of respondents use blogs, 24% use wikis, 8% use social networks and 6% use social bookmarks.

This does not mean that the other side of the equation is unproblematic. Students are not always open to change or believe that change is always for the better. Heckman and Annabi’s (2006) experience with computer mediated case studies indicate that even though the on-line version promoted more student-to-student interactions, 77% of the pupils preferred face-to-face discussions. Among the face-to-face elements which were greatly appreciated by students they cite the “human element”, the flow and dynamics of ideas development, the personal involvement and the inherent structure of traditional classes. It must be noted that this study was done almost 10 years ago with students who were less impregnated by social media tools. A more recent study by Stefanone and Gay (2008) in the same domain came up with opposite results, which indicates that student expectations and habits may be changing. Even if that is the case, criticisms to social media adoption in higher learning remain a valid reminder that implementing new technology is not a matter of radically replacing all the traditional methods of teaching but rather identifying the best elements in each approach and developing a complementary use of both worlds.

As the “grown-up digital” generation emerges, understanding the limits and possibilities of these adaptations is crucial. Teachers seem to recognize that they need to extend their technology skills to address the requisites of a Web 2.0 age. Likewise, students need to perceive that zapping superficially among different topics is not the only way of learning, and that many traditional methods of learning have the proven potential to develop their in-depth understanding of complex issues and their critical thinking skills. Remaining open on both ends of the debate is key to finding a compromise.

In order to achieve the right balance, faculty has to understand the changing profile of younger generations in order to stimulate their cognitive abilities while addressing their learning needs. The next session give an overview of the challenges involved.

3. How the Net Generation Thinks and Learns

People born during and after the eighties are called “Digital Natives” (Prensky, 2001) or “Net Generation” (Tapscott, 2008a) because they grew up in a post-digital world. Also called “Generation Y” (Peattie, 2007), this cohort is estimated to currently be the largest demographic segment in several nations. Specialists estimate that at age 20, an average ‘Net Gener’ will have spent 10,000 hours playing video games and 20,000 hours watching TV, they will have sent 200,000 e-mails; and while they will have spent 10,000 hours on cell phones, the time reading will amount to less than 5,000 hours (Barnes et al., 2007).

As these young adults flood universities worldwide, a series of opportunities and challenges emerge. Among the facilitating factors identified in the literature are their greater familiarity with technology, their specific cognitive abilities to work on multiple tasks, team orientation and acceptance of authority. But as put by Hartman et al. (2005), there are great challenges that arise from “the shallowness of their reading habits, a comparative lack of critical thinking skills, naïve views on intellectual property and the authenticity of information found on the Internet”. Traditional scholars are often under the impression that the habits of the Net Generation result in a superficial understanding of their discipline (Oblinger and Oblinger, 2005).

It must be noted, however, that the underlying element that predicts competence in this domain seems to be exposure to new technologies rather than age (Oblinger and Oblinger, 2005). Indeed, older individuals who are heavy IT users tend to present similar cognitive preferences as Net Geners. Conversely, younger people who have grown without frequent access to computers tend to have more abilities in common with previous generations than with their own.

Even if it is not a purely generational phenomenon, behavioral differences are often noticeable between tech-savvy youngsters and their parents. Don Tapscott (2008b) suggests that while parents use cell phones too mainly to talk and check e-mail, Net Geners are more inclined to text, google, find directions, use multimedia and collaborate. As recently seen in scenes as diverse as students flash-gatherings for picnics in France or protests in Tunisia and Egypt, the use of social media in mobile phones allow them to move in synchronization “like schools of fish ... on currents of whim” (Hartman et al., 2005), a phenomenon known as “smart mobs” or “social swarming”. Younger people think e-mail is old-fashioned. They are very education oriented. They perform multiple activities simultaneously, which Prensky (2001) considers resulting from a different neural wiring inherent to the way they were impregnated by these technologies from early childhood. As a consequence, while digital natives have shorter attention spans, and less ability to reflect on topics, they instead have greater visual skills and the ability to concentrate on different media simultaneously. A survey mentioned by Barnes et al. (2007) found that Net Geners aged between 8 and 18 years report using multiple media simultaneously. Thus, it is not surprising to find such adolescents using the Internet at the same time as he or she is playing video games, reading print

media, listening to music, and talking on the phone (Williams and Chin, 2010). They would also have particularly developed the ability to monitor changes and make inductive discoveries. In his words, “While these individual cognitive skills may not be new, the particular combination and intensity is. We now have a new generation with a very different blend of cognitive skills than its predecessors”.

According to Oblinger and Oblinger (2005), there are other marked differences in the thinking processes of Net Geners as compared to previous generations: linear thinking is less common than *bricolage* based on fragmented pieces of information; they have fast response time and expect the same skill from their interlocutors.

Their in-depth text literacy, on the other hand, often proves to be less well developed than that of their older peers. There is a certain non-linearity to their information absorption habits; “they don't necessarily read a page from left to right and from top to bottom. They might instead skip around, scanning for pertinent information of interest” (Tapscott, 2008b). Besides, they are less likely to use the library than internet based sources for their research.

Paradoxically, Net Geners do not necessarily appreciate computer-based distance learning (McNeely, 2005). A survey from the University of Central Florida cited by Oblinger and Oblinger (2005) suggests that the older students (Matures and Baby Boomers) are more prone to be satisfied by a fully web-based course than their younger peers. Net Geners seem to value face to face interaction higher than on-line exchanges and their expectations towards higher education is to develop their skills by team work and interaction with the faculty. Technology is welcomed rather as a support than as a substitute for face to face interactions. In another study with University of Pittsburgh students (Roberts, 2005), 25 students were asked to rate their preference for the level of interactivity in a learning environment (ranging from 100% lecturing to 100% distance learning). All of the respondents gave their highest rating to a balanced, 50-50 environment. Similar results were found in a much wider survey (McNeely, 2005) with over 4000 American students. They found that the preference for technology use is normally distributed in that population of higher education students of 25 years of age or less: in a scale of 1 to 5, with 1 meaning “I do not prefer the use of technology” to 5 being “I prefer taking courses that are taken totally online”, the mean response was 3.07, with a median of 3.00, and mode of 3. These results seem to validate the assumption that Net Geners see computers as a support rather than as an alternative to face to face interaction.

There seems therefore to be a growing consensus in the literature that the learning style that best fits the Net Generation cognitive skills and expectations is a solution between the old-fashioned, professor-centric lecture and the dematerialized class of e-learning. The ideal class would be a “balance of individual and active learning, along with collaborative learning and passive learning, which occurs in groups and through lectures” (Ramaley and Zia, 2005). Pedagogical design principles should therefore alternate engaging lectures based on rich-media examples of real-life situations with student-centered activities based on such terms as analyze, create, criticize, debate and present (Brown, 2005). A dedicated and passionate scholar is still expected to dramatize and embody the intellectual content of a subject and to inspire students by demonstrating the appeal and importance of the material. At the same time, one can no longer neglect the need to integrate

the wealth of contents available in web-based resources as a learning support, along with the collaborative potential of synchronous and asynchronous technologies.

3.1. Constructivist principles: Active Learning, Critical and Creative Thinking

Teaching in most Business Schools has hardly changed over the past few decades. Blackboard scribbles may have been replaced by digital transparencies, but the main experience still consists largely in lecturer-centric, one-way communication flow. The infamous “death by lecture” may have simply been transformed into “death by Powerpoint” (Clayton-Pedersen and O’Neill, 2005). A more student-centric approach is called for if we are to respond to the degree of interactivity that Net Generation students have come to expect.

Johnson and Levine (2008) see in the relative autonomy of social media an opportunity to appeal to one of the most powerful motivating factors in Maslow’s classic hierarchy: self esteem. The ubiquitous access, ease of use, functionality, and flexibility of Web 2.0 technologies have made them increasingly appealing as student-centered instructional tools. They can support constructivist pedagogical approaches such as active learning, social learning and student publication. A series of studies (Lima and Wanderley, 2010; Spiro et al., 2003; Chaka, 2008) based on the principles of Cognitive Flexibility Theory (CFT) have demonstrated the potential of web-based environments for collaborative learning. These studies rely on the premise that, in order to be more meaningful, learning should ideally be based on three principles (Brown, 2005, Jonassen et al., 1999): interaction (students should be able to explore and manipulate the object of learning), reflection (the interaction should lead to creative and critical thinking about the nature of the learning object) and collaboration (the individual insights of each learner is enriched by a collective synthesis that takes into account multiple points of view on any given subject). The application of these CFT principles is particularly relevant in so-called ill-structured knowledge domains such as business, sociology and economics, in which solutions to problems often rely on the heuristics of personal insights and collective discussions rather than on the application of algorithmic formulas.

Indeed, interactivity is what young student crave the most, “whether it is with a computer, a professor or a classmate” (McNeely, 2005). Technology can play an important role in mediating both student-professor and student-student interactions, but above all it may facilitate the reflection by opening up endless sources of information about any real-life problems that need to be understood and solved in an authentic environment. Internet surfers have grown used to a certain degree of autonomy and can get easily bored if not challenged to develop their own knowledge with the same set of tools that they use to socialize and learn outside of the classroom (Barnes et al., 2007; Barone, 2005); on the other hand, if properly stimulated with the right guidelines for knowledge creation, they can be passionate about the topics they are interested in and expect a high degree of interaction with peers; technology is expected to play a role of enhancing such hands-on interactive experiences.

Some see a parallel between this shift from a transmission paradigm of teaching to a constructivist paradigm as a natural consequence of the transition from an industrial to a post-industrial society. As Brown (2005) argues, in the early 20th century, “knowing meant being able to remember and repeat”. Average workers could expect to do the same work for the duration of their

lives. In a fast-changing post-industrial world, however, basic skills include critical thinking, persuasive expression and complex problem solving. Student-centric approaches to the use of new technologies may help foster these competencies.

Constructivist, computer-based tools seem to be particularly useful in the context of business education. Heckman and Annabi (2006) single out the virtues of asynchronous discussions in the context of business case-based learning. The fact that students can interact with the same content in different times in different places would allow for increased time to read and reread the exposed ideas and arguments. This would increase the reflection time and would positively affect the quality of the analysis and the decisions taken. Besides, contrary to face-to-face cases, in which virtually all student utterances were in response to the teacher, over half of the student utterances in that on-line experience were in response to other students. Lima et al. (2004) have also detailed how case-based learning, particularly when mediated by the constructivist use of information technology tools, may help develop critical and creative thinking as described by Figure 1.

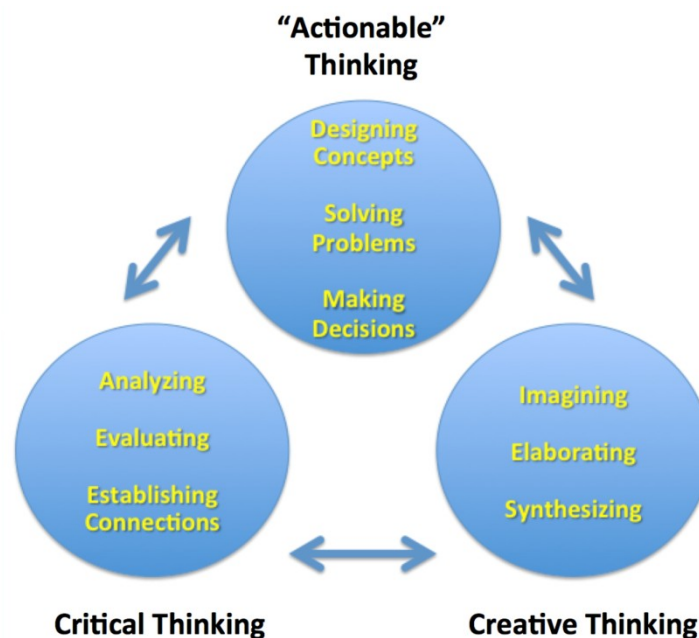


Figure 1. Creative and critical thinking skills

Adapted from Lima et al. (2004) ‘Collaborative interactivity and integrated thinking in Brazilian Business Schools using cognitive flexibility hypertexts: the Panteon Project’. *Journal of Educational Computing Research*, Vol. 31, No. 4, pp. 371-406.

Preliminary results obtained from our own experimental use of social media for case-based learning suggests that technology may indeed play an important role as a facilitator in several of the above mentioned categories of critical and creative thinking in business students. However, as will be described in the session below, there are also clear objections on the side of teachers and students to adopting these tools.

4. Methodology

A recent experience (2011) in our own business school may shed light on the potential benefits and difficulties of combining active learning principles with social media tools. Using Google Sites, Youtube and Facebook, we created an interactive case study platform which allowed content to be enriched with relevant videos, images and collaborative inputs (comments, links, tags, etc). The case, which we called “Organixis”, described a fictional software start-up company that created games for mobile phones. It took a dozen professors of our three departments (finance, marketing and human resources) about three months to create an in-depth description of the company problems in each domain, including links to external resources, built-in videos with related topics and conceptual graphics to help students understand how each “tree” fit the overall “forest”.

The pedagogical framework consisted of assigning roles of finance, human resources and marketing consultants to each one of 80 fourth-year students who participated in the experiment. This was a convenience sample of students who were required to participate in a 3-day entrepreneurship seminar. As part of the activities for that seminar, we decided to create an immersive organizational environment to confront students with the problems of launching a new product. The students were given two weeks to navigate the dozens of pages on the Google Site page, focusing primarily on their “domain of expertise” while at the same time trying to get a glimpse of the problems in the other domains. They were asked to collaborate at a distance on specific forums of discussion which were set up using a Facebook page, and they were encouraged to share their insights, additional materials concerning specific questions or problems, links, videos, etc on that platform.

After the two weeks of distant collaboration, they met in 4 separate classes of 20 students for an 8-hour marathon of analysis and recommendations. As a first step in each class, the students were asked to “debrief” what they had learned in their domains of expertise during the two weeks of “asynchronous collaboration”. The finance, marketing and HR specialists stood before the class and exposed the main issues they had contended with while navigating their domain individually; a projection of the Facebook discussion on the background helped them synthesize the key points discussed on-line.

Once all the key issues had been identified orally, the facilitators in each class formed 5 groups of 4 specialists (one in finance, one in human resources, one in strategic marketing and one in tactical marketing) and gave them 3 meta-plan cards on which they were expected to describe the three main problems confronted by Organixis in all the domains. The 12 problems were posted on flipchart sheets glued to the wall around the room. If the facilitator identified common themes, he or she would group them together in a single cluster. Then each individual students was given three mini-post-its (small self-adhesive, colored squares) that they could use to “vote” on the three problems they personally thought were the most relevant among. As a result, we had the “collective thinking” of each class clearly visible.

Finally, the groups were given 3 hours to prepare a very detailed diagnosis of the problems, how they interrelated and how they could be solved. In the afternoon the four groups presented their

solutions and debated their implementation. After these activities, we held interviews and informal conversations with a few randomly sampled participants about the challenges and opportunities associated with this kind of pedagogical approach. We also looked at the actual discussion threads on Facebook about the case and its implementation.

5. Findings

A few extracts of the Facebook inputs from sampled groups are reproduced below (translated from the Organixis Facebook page in French). These reactions illustrate how the constructivist interaction and collaboration around authentic problems using social media tools may foster some of the critical / creative thinking competencies previously described:

- *Critical thinking categories:*
 - Analyzing:
 - I agree with you Janaina. In addition, males between 30 and 40 can afford to spend more on games than the other targets. We should try to do a study on what kind of games can please them ... to best meet their expectations. However, we must also try again to find one that would appeal to "teens" because Vampyx was not a success.
 - Evaluating:
 - Yes, I agree. But concerning the choice of product, are we not talking rather about operational marketing? Well, we can give them ideas. As for targeting, it seems that teens and 30-40 year-olds are the two age groups to focus on and to exploit.
 - Establishing connections:
 - It is true that there are not many games designed for women ... Yet still we see more and more women play with consoles ... as the Wii. The consoles have developed games based on women's needs and have conquered a lot of clients. Why not try to do the same with games on mobile?
- *Creative thinking categories:*
 - Synthesizing:
 - Our suggestions: find new segmentation criteria; modify target age groups; find the right balance of resources in the targeted segments; enhance external communication (promotion through social networks).
 - Elaborating / Imagining:
 - For "teens", we could make a contest with prizes to be won .. It could stimulate them to play more. And concerning the 30-40 year-old target, I'd rather suggest games that remind them of what they played when they were young, we could make new versions of old games.

Even though this qualitative evidence seems to confirm the potential for the use of collaborative on-line tools for active learning, interviews and informal conversations we had with students and teachers after the experience reveal a more complex scenario. While there was an

overall positive attitude towards this kind of tool from both camps, there was also a sense that the effort to create and coordinate such virtual learning environments is disproportional to the actual benefits. Indeed, several of the objections mentioned in the literature could be identified among both teachers and students.

On the teachers' side, they felt that similar critical and creative thinking skills can be more easily stimulated with traditional in-class case study discussions, without the aid of web-based technology. They also pointed out that preparing multi-media cases for distance learning based on a fictitious company is both more demanding and less authentic than using real-world, paper-based cases. While they were willing to collaborate on a topic for the virtual experiment, they argued that the coordination effort required to create a consistent multidisciplinary approach on the web renders this approach impractical as a regular teaching method. Besides, they argued that not all of them have the technical skills to thrive in this environment. Very few of them were ready to repeat the experiment on their own or to incorporate web-based collaboration as a routine element of their courses.

On the side of the students, they acknowledged that while it is "cool" to simulate distance learning environments with non-linear, multi-media web resources, the reality is that face to face group collaboration is much easier / familiar to them. There was a sense of "artificial time / space barriers" created for the purpose of the experiment during the four weeks of distance collaboration. However, the "Net-Generation-friendly" components of the experiment were quite appreciated. They liked being able to discuss the case on Facebook, they appreciated the multimedia components of the case and they enjoyed navigating a non-linear information space. They also understood that there is a tendency toward web-based collaboration in today's business environment and wished we would continue to experiment with online tools to replicate that environment. They were quite aware of the limits of the traditional lecture format and expected it to evolve to a more participative, technology-based learning environment similar to the one created around Organixis.

6. Conclusions

Despite the several objections raised by the participants in our experiment, they all agreed in principle that the next generations will increasingly expect changes in the way they learn. As the evidence from both the literature and our case indicates, they expect neither the isolated experience of pure distance-learning nor the traditional, professor-centric approach. A hybrid model is called for, in which the best of both worlds can be conveyed. The use of Social Media for active learning presents a unique opportunity to address this challenge. However, as we also learned from our experience, these tools must be introduced in a way that is both convenient for teachers and natural for students to use. We are all learners in this journey and we have yet to come up with practical ways of integrating these tools in everyday teaching.

The full potential of web-based learning is perhaps best captured by the current tendency of encouraging "flipped classroom" pedagogy (using web content for learning at home and coming to class for collaborative activities and face to face discussions; see Herreid and Schiller, 2013). If properly embedded in such hybrid systems, social media usage may provide the tools necessary to

develop active learning. If meaningful learning is about developing critical and creative reflection in an authentic context, based on collaboration and interaction, social media tools may provide students with additional means of exploring most of these constructivist elements.

Both our empiric experience and most of the pedagogical literature present the opportunities and challenges faced by teachers in this context. In a more interconnected world in which speed-of-light information is instantly available at anytime and anyplace, our role would be less that of a “lecturer” than that of an “animator of collective intelligence”, asking provocative questions, playing the skeptical role of the devil’s advocate, questioning potentially fallacious assumptions and encouraging alternative solutions. Business teachers in particular are increasingly expected to help students to develop the competencies to critically distinguish valuable from irrelevant sources and how to use them to construct their own insights about the complexity of organizations and markets. Even though hybrid learning experiences may prove to be hard to implement, such pedagogical approach may better prepare students to respond to job offers in business environments that increasingly demand distance collaboration with web-based tools.

Our experience with the Organixis case, based on such a mix of social media tools (Google Sites, Youtube videos, Facebook page to support discussions), is an example of how active learning principles can be enriched by the use of new technology to foster critical and creative thinking among net generation students in business schools. Nonetheless, the barriers identified in the literature and in the experiment remain strong: teachers are still reluctant to change their traditional approach and to learn new tools. Students, on the other hand, loathe the idea of pure distance-learning solutions without the stimulating environment of face-to-face exchanges. Therefore, more research is called for in order to understand how innovative pedagogical projects can be conceived to reduce those barriers.

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