The disconnect in the appropriation of new technologies into students' everyday lives
A three country comparison

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Abstract
Non c'è dubbio che gli studenti abbiano adottato con passione le nuove tecnologie all'interno della loro vita. Tuttavia, gli autori hanno voluto esplorare quali passi sarebbero necessari per garantire un utilizzo adeguato delle tecnologie in ambito accademico. Questo articolo presenta un'indagine realizzata tra gli studenti in tre nazioni rispetto alle attività accademiche e all'uso delle tecnologie nella vita quotidiana. Anche se i numeri variano leggermente all'interno di ciascun paese, i risultati finali mostrano una differenza tra la quantità di tempo dedicato alle tecnologie e alle attività accademiche. Nel complesso, i risultati evidenziano un bisogno di maggiori dati sulla realtà attuale delle abitudini tecnologiche e accademiche degli studenti. Gli autori propongono una serie di possibili passi da compiere per comprendere meglio questo fenomeno. In definitiva, questo studio esorta educatori e studenti a raccogliere ulteriori informazioni sul ruolo che i social media hanno nella vita degli studenti. Una migliore comprensione della situazione potrebbe migliorare l'integrazione delle nuove tecnologie nel mondo accademico.

There is little doubt that students eagerly appropriate new technologies into their lives. However, the authors wanted to explore what steps would be needed to ensure a proper appropriation of new technologies when applied to academic set-

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tings. This paper presents a 3-country comparison of students reporting on their academic activities and technology use in everyday life. Though the numbers vary slightly within each country, the final results show an overall disconnect between the amount of time students allot to technology use and academic activities. Overall, the findings shed some much needed statistical light on the current reality of students' technological and academic habits. The authors propose possible next steps to take in order to better understand this phenomenon. Ultimately, this study urges educators and students alike to gather more information about the role social media plays in students' lives. A better understanding of the situation could eventually lead to the successful integration of new technologies in academia.

Parole chiave: Appropriazione, nuove tecnologie, vita accademica, confronto cross-culturale, social media

Keywords: Appropriation, new technologies, academic life, cross-cultural comparison, social media

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Introduction

As advances in technology proliferates, and students adopt new technologies, questions arise as to the depth and breadth of the role they should play in their lives. How are young people using these technologies? To what extent do they rely on them for entertainment? Information? Social Networking? Do they have a place in the academic context? Whether one refers to them as "Digital Natives"(Prensky, 2001) or to their "mobile culture" (Caron & Caronia, 2007) as they now access information and engage in communication – in "nowhere places" and – in "no when-times" they no longer have spaces or times that are not accessible for new media uses and that includes in the classrooms.

North American data reveals that today nine out of ten 18 to 29 year olds are online and have cell phones (Pew Internet & American Life Project, 2009). The 18 to 24 age group are those that talk the most averaging more than 16 hours per month and receiving and sending more than 1600 text messages for this same period (Nielsen 2010). Although perfectly comparable data are difficult to find we do know that in Italy the 15-24 year olds are those that have the highest smartphone penetration (47%), higher than in the U.S. or the U.K., (Nielsen 2010) and more than 70% of 16 to 24 year olds are on the internet daily. (Eurostat, 2009). In Switzerland close to nine out of ten young people in the 20 to 29 age group are regular users of the Internet (Indicateurs de la société de l'information en Suisse, 2008)

Many books, articles, and essays have been written about young people and new technologies (Katz, 2008). Evaluative research specifically on mobile technologies

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– in regard to their use in the academic context has however just recently begun to look at this issue. Educators however feel the urgency today to better understand how learning may be impacted by these mobile technologies. In many cases, the integration of such technologies has been touted as *the* necessary next step in education. This viewpoint however has not been without its detractors, and in recent years, a debate has arisen as to whether or how technology should be integrated into the classroom.

For some administrators, integrating technology into the classroom can be seen as the proper solution to satisfy political or economic agendas. Increasing enrolment by allowing distance learning and remote access, and managing costs by reducing the need for textbooks as well as the need for larger classrooms are among the main reasons technologies are often promoted for the educational context. There also seems to be a pervasive bias that using technology is a progressive method of teaching that will automatically render education more efficient (Caron & Caronia, 2009) and that members of the "mobile culture" generation will eagerly accept the use of mobile media devices as learning tools (Caron, Caronia & Gagné 2011).

And so, educational institutions have started implementing technology into their curricula. In 2004, Duke University was one of the first institutions to integrate such technologies into education by providing 1,600 first-year students with iPods. The purpose of this initiative was to determine the ways in which the iPod was most useful and to help shape future technology initiatives at the University (Duke University iPod First Year Experience Final Evaluation Report Summary, 2005). The results were mixed. While students appreciated the enhanced focus on individual learning style and the flexibility the mobile device provided in making audio recordings, they cited technical challenges and "lack of specific ideas for academic uses" as major detractors. More recently Amazon's *Kindle* underwent pilot testing at seven universities in the fall of 2009, to see to what extent it would enhance the learning experience. Evaluation of the program again showed that the vast majority of students, while loving the Kindle for their personal reading, indicated they were reluctant to use it for academic purposes. In this case, they cited technical glitches as the biggest obstacle. The slow refresh rate, the inability to load PDFs over the network, and the inability to handle more than one text at a time were among their chief complaints (Foresman, 2010). The Monterey College of Law is now piloting a program with the iPad in the hopes that the mobile technology could allow busy students to access learning materials outside of the school setting (Nagel, 2010).

Besides economic considerations, there are also educational models that's focus is leveraging technology to increase *interaction* among groups of learners. These models inspired by the work of Jerome Bruner stress the importance of interaction in learning, denouncing the *transmission model* of education in which the information

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flow is unidirectional from teacher to student (Bruner, 1996). Bruner believed that it is through interaction with others that people learn about their culture's world-view. This type of learning environment is what psychologist Lev Semenovich Vygotsky envisioned when conceiving of the *zone of proximal development*; an environment where children can reach higher and more abstract levels of understanding with the guidance of a mentor or facilitator (Wertsch, 1985). In Vygotsky`s own words, the *zone of proximal development* is *"the distance between the actual development level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers"* (Vygotsky, 1978, p.86). Technology, then, could help in breaking down the one-way flow of information and allow learners to interact with each other and the instructor in a very direct and tangible way.

There *is* also an underlying assumption by some that students love learning and want to learn at all times and in every situation. Technology is then integrated in order to fulfill this desire for continuous learning. Luckin et al. (2005) believe that their goal should be to make every environment and every moment primed for learning, and believe that technology is able to accomplish this: *"We are poised to take advantage of the potential offered by these technologies for the creation of learning experiences that will engage learners in activities across multiple contexts and that can support collaboration and communication across time and space"* (Luckin, et al., 2005).

This position seems in line with the tenets of two models widely shared in the education field: the constructivist model and the continuity-contiguity model (Caron & Caronia, 2009). The former suggest that students actively create their own reality using past knowledge and experiences, as well as the traditions and norms of their culture. It is in this way that they endow information they receive with meaning (Bruner, 1996). Technology is seen as a powerful aid in this process of knowledge construction. The latter model suggests that the more an educational activity is able to connect with students` social and cultural worlds, the more effective it will be. The assumption is that since students are already deeply engaged with technology for leisure and social activities, it should well support and enhance their academic activities.

Some evidence has however appeared that challenges the assumption that students want to learn all the time and in every setting. In one in-depth study, researchers explored this contention by designing an experiment that shifted the iPod technology from its context of leisure and social uses to an academic context. The results showed that more than 90% of iPod use was for leisure and social uses. Spending time creating academic content and sharing it with their learning community was also very little considered as a valuable use of their time (Caron & Caronia, 2009). This may suggest that neither the continuity-contiguity models

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nor the constructivist model mentioned earlier, are the best educational arguments for the implementation of technology into the classroom .
The cultural frames through which students interpret both the learning process and technology may not necessarily be consistent with the cultural frames employed by institutions and educators.
In an effort to better understand these issues and to see how to make the best use of technology for his students, Michael Wesch, a Cultural Anthropologist at Kansas State University, had his students develop questions for a survey they would then complete. The "A day in the life of students" project painted a picture of students who were very involved in new media but somewhat disengaged from their education. Wesch attributed much of the students' disengagement to the physical classroom itself and its setup that implied an educational system whereby students passively acquire information given out by an authority. However, since information is today no longer contained within a single room, when students seek out meaning and relevance inside the classroom, they can't, and so they disengage (Wesch, 2008).

The research

To investigate these issues further we designed a research project that would partially replicate the one initiated by Wesch by expanding somewhat on his original survey to also include questions on time allocations, other lifestyle activities and uses of other technologies. In addition we thought a cross-cultural approach could be of interest to see if and to what extent cultural factors could intervene.
Our goal was thus to go into the classrooms and survey what were students' uses of technologies (i.e. internet, social media, mp3 player, cell phone, e-mail and television) and overall how much time in a given day or week they spent on them, especially when compared with the traditional educational activities they engaged in (data that was also collected).

Methodology

Research was conducted over the 2009-2010 academic year in three universities: Université de Montréal in Canada, Università di Bologna in Italy and Université de Fribourg in Switzerland. Average class size was moderate to small, with no more than 60 students in a given class in any of the 3 countries. This can be attributed to the fact that most of the classes in which the survey was distributed were 3rd-year courses, which generally have fewer students than 1st or 2nd-year courses. All in all a convenient sample of 282 undergraduate students (with slightly more female than male students) participated in the study, these being in the early twenties age range (21-23 of age). Students were registered mostly in Communication, Psychology and Education courses.

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To Wesch's original survey on Education and Internet usage we added in our international survey nine new questions in order to broaden the picture of students' activities and to get a more complete sense of their priorities. In so doing, we expanded the **Internet usage** category to include other technologies and added elements on lifestyle time allocations.

Table 1

EDUCATION AND EVERYDAY ACTIVITIES	
1.	What is your age?
2.	What is your average class size?
3.	What percentage of teachers you have had at university who would be able to recognize you and call you by name?
4.	Not including this class, what percentage of assigned readings do you complete?
5.	Not including this class, what percentage of assigned readings do you find relevant to your life?
6.	On average, how many pages do you write for your classes each semester?
7.	On average how many books have you read in the past year?
8.	On average how much time do you spend on studies each day?
9.	On average how much time do you spend in transit each day?
10.	On average how much time do you spend sleeping each day?
11.	On average how much time do you spend working or volunteering each week?

Table 2

TECHNOLOGY & INTERNET USAGE	
1.	On average how many web pages do you read each day?
2.	On average, how many Facebook profiles do you view each day?
3.	On average how many e-mails do you write each day?
4.	On average how much time do you spend on the internet each day?
5.	On average how much time do you spend listening to music each day?
6.	On average how much time do you spend watching TV each day?
7.	On average how much time do you spend talking on cell phone each day?
8.	On average how much time do you spend using mobile technology each day?

Although it could have been interesting to include Wesch's findings on American students in this comparative study, due to fact that in the two years that elapsed between his study and ours, technology advancements and proliferation have been too extensive for a proper comparison

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Data Analysis

EDUCATION AND EVERYDAY ACTIVITIES

Despite the small class size, the proximity of teachers and students, as measured by teachers recognizing students and knowing their names, appears to be quite low, student's reported only one teacher in ten would know their name. There is slightly more proximity between teachers and students in Canada, perhaps due to cultural norms in North America for teachers to have less formal relationships with their students.

With regard to percentage of readings done, Italian students (86%) seem to read more required readings than their Swiss (61%) or Canadian (51%) counterparts. This could be explained however by the fact that in Italy, assigned readings are compulsory. Given this compulsory nature of readings, Italian students (49%) find up to one half of their readings to be relevant, while Canadian (31%) and Swiss students (35%) find only about a third to be relevant. For Italian students, all assigned readings are essential for them to succeed in their classes. Because they are compulsory, Italian teachers appear to assign fewer of them, unlike in Canada or Switzerland where multiple readings, both required and optional, are assigned to students. As well, in Italy (14), assigned readings are more often books than articles, which is less the case in Switzerland (5) or Canada (8). This might also explain why Italian students report reading between 6-8 more books per year. Swiss (97) and Canadian (71) students did report more writing output than Italians students (59), though. This could be because in Italy, the majority of evaluation methods for course work are oral. Overall, Italian students in our sample seem to spend more time on their studies. However, they spend less time working outside school than Canadians students and less time in transit than Swiss students, so this may be a culturally-driven trade-off. Finally, students in all 3 countries report getting about the same amount of sleep per night (7h 20m), though Canadian students report slightly less than their Italian and Swiss counterparts

Table 3

EDUCATION AND EVERYDAY ACTIVITIES		AVG.	CANADA	SWITZERLAND	ITALY
1.	Age	22	**22 yrs**	**22 yrs**	**23 yrs**
2.	Number of students in class	51	60	54	39
3.	% of profs who know your name	11	**14**	9	9
4.	% of required readings done	66	51	61	**86**
5.	% of readings found rele-	38	31	35	**49**

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6.	Pages written for school/semester	77	74	**97**	59
7.	Books read/past year	9	8	5	**14**
8.	Time spent on studies/day	3	2h 50m	3h 08m	**3h 25m**
9.	Time in transit/day	2h	2h 20m	2h 51m	**1h 38m**
10	Time sleeping/day	7h2o	7h 10m	7h 34m	**7h 24m**
1	Time working or volunteer-ing/week	10h42	15h 36m	6h 20m	**10h 51m**

TECHNOLOGY AND INTERNET USAGE

With regard to technology and internet usage, our findings show that Canadian students are those that write more emails, view more Facebook profiles, and read more web pages. This is consistent with data that reports that Canadians are those in these three countries that spend the most time on the internet - likely because they have the greatest and most consistent access to it. Swiss students in our sample spend the most time listening to music (3h 14m). Since Swiss students are well known for having to spend a great deal of time travelling by train to get to and from school, listening to music may be a way to pass the time in transit. Rates of mobile technology use are highest among Italian students (2h18m) possibly due to their high cell phone use (47m). Cell phone diffusion came earlier in Europe than in North America and spread particularly quickly in Italy. Further, since Italian students do less after school work than Canadian students, and don't spend as much time in transit as the Swiss, they possibly have more opportunities to talk on their cell phone and spend time watching TV (1h 56m).

Table 4

TECHNOLOGY & INTERNET USAGE					
		AVG.	**CANADA**	**SWITZERLAND**	**ITALY**
1	Web pages read/day	11	**14**	9	9
2	Facebook profiles/day	3	**4**	2	2
3	Emails written/day	3	**4**	3	3
4	Time on the internet/day	2h	**2h 21m**	1h 59m	2h 10m
5	Time listening to music/day	2h	1h 52m	**3h 14m**	1h 25m
6	Time watching TV/day	1h35	1h 34m	1h 17m	**1h 56m**
7	Time talking on cell phone/day	37m	30m	35m	**47m**
8	Time spent using mobile technology/day	2h	1h 59m	2h 10m	**2h 18m**

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On average one then finds that students in these three countries say they spend approximately 3 hours per day on their school work and over 8 hours per day on using technologies (although there may be some concurrent uses) mostly for communicating and entertainment purposes.

Discussion

If one was not already convinced that there is a high level of integration of new technologies in young people's lives today, the above data certainly confirms this although cultural and national differences must always be factored in. What is less clear is what are the true opportunities to integrate school material with such student's habits?

Even a pro-technology teacher such as Wesch recognizes that teachers need to help students learn how to use technology *and when to turn the technology off.* Otherwise, he says, with access to Facebook, instant messaging and texting while in the classroom, students will no doubt be engaged, just not with the teacher or the course content (Wesch, 2008). This means that teachers and students alike will have missed the point entirely.

Some research exploring the integration of new technologies in the classroom has not yielded the same success rates as experts once predicted. Educational institutions in the U.S. who are usually regarded as quite avant-garde in terms of introducing technologies in the classroom (as we have seen in the introduction) are still searching for the right appropriation strategy on this front. A recent survey titled "Student Attitudes toward Content in Higher Education" revealed that 75% of college students still preferred print textbooks over digital versions (Book industry Study Group*, 2011).* Educause, in it's very large study on "Undergraduate students and information technology", found that students were very active in social networking but very few said they use their sites as part of their coursework and only 8% said they used social networking sites to interact with their instructors. Only one in four said they would like to see more social networking in their classes. Finally as for Learning Management Systems used in over 90% of educational institutions in this American study, student participation was not high and their experience with the systems was not positive (Educause, 2010).

With this avalanche of experiments and findings it is obvious that there is a certain "malaise" in our academic institutions that appear overwhelmed by the fast pace invasion of new technologies in our everyday life. Improvising on the integration of these new tools is certainly not the best path to follow. A better understanding and redefinition of the various components of the educational culture we wish to provide to our youth is what remains most essential.

The explorative research presented in this article has led the senior author to engage students in conversations about these results and the role of new technolo-

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gies in their lives, giving rise to important supplementary information. The authors encourage teachers to use the same (or a similar) questionnaire as a practical exercise for their students, and as a springboard for the same type of interactions. In short, this research study is seen as a first step in the process of understanding how new technologies may or may not successfully integrate into the classroom. By attaining an accurate quantitative snapshot of modern students' technological and academic practices, teachers and students alike are able to better appreciate the challenges of this new environment.

The aforementioned results have allowed the senior author of this paper to take this concept one step further and explore the phenomenon in a more in-depth and creative fashion. For the past 20 years, he has been undertaking research involving student abstinence from traditional media and information streams. In an upcoming study, he intends to look at the effects that 10 days of abstinence from all social media and mobile communication can have on participating students. A similar "social media blackout" experiment has recently been undertaken at Harrisburg University in the U.S.A. by discouraging gadget use among students for five days or rewarding extra credit for a semester without Facebook (Harrisburg University, 2011).

This disconnect experiment acts a second step in understanding the phenomenon at hand and boasts many benefits. Primarily, the exercise allows teachers to become more aware of the presence social media and new technology plays in the lives of their students. It also prompts students to become cognisant of how much social media they typically consume and the impact it has on their everyday lives. In completing this disconnect, students are able to explore this media detoxification from multiple angles and better understand emerging themes such as technological dependency, loneliness, incessant connection with the outside world, agenda setting, memory loss and silence.

The anticipated results from this experiment will hopefully provide a better way of implementing new technologies in the classroom. Once both teachers and students fully comprehend how social media and technology impacts and is used by students, it may become possible to develop better appropriation approaches that stem from a more student-centered viewpoint.

The implementation of technologies in academia raises new challenges. It is important to recognize that technology is constantly changing – cutting edge equipment today may very well be obsolete tomorrow. Keeping up with the most advanced and capable technologies will be an ongoing challenge for educational institutions, as well as a costly prospect.

New technologies might improve access, but they cannot do the rest. They do not teach us judgement. The traditional role of teachers may need to change, though, to that of facilitator and translator. Teachers need to translate the cultural context

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of new technology in ways that students can understand and integrate into their existing knowledge. Further, *" teachers should know how to use the technology in innovative ways"* (Caron & Caronia, 2008). The debate is likely to be long, and as it continues a lot of exploration regarding technology in the classroom as we have just seen is being done. As more and more pilot programs are launched these must be seriously evaluated. Only such results will shed more light on the issues of knowledge construction, interaction and engagement discussed in the introduction.

Ultimately, what educators should want to have above all is to ensure meaning and significance in the classroom in order to develop engaged learners who are active participants in true knowledge appropriation.

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