THREATS TO USING MASS COLLABORATION IN EDUCATION

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Abstract: Ever since Wikipedia stormed the cyberspace with the living proof that mass collaboration could be used in education, strong points of this union have been put forward and weaknesses have been addressed. The present paper takes this discussion further on a SWOT analysis and asks what happens when a strong point proves to be a weak link, and becomes a threat to using mass collaboration in education.

Keywords: mass collaboration, education, threats, detractors.

I. INTRODUCTION

Mass collaboration can be considered one of the buzz words of the early 21st century. Despite its large usage, its definitions are shifting between the paradigm of sharing-cooperation-communication and the tools themselves employed to achieve the afore-mentioned human relations. On educational grounds, cooperation and collaboration have been listed among the skills required by the 21st century students [38], but we consider ourselves safe to assume a class of cooperating students has been one of the long-established dreams of teachers.

It is considered by some that mass collaboration in education means pushing the dialogue into a bigger arena, providing the infrastructure to discuss and negotiate knowledge about a particular subject across a large collective [36]. Others [38] consider that learning in the digital era is „fundamentally collaborative in nature” with social networks arising around common (learning) interests. In other views, mass collaboration is a way through which the „researching” part of education can be done faster and cheaper [46]. In other words, we could talk about the principles of sharing information, but we could be discussing also the tools through which this collaboration is intermediated. The dependence between collaboration and communication is considered self-evident (on the reasoning that collaboration cannot be a solo venture) [11], and thus much of the discussion about mediating communication can be translated into mediating collaboration.

In this paper we will not debate „whether” mass collaboration should be used or not in education. If not for other reasons, we side with those who encourage the adaptation of new technologies and paradigms into the educational process. However, we consider that the process should not be a blind one, as there are risks involved in the whole endeavor, and this paper aims at investigating these threats, as well as providing work around. Also, in compliance with the current perspectives on education, we will consider that collaboration, communication and cooperation are something to be desired in a student.

An attempt to review the available literature finds the authors split between two sides: the so-called techno-zealots, who think that current educational models are outdated and the new technologies bring a completely new kind of educational process and a new set of digital literacy (Will Richardson and Marc Prensky are two examples). Opposing them we find the techno-critics, led by authors like Larry Cuban, who are backed by countless studies that show lack of correlation between investments in IT-based education and grade improvement (examples here [45], or summarized here [29]); some of the myths that they debunk are “increased access to machines leads to increased use
which, in turn, leads to desired outcomes [education objectives]” [8]. Because often the arguments are not made in books or peer-reviewed academics, we chose to include press-releases and blog posts in our research, viewing this way of delivering information as a usage of mass collaboration tools.

Since mass collaboration is not always about computers, we have consulted some studies from the medical community, especially on child development. While the popular view holds that very few of today’s items we employ (from technology to food) is beneficial for a child, we looked for actual studies that proved the existence of threats when education meet mass collaboration, through the use of IT.

II. COMPUTERS, TEACHERS, CURRICULA

“Looking at the way in which digital technologies have changed how people access and manage information, it can be seen that a new learning paradigm is emerging”, claims Christine Redecker in her Study on the Impact of Web 2.0 Innovations on Education and Training in Europe. Using computers to educate is not that much of a novelty; what really changed is the impact of mass collaboration tools on school-aged persons. In all fairness, it is hard not to consider using web 2.0 to educate, when studies have showed that more than half of today teens are actively using these sites [33].

As already stated, the authors are split between those who praise the new digital learning and those who believe computers are overspent and under used in classrooms. We consider beyond the scope of this paper to take sides, as we investigate threats to the usage. We will, for the sake of fairness, quote studies like Redecker, who consider NOT using IT in education a big set back in the development of a 21st century child. As for the techno-critics view, we will list their concerns that investing in technology for technology sake is a threat to the learning process, because it takes funding away from educational projects that (maybe) proved their worth time and time again. The discussion, however, picks up importance when public schools choose to obey laws requiring a smaller number of kids in classrooms while solving the budget crisis that requires letting go of teachers. American schools in Florida, Chicago and Omaha have classes without teachers, only computers [19]. Lacking recent studies regarding possible outcome, we will list the general threat of “going wrong”, and one’s analyst opinion that the whole process is not done for the sake of education, but for reasons ranging from budget cuts to political capital [44].

We believe that one of the first threats to be taken into account is the idea that technology, by itself, changes something. While there are studies that show students picking up fast on how to use a computer, it was discovered that without a context, a curricula to empower (or to be empowered by) that technology, the educational process do not pick up by itself [10]. Of course, a computer user could discover Wikipedia and Google and start learning things, but it is our belief that, in this context, learning is not the same thing as education.

There are scholars and studies that show situations when, despite massive investments in providing classes with computers and software, the students do not perform better in tests [17]. The threat lies in overestimating the importance of students’ access to technology in schools and underestimate teachers’ influence on students’ learning [9].

It can be argued, however, that in some cases it is not technology to blame, but the content providers: the teachers themselves. Studies and analyses showed that, even when given computers from schools, teachers were reluctant to use them in classes [17], [29]. The pilot programs and implementations of e-learning platforms, far from leveling the field, exposed deep flaws in how teachers view the IT usage in education: the small number of teachers online compared to the total number stand behind claims that teachers do not know how, or do not want to bother with making use of this technology. “Having been a professor myself for 30 some odd years, I've developed a healthy disrespect for professors as a group. They tend to lobby for keeping their lives easy, and that means, among other things, making sure they don't have to teach too much or teach in a way that makes them have to work too hard.”, claims author and pedagogist Robert Shanks [37]. Some ignore the mal intentions of teachers, stating that teacher’s belief and way of teaching are the end result of a lifetime of events [20]. In this view, the collaborative culture which [the teachers] developed extended to the
students in the type of work they asked the students to engage in, as well as in the collaborative relationship the students themselves developed through their class work [43]. Whether they don’t want it or don’t need it, studies show that even when provided with school laptops, teachers are reluctant to use them at school [17].

The discussion could be taken even further, as some of the teachers complained that the curricula are not actually encouraging collaboration, but test scores. The discussion is beyond the scope of this paper, as techno-zealots and techno-critics fight themselves and against pedagogists. Still, an inadequate curricula imposed over an insufficient researched desire to use computers in class could hamper the educational process, as most time is spend trying to find a middle ground, then to actually teach.

There are, of course, successful implementations of computer systems in school. But the software itself, even functional, can present some issues: it can be a functional one, but not adapted to student needs, or to the curricula. As Clark Quin puts it, “there will continue to be E-Learning Solutions Providers with no one on the executive/management team who really understands learning” [28]. This threat could be alleviated through the involvement of educators in the analysis part of the development. Talking about mobile learning, Mark Oehlert observed [30] that the educational software is not treated like any business acquisition: the discussion should be started with what the system (any system) should do, and work its way toward a request for application. Instead, the developers contact the institution, proposing their software solution, which is then tested to comply with an ad-hoc set of requests.

Logistics proved to be a department full of threats. An insufficient number of equipments correlated with curricula that emphasis the usage of one laptop for each computer leads to perturbations of the education process, as students need to rotate to get computer time. Furthermore, it has been reported that in cases where schools’ insurance policy did not cover home usage of computers, the equipment had to stay on school perimeter, which really hampered the “learn anywhere” concept. The technology by itself can become a threat, when it’s malfunctioning and thus a well prepared IT-driven lesson plan has to be scraped on the spot because computers are malfunctioning. It can be argued that this risk could be mitigated by employing an IT specialist, but this has proven hard to implement for reasons varying from neglect (computers are during their extended warranty, so it’s suppliers’ job) to budget cuts. If assistance cannot be provided on the spot, then the education process has to suffer.

III. MOBILE LEARNING

If computer usage in school is a normal technological development, then usage of mobile technologies have been touted as the next logical step in delivering educational content. It’s beyond the scope of this paper to argue pro or against this idea. From the emphasis on collaboration, this is an interesting development, since among the pillars of Mobile education we can find “personalization of content”, “education available anywhere”, and context-aware information [34]. Three terms not quite related to collaboration. Labeling them as threats, however, is problematic, since we lack a universally acknowledged frame of reference when dealing with education.

Mobile learning shares some of the threats associated with computer based education, but there are some we consider especially noteworthy: first of all, the costs involved: Studies have shown [22] that the education providers have problems assuring the financial sustainability of the M-Learning project. Even if the state-funded pilot program was successful, the institutions cannot sustain a generalized implementation, or even a localized implementation on the long turn [35]. One of the workarounds involves using students’ own mobile units [24] (since most, if not all, had reasonably recent cell phones, and/or the curriculum can be adapted to fit even the „dumbest” of terminals [16]), but the question remains: if, for instance, in the afore-mentioned study [16], 88% of the pupils in class have mobiles, what are the rest to do? Furthermore, there is the issue of carrier costs, of different operating systems, and so it can be hard to develop a universal solution, for instance on a campus level, without taking into consideration the fact that the universities have to provide the equipment
themselves, since nowhere in the study contracts does it say anything about students having to accept a certain carrier or, for that matter, having to own a cellular [35].

We also consider there is a threat to the educational process coming from misguided definitions of the “learning” part of the concept. For instance, defining it as “any means of acquiring information” allowed marketers to expand their software platforms into new markets [35], regardless of the actual capabilities of the applications. For example, allowing an e-learning site to be accessible via a cell phone is detrimental to the education process if there is no scaling involved; a course designed for a 19 “screen looks very different on a 3”. On a similar note, diluting the whole “mobility in education” concepts with sociological [27] and even philosophical coordinates [42] hurts a concept we view as mostly technical.

We cannot end the discussion about mobile learning without at least mentioning the technological limitations of this technology. Apart from battery life and network coverage, there is the problem with accessing information. The screens of the mobile devices are too small to allow a prolonged usage and, apart from some successful courses of English and Chinese in Eastern Asia, audio books failed to establish themselves as valid course replacements.

IV. GAMES IN EDUCATION

Strictly form a collaborative point of view, this subject is important for the current paper because of the multiplayer component that many of these application support, allowing players to interact one with the other through the game environment. From developing economic relations between two in-game civilizations or thinking as a team in a shooter, games can find their way into a discussion about inspiring collaboration as part of the education process [41].

The benefits of video games in education have been documented by academicians like James Paul Gee [14], [15] and David Williamson Shaffer [41]. The discussion have even taken philosophical turns, as the video game promises to overcome the longstanding dispute between progressives and traditionalists because they have built into them the best of both approaches to learning [26]. However, others have raised some concerns relating to how kids view reality after being exposed to virtual reality. Professor Lowell Monke summarizes some of these [26]:

- abstractization processes used in simulating a virtual economy fail when applied to real-life economy, with all its unscripted, random, even illogical or abnormal events;
- constraints and morality used in a virtual environment do not always apply to real life;
- the mechanical way of thinking that apply to a computerized environment it’s not always suited for a imaginative reality;
- because of the space and time manipulation that it’s employed in a virtual reality, children experience patience loss when going camping into a world where something exciting it’s not happening at every moment;
- the children are motivated to play not by the educational value, but by the entertainment factor. As Monke puts it: “the appeal of these games comes from stimulating the adrenal glands rather than the cerebral cortex”.

There are other issues concerning the educational values of games in general, that we consider outside the scope of a paper that deals with the collaboration part of the education. We would, however, raise the issue of expectation; in real life one could not point and click in order, for instance, to build a hole: one has to actually take a shovel and start digging, start sweating, and not for 5 minutes, but for some hours. Digging a hole collaboratively would really lower the time and effort required. Still, in our view, the threat comes not from the game itself, but from over-emphasizing its good parts and forgetting about the limits. We side with those who see educational value in some of the games, and we believe that games could teach students the value of collaboration and could promote team-spirit, especially among the students who do not perform well in the other activities that usually engage pupils as a team: sports. However, over reliance on the game for education (and in the spirit of this paper, collaboration) is a threat to the whole process, because decisions and criteria used in virtual worlds could not be applicable in real life; furthermore, collaboration between two pupils in
an economical game, for instance, does not necessarily promote collaboration between the same pupils at the next class, math or chemistry. As we said, the threat here is forgetting the limits and limitation.

V. HUMAN ISSUES

The search for new tools to improve collaboration might be sabotaged if one forgets to ask the students whether they need those tools or not. One big threat to using devices in education is the fact that, studies have shown, as the complexity of the teaching process gets more complex, students are more dissatisfied with the results [23]. Of course, a balance should be maintained, but in using computers to promote education and collaboration, one should not ask himself if the old pen and pencil is not a better approach. As Monke puts it [26]. Given the sorry history of other highly touted technological saviors of education — from the motion picture to the Internet — all sold on speculative potential rather than existing evidence, there is good reason to be highly skeptical of the utopian picture painted of the future by enthusiasts.

When using computers in education, one should not forget the impact these devices have on child development, especially when dealing with small children. Yet, according to a 2009 study, 36% of center-based child-care programs include television time, for an average of 1.2 hours a day, and a troubling 70% of home-based child-care programs include television time for an average of 3.4 hours per day [6]. Studies also show that the more time young children spend with screens, the more time they are likely to engage with them as older children [4], and the harder time they have turning them off [5], [18]. It is outside the scope of this paper to pursue medical reasons, but we have to enlist inducing a screen dependency as one of the threats of using computer-aided instruments in education. Of course, this should, actually, be an easy threat to bypass, by simply sending the kids outside to play. But there are voices [3] that take into account the time a child spends in front of a screen at home, and thus strongly recommend not using any form of screen time in the education institution. Children in the U.S. between the ages of 8 and 18 now spend over 7 hours per day in front of screens with very little time spent outdoors [1].

Threats to using computers in classes might also come from the end users. The inane curiosity in children could prove to be a deterrent in a normal progression of a class. Kesey, who teaches literature, went as far as rejecting more then two keyboards in his class, as pupils „would be just fussing with each other” [21]. Furthermore, students might be reluctant to request for help, when applications fail them. From reasons varying from shame/pride (the other kids did not get the error) [39] to stubbornness (he wants to find the answer himself), a pupil might waste time and emotional resources trying to make a faulty application to function. Other students might try to input random entries in an attempt to trick the system into accepting their answer [2]. All of these situations could be covered by extensively testing the applications at developers end, and by creating an environment in which the student could openly discuss application feedback.

When using collaboration as the main tool for achieving educational purposes, one should pay attention to Kesey’s idea [21]: “Nothing hampers creativity like too many cooks”. In his classes his voice counted as 50% of the class, without concern to „a lot of democratic discussions”. Kesey’s experiment showed that, if the creative activity is done outside of class, the students began following their own direction and paths, which, despite being good in terms of originality, affected the end result of the collaborative process. In our view, this is a two way sword and depends on what the purpose of the course was: if achieving an individual end-result was the norm, then outside thinking is desirable, and the collaboration in class could be viewed just as a starter. If, however, the main idea is to produce a collaborative work of some sort, then this end result should be achieved exclusively through a process of collaboration.

Those who ask for new methods of teaching take into account the anecdotic proof of pupils being smarter than the previous generations. So a lot of concepts that were induced at later ages of kindergarten are now being pushed earlier because, “everyone knows”, kids are smarter these days and pick up faster. This includes assimilations of computer skills. However, a 2010 study [32] shows that the kindergarten kids of today are not smarter than before, they cannot learn new things sooner and the modern culture had no effect on their development. At best, study shows, they can be trained that
2+3=5, but they will not know that 3+2 also equals 5. Although the pedagogical debate is beyond this paper, we would like to use this example to illustrate one of the threats to using mass collaboration in education: using the tools inappropriate for the pupil’s age. For instance, it might be expected from toddlers to give up their “inane selfishness” in favor of a collaborative spirit faster than the previous generations have. Or teachers might be taken for granted that the kids will understand easily that “sharing” is related to “strength in numbers”.

Moving the discussion up the age ladder, studies [31] showed that extensive usage of ICT leads to students choosing their educational path accordingly to the easiness of passing an on-line exam, rather then studying the “classic way”.

The teacher burnout phenomenon is a threat worth mentioning, even though the current paper tries to steer clear of physiological debates. Maybe Floyd explains it best: „too many classes and too many students with too many problems; too many papers to read and too many reports to fill out and submit; too many routine and dispiriting conversations with colleagues, administrators, and parents; too many public reports about what teachers and schools are doing wrong; all too little time to read new books or to reflect on what I was doing in the classroom” [12]. Some teachers, Floyd included, found the solution in a collaborative process that takes place at teachers level, between colleagues. In other cases, the new informatics tools have smoothed the road towards achieving educational objectives (especially if those are connected to a national evaluation scheme) [40].

VI. CONCLUSIONS

We mentioned as the first threat in using technology and/or other means to improve collaboration in education the belief that, by itself, technology improves something. Technology, even as enlighten as one can find in techno-zealot literature, it’s employed by humans and thus there is a relationship established between these two actors. In turn, this relation is dependent of the inherent flaws existent in both partners: humans have needs and whims, and might respond illogically to some mathematically exact inputs; technology does not spark into existence, it is created or discovered, but its implementation in practice is rarely as fine tuned as the theory.

In this paper we have presented some issues that occur between humans and technology, when education and promotion of a collaborative environment meet. We do not consider any of these threats as we called, insurmountable, and we believe that the greater threat lies in dismissing any approach before hand. Studies show that literacy rates improved nations-wide with the introduction of computers in schools, but in the schools already literate the grades did not necessarily improve. And there is the question of the lack of methods to measure collaboration. Informaticians promote the potential of their software solution to educate, but doctors advocate for limiting the screen time and computer-centric activities. In the middle of any discussion are the teachers, how they view the collaborative process in class, their take on computer’s role in education, and the pressure laid on them to deliver students expectations.

Acknowledgements

This paper was presented as part of CNCSIS PNII IDEI project, no. ID 2105, “Inovarea design-ului instructiunial in elearning-ul universitar. Sistem de indicatori statistici specifici”.

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