

## FOUR VIEWS, ONE PORTRAIT

Just like the hundred or so visitors who, admiring the Mona Lisa at the same time and in the same location but each from a different spot, see the same face looking back at them, this article, “Four Views, One Portrait”, evokes a unified vision of the integration of IT at the college level through four distinct perspectives. To do so, the article reports on comments gathered during a group discussion involving four experts,<sup>1</sup> hereafter called “participants”, met with as part of the projects being conducted by ARC (Association pour la recherche au collégial) on the theme of the successful integration of information technology (IT) into college teaching. Intended to provide a kind of diagnosis of the current state of IT at the college level, the pooling of our results, enriched by the different perspectives adopted in our respective fields of work, reveals both the complementarity and the cross-referencing of concepts and links situated in a multidimensional context. In these comments, the roles of the teacher, the organization, and the various potentials and methods of the use of IT come to the fore. These various factors all contribute to the presentation of the conditions that promote the integration of IT into college teaching and learning.

The ARC research team first met with the participants individually and then brought them together for a roundtable discussion. During these encounters, the question put to the participants was: In your opinion, what are the main determining factors and the principal conditions that must be taken into account to ensure that the impact of IT use in teaching and learning is a positive one?

The participants’ answers to this ambitious and stimulating query have been organized under six headings.



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### THE ORGANIZATIONAL SETTING: AN ESSENTIAL SUPPORT FOR INTEGRATING IT

Given that the values conveyed by the setting determine what teachers can do in class and how they can do it, those same values will incite teachers to integrate IT into their teaching or not. In other words, it is a question of organizational commitment, as spelled out in an institution’s policies, its strategic plan, or its institutional plan for integrating technologies. The commitment to integrate IT that is present in a given setting is reflected in the institution’s support to users. This idea of commitment refers more specifically to material resources (accessibility and appropriateness of the equipment and software), to human resources (including, for example, technicians assigned to support teachers), and to training for teachers (both training in the technology and training in how to use IT in education). The successful integration of IT, that is, an integration that favours student learning, requires time. Therefore, the institution must grant itself the right to “wait” for results, first as regards teachers’ development of expertise and second, as regards students’ learning.

The organizational culture is an important dimension of the successful integration of IT. Indeed, the orientations and resources adopted by the institution are what will elicit and facilitate the effective acquisition and educational use of IT.

### THE TEACHER: A FRONT LINE PLAYER

As Participant 1 noted: “A positive impact on students in class is largely something that happens because of teachers.” In that respect, our portrait is in keeping with remarks by Bressoux (2001), who referred to the “teacher effect”, the set of effects that a teacher can have on students. Indeed, the teacher emerges as the core of our portrait of the successful integration of IT, as emphasized by Participant 3. Since the responsibility for educational choices and the organization

\* Since the author of this article also played the role of expert in ARC’s study, it seems necessary to emphasize that any use of the first person plural designates all participants in the expert group and is not an effect of formal style intended to refer to the singular author. The use of this collective “we” also serves to reinforce the idea of consistency and convergence that characterizes the portrait sketched.

<sup>1</sup> The people approached as “experts” had implemented or participated in IT-based innovations or published on the subject of IT and education; they also had more than 10 years’ experience in research or as consultants on education technologies.



of teaching tasks falls on teachers, they become the front line players, who determine and set up the teaching situation that should eventually lead to students' learning. To do this, teachers who elect to use IT must: 1) be convinced that IT can contribute to teaching and learning in their discipline; 2) demonstrate a real interest in these tools; 3) choose and use IT tools according to targeted learning objectives; and 4) feel they possess a degree of competence with IT. In other words, teachers' beliefs, as well as their concerns about effectiveness, interest in the tool, feelings of competence or perceptions of self-efficacy, and choice of considerations about curriculum alignment<sup>2</sup> (we will return to this point in the next section) are all individual characteristics that will determine whether or not they opt to use IT and how effectively they will use them.

From a different perspective, being able to learn with IT requires new knowledge and skills on the part of the learner. For this reason, teachers must, on the one hand, be in a position to support the development of this new knowledge associated with IT, knowledge related to the search for, management, and communication of information; and, on the other hand, be at least minimally familiar with the concept of the co-construction of knowledge and its underlying educational principles. Besides this, IT can play a "major role in social learning, [and function] like a connection that links individuals to the social" (Participant 4). This means being able to conceive that, beyond individual learning, one aspect of the potential of IT resides in collective learning, group learning, and, on a broader scale, community learning.

Briefly stated, "[T]he effective use of IT requires teachers to develop their competencies in education technology" (Participant 1), as well as new knowledge and know-how associated with the process of information processing.

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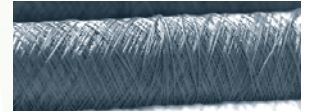
However, teachers aiming at an effective use of IT in their classroom must also be ready to answer questions such as: "What is it about this tool that interests me personally as a teacher? Do I feel that I am competent enough to use it? Do I (ac)know(ledge) the tool's potential with regard to my targeted learning objectives? Are my choices of tools and educational uses in line with these objectives? Am I ready to invest additional time, at least in the short-term, before seeing any tangible benefits from using IT in my classroom and my professional practice?"

## ► METHODS OF USE FOR IT, EPISTEMOLOGICAL STANCE AND CURRICULUM ALIGNMENT (OR CONSISTENCY BETWEEN TEACHING, LEARNING AND ASSESSMENT)

To some of us, it seemed necessary that teachers clarify their epistemological stances (that is, their positions about or reflections on knowledge construction) and for their stances to be situated within, not to say oriented towards, the perspective of a socioconstructivist stance (which is more in keeping with the competency-based approach) "before [the teacher embarks on] the use of technology,..., [because] this epistemological stance is necessary to the consistency of an educational process" (Participant 2). Others stated that constructivism is not the only approach that allows for the effective use of IT. Actually, it would be wrong to say that our observations differed with regard to the importance that should be accorded to the teacher's epistemological stance, because they came together and formed a consensus on a cross-curricular concept that corresponds to what some have called, in the scholarly literature, curriculum alignment. This consists of a correspondence between the prescribed program, teaching, and assessment. All the participants spoke, each in their own way, to the importance of consistency between the type of learning objectives identified in a given course plan and the program,<sup>3</sup> the educational and instructional choices made by the teacher, the learning exercises and tasks, the use made of the IT tool, the assessment of learning accomplished, and the tools chosen for conducting assessment. Nevertheless, we believe it is essential to state the following caution. Although it is important to have tools that are in keeping with the targeted learning objective(s), certain types of drill and repeat software could, due to the possibility they offer for immediate feedback, reduce a student's motivation by rapidly conveying to her or him, with each "wrong" answer, the idea that she or he is no good. This is the position advanced by Participant 3, who said: "I am not saying that we should not have behaviourist types of drill and repeat software programs, 'yes', 'no', 'no good', or that a more traditional use of IT is always counter-educational." All

<sup>2</sup> According to Bissonnette, Richard, and Gauthier (2006, 28), curriculum alignment constitutes "the first principle that should guide the effectiveness of teaching". More specifically, curriculum alignment aims to ensure a high level of congruence between the prescribed curriculum, the curriculum taught, and the curriculum assessed (Guskey 2003, in Bissonnette, Richard, and Gauthier 2006).

<sup>3</sup> According to Anderson (2004, 22), "Effective teachers are those who achieve the goals which they set for themselves or which they have set for them by others (e.g. ministries of education [...])." Thus, the teacher's effectiveness is to be evaluated in the light of personal teaching and learning objectives, and of objectives specified by the curriculum.



in all, we must simply make sure to use IT consistently with the targeted learning objectives and according to their impact on learners – learners' self-image and motivation to learn.

As well, regardless of the type of software or the “environment in which learners are placed, they must act upon the [learning] opportunities” that are presented to them (Participant 4). This condition for integrating IT is based on the concept of personal agency (Bandura 2001), which states that human beings are “agents rather than passive ‘victims’ of their experiences”, and that the choices human beings make and the experiences they go through shape their cognitive structure, which accordingly has an impact on learning. As regards our question on the conditions for integrating IT, this idea of agency, as put forward by Participant 4, de facto involves students and their actions. It also directly involves the teacher as the “transmitter-purveyor” of the situation in which student action will take place, because, in an academic context, it is precisely by means of and within the teaching and learning task that the learner's action plays out. Agency becomes a factor to be taken into account in order to better conceptualize the IT teaching and learning situation and have students learn from it.

All in all, a successful integration of IT depends on the “educational design” of the learning task, curriculum alignment, and agency. This gives a sense of the full scope of the relationships governing education, instructional design and technology, as well as the scope of the impact on the student's learning of the teacher's educational-instructional choices.

### THE SUCCESSFUL INTEGRATION OF IT: A QUESTION OF TIME AND COMMITMENT

We touched above upon the question of time as it relates to organization. It is appropriate to return to it here, but from the teachers' perspective, because from this perspective the question of time is not necessarily associated with the same realities. The fact is that, from the teachers' perspective, the need to make a personal investment of time – and such an investment is necessary and real – can be an irritant at the start of a project for integrating IT. However, over the medium term, some teachers will observe advances made in class management, professional motivation and teacher-student relationships. For instance, teachers will now be able to perform regular updates of the teaching material, provide quicker follow-ups with students, conduct more frequent formative assessments (which, additionally, could include feedback methods), create personalized tools, etc. The fact is that, even though the characteristics of IT tools enable a knowledgeable

and competent user to lighten the administrative side of the workload, the prior investment required of the teacher in the short-term would appear to be greater than the one required by a more customary type of task.

So at least in the short-term, IT integration requires certain personal forms of investment, including time and training, for example. As noted in the section on organization, it is in light of future advances and benefits, for both teaching and learning, that teachers must evaluate the potential of IT.

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### THE STUDENT: LEARNING ABOUT IT AND LEARNING WITH IT

As compared with the other factors put forward as conditions for the successful integration of IT, participants had little to say on the “learner” variable. Undoubtedly, they view the student as having a role to play since, as Viau (1994) so aptly wrote about motivation in an academic context, success will be slow to come if the learner makes no effort. In other words, the learner's motivation, attitudes, and activities or action constitute factors promoting the successful integration of IT at the college level. Besides this, when associated with active learning or more socioconstructivist approaches, the advent of IT in the classroom gives rise to a shift of control from teacher to learner. This implies that, for a successful integration of IT, the student must play a role in managing content, must also demonstrate certain technological competencies needed to carry out this process, and must necessarily have the usual familiarity with technology.

### THE TEACHER'S LEADERSHIP AND THE SOCIAL DIVIDE: COMPLEMENTARY ROLES

Going somewhat afield from the conditions for integrating IT as such, our work brought out two highly important possible effects of IT, effects that simply cannot go unmentioned. The first relates to the teacher's leadership, the second to what some refer to as the “social divide”.

To begin, if we accept that the teacher-students relationship revolves around the teacher's leadership, it is plausible to propose that the type of leadership exercised by the teacher



will directly influence that relationship in one direction or another. In the question under examination here, that is, in the context of IT use, it seems that, contrary to the fears expressed by some teachers (Gazaille, Lavine, and Fiala 2005), the incorporation of educational practices supported by IT has a positive impact on the teacher's leadership. The fact is, whether they adopt an approach that is more highly teacher-centred and transmission-based or less so, college-level teachers are generally used to conveying instructions to a group that will follow them. Now, using IT in a way that banks on learner empowerment implies allowing students to work on their own or in small groups, even outside the physical class location. All this can easily be interpreted as a distancing of teachers from students, which is what worries some college teachers ("ibid"). On the other hand, students report either that they perceive that their level of satisfaction on this score is maintained, or that they perceive an improvement in the quality of the teacher-student(s) relationship in an IT learning context ("ibid"). In fact, we would say that IT modulates the relationship with the group and that the teacher-students (plural), group relationship seems to transform itself into more of a teacher-student (singular) relationship. For example, since students work more by themselves, in dyads or in small groups, it would appear that the teacher moves around more to answer specific questions, which, given some characteristics of college students, including shyness or the fear of appearing "stupid" in front of their peers, might not be raised in a traditional classroom. In support of this, Participant 3 states that his work and observations yield a finding of more numerous in-class movements, especially by the teacher, when IT is in use. Accordingly, the integration of IT into the classroom would appear to transform the teacher-students (plural) relationship in the direction of more teacher-student (singular) interactions, whereas previously (indeed, as in any teaching and learning situation where control remains in the hands of the teacher), communications and the relationship had been imposed on the group from the outset.

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Secondly, IT could attenuate what some call the "social divide". This expression refers to systematic status differences between different socioeconomic groups. Among the sectors or areas usually associated with social inequality, we will mention here the right to vote, freedom of expression, health, and the right to access to education. As regards education, IT tools can become to some degree "a democratic kind of tool

that provides access to [knowledge for] individuals who don't normally have access to it" (Participant 4). Thus, IT has an undeniable democratizing potential and can play an important role with regard to certain social inequities, at least those related to access to knowledge. In addition, when associated with Internet capability, IT makes it possible to create practice or learning communities where presently none exist. IT could thus contribute to reducing social, cultural, geographic or other inequalities. In other words, IT could help heal some of the wounds associated with the social divide.

## CONCLUSION

In the light of our respective points of view, it appears there are a number of factors to consider in order to promote the successful integration of IT. The combined portrait sketched out here identifies the teacher as a crucial player in achieving this objective. Indeed, the remarks presented are in keeping with those garnered from the literature, that is, they are in keeping with the view that, for successful integration of IT into teaching and learning, the teacher must demonstrate the right attitude (Kadel 2005) and demonstrate as well an openness to change, be ready to invest some personal time (Vanatta and Fordham 2004), and acknowledge how IT can be used in the classroom so that teaching and learning can benefit (Schuldman 2004). Besides this, all the participants consulted emphasized the importance of organizational support, in particular with regard to training, time and resources. The fact is that, without organizational support and if left to personal initiative, the integration of IT could rapidly become a matter of chance. From a more instructional perspective, curriculum alignment emerges as a condition for the effectiveness of IT, while, educationally speaking, the successful integration of IT calls for renewed teacher leadership. Considering that our definition of successful IT integration requires that it leads to student learning, our inquiry also emphasizes, although without pursuing this aspect as thoroughly as others, the role of students and their engagement with their learning process. Thus we would conclude, under the heading of a final but nevertheless still very partial diagnosis, that the successful integration of IT into college teaching and learning will emerge from a genuine interest and a shared commitment on the part of both the organization and the front line players. ●

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