A COMMUNICATION-FOCUSED MODEL FOR LEARNING AND EDUCATION

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ABSTRACT

Discontinuities in markets and technology as well as issues of performance are roiling the field of higher education. Despite the profusion of educational and learning concepts, a comprehensive model for both explaining and testing for educational performance has been hard to come by. The paper starts with a brief retrospect of the better-known conceptualizations of learning and educational processes. Next, built atop the Community of Inquiry framework and employing the typology for the purposes of communication under knowledge-intensive environments, a "Communication-Focused Model for Learning and Education" is proposed. With clearly laid out causal linkages, the model shows how the sub-components of a communication-based design aggregate to a comprehensive educational design. Such educational design in turn is shown to influence the learning processes and, finally, the quality of learning, which can be assessed better with the proposed comprehensive model. Suggestions for the empirical applications of the model and for its heuristic extrapolations to arrive at new educational designs are provided.

INTRODUCTION

S evere turmoil in its markets, uncertainties about impending technological discontinuities, and widely known problems in performance have been buffeting the field of higher education for some time. Citing several critical studies, the Economist (2010) declared, "America's universities lost their way badly in the era of easy money." This is truly an unfortunate state of affairs when the overall global demand is soaring. (Archibald & Feldman, 2011) Whenever the dust settles, institutional survival would more than likely depend on the capability to satisfice both the basic and transient learning needs of a rapidly expanding global market.

It is reasonable to have doubts, given all the conundrums, whether our current educational institutions can meet the learning needs while adjusting to the transformations of markets and technologies. Arum and Roksa have empirically, and alarmingly, highlighted the current conditions of 'limited [undergraduate] learning in college campuses.' (Arum & Roksa, 2011) Many proposed solutions seem to be proffered more because they are new and available than because they have been shown to improve learning. The field is rife with classifications, concepts, analogies, and frameworks. Yet, it is sorely lacking in a reasonably comprehensive model that can be used both to explain performance (that is, learning outcomes) and to test it empirically. Building on the progress to date in conceptualizing learning and education and on the insights from the research on communication, this paper will attempt to fill that gap with a suitable model.

The paper is organized as follows. It begins with a section on literature review with two parts. The first part begins with the early conceptualizations around learning and education and ends with the Community of Inquiry (CoI) framework. (Garrison, et al., 1999) The second part describes the insights from the research on communication and innovation. In the next section, extending the two streams of work cited in the literature review and merging their separate insights, a testable "communication-focused model for learning and education" is proposed. In the section that follows on Discussion, I show how the model can

help improve learning and institutional outcomes. Finally, in Concluding Comments, the contributions as well as the limitations of the paper are summarized.

LITERATURE REVIEW

Although learning is a multifariously complex process, conceptualization and theoretical articulation around it started with a rather simple, perhaps simple-minded, formulation based on one didactic technique. Even with much passage of much time, pedagogy is a short hand term for all that happens in an educational setting. Words do take on meaning that users want to give it over time. However, it is worthwhile to remember that the literal meaning of pedagogy is to teach a child. Scholars have added much sophistication to that instructor-centered early conceptualization.

It is easy to see why the early models started around major individual players. In the case of pedagogy, the main player is the instructor, historically the most influential and powerful person in the learning process, and respected as the repository of much knowledge. This had to change, of course, as the world's knowledge began increasing exponentially and the learning continued later into the adult lives of the learners. This paved the way for Knowles (1970) to elucidate andragogy. If pedagogy is teacher-knows-best, teaching of 'children,' andragogy is all about adult education. Andragogy is student centered, with the expectation of self-direction, readiness to learn, use of experience, and a performance orientation to learning. Instructor moves from being a sage on the stage to a guide on the side (Durgahee, 1998).

In a mildly chiding tone, Forrest and Peterson (2006) exhorted management educators to eschew using the term pedagogy and to start using the term andragogy because that is what they mostly do. It is ironic and a bit telling that more than a quarter century after the principles of adult education came into vogue, for most of us, our terminology, if not technique, still harks back to 'pedagogy.'   Many ideas related to andragogy have resonated in the educational setting, although the term itself certainly has not. It took another few decades after andragogy for newer concepts to emerge and, when they did, they captured progressively more of the environmental influences on learning. Reflecting, perhaps, both self-awareness of needs and available choices, heutagogy (Ashton & Newman, 2006; Hase & Kenyon, 2000, 2007; Kenyon & Hase, 2001) added a specific dimension of 'self-determination' in learning. It was put forward with the rapidly changing vocational contexts in the global environment in mind. It was also assumed that ICTs could be particularly helpful for the self-determined learner to quickly access knowledge. Ergonagy (Tanaka & Evers, 1999a, 1999b), an archetype derived from Japanese tradition, is also on a similar vein. It gives greater emphasis to vocational education and perhaps a little less to 'self-determination.'

Other theories focusing on learner's motivation and efficacy also emerged around the same time. Constructionism (Harel & Papert, 1991; Papert, 1987), using constructivist theories of psychology, proposes "the idea that learning is most effective when part of an activity the learner experiences as constructing a meaningful product." As such, constructionism is closely related to experiential education. Papert originally proposed constructionism for elementary school students. On some other far end of the spectrum is the transformative learning theory (Mezirow, 1991; Mezirow, 1997), which also acknowledges the power of experience. However, in contrast, it targets adult learning and calls for enabling the learner to be 'critically reflective of the assumptions of others' as well as 'one's own.' That, in turn, would help the learner to be an effective collaborator in posing and solving problems and in adapting to change.

We can safely say that in the above concepts, the environmental influences are acknowledged, but are embedded only indirectly through the actors. They are front and center, however, in some of the (mostly) newer, and more comprehensive, models. A case in point is Ubuntugogy. Bangura (2005) arrives at

Ubuntugogy inductively from the quintessentially African worldview enshrined in the maxim, "a person is a person through other persons." Thus, the teaching and learning processes enshrine dialog and consensus building with not only those around you, but also those from whom you inherit knowledge and those to who you pass it along. Another example from ancient India, currently undergoing modest revival, is Gurukulam, which prescribes for a student a familial relationship with the teacher, and through the teacher with the rest of the family and community. It is anchored in the benefits of apprenticeship and close physical proximity. Students are deemed as the extended family or part of the clan, 'kula' in Sanskrit, of the teacher. If we consider the evolution of the various concepts presented so far, it is clear that over time greater attention started being paid to the contextual influences from the learning environment. In particular, the vocational and the social contexts began getting increased and rightful importance.

The Community of Inquiry Framework

Conceptual models have become even more comprehensive, and complex, in the last few years. A learning framework of note is from Garrison and colleagues (1999). Known as the Community of Inquiry (CoI) framework, it is very comprehensive and its components have been variously tested and validated (Arbaugh et al., 2008; Arbaugh & Hwang, 2006; Daspit & D'Souza, 2012; Garrison, Cleveland-Innes, & Fung, 2009; Shea, Sau Li, & Pickett, 2006). It shows the major elements for a successful "educational experience." It calls for three types of *presences*: teaching, cognitive, and social. All three have to come together properly, using communication medium, for a satisfying educational experience. Cognitive presence is considered the most essential for the success in higher education, and it is taken to mean the ability of the participants "to construct meaning through sustained communication." Social presence is defined as the ability to project personal characteristics in conversations and thereby present themselves to other participants as "real people." Teaching presence captures the more classic educational processes and content, conventionally initiated by the teacher, as well as the learning activities and assessment. Communication drives, behind the scenes, the CoI framework, delivers each of the different presences and integrates them to create the educational experience. The three circles in the middle and the labels within them in Figure 1 represent the CoI framework.

Many empirical studies followed the CoI framework. A serious problem, turned out to be the great difficulty to link the framework empirically to learning outcomes (Daspit & D'Souza, 2012; Garrison, Anderson, & Archer, 2009; Rourke & Kanuka, 2009). There also are other conceptual issues. For example, for checking the association of teaching presence with learning outcomes, the mediating pathways and their relative efficacy need to be considered. This applies also equally to the cognitive and social presences, as well as the intersections of the three presences. Yet, we see that only a catchall label of "communication medium" serves as a gross, and rather neglected, proxy for these functions in the CoI framework. Some constructs widely used in communication research in the context of technological innovation can come in quite handy in this context to make the connection to outcomes.

The difficulty to link to learning outcome in a definitive manner is by no means limited to the CoI framework. Many studies on the use of educational technologies (Alavi, 1994; Alavi, Marakas, & Yoo, 2002; Alavi, Wheeler, & Valacich, 1995; McKinney, Dyck, & Luber, 2009) show positive influence, but side-step the question about overall learning outcomes. Alavi and Leidner (2001) agree that considerable potential exists for research that examines related issues more comprehensively. They specifically call for in depth examination of how "learner's interactions with learning materials, peers, and instructors are mediated through advanced information technologies" without "ignoring the larger context." Despite that well-argued and clearly articulated call, the scholars of learning seem hesitant to take the next steps along those lines. Such steps should not be overly difficult since the scholarship on communication, especially in the context of technological innovation, has a rich and highly borrowable tradition that permits careful study of 'interactions' under conditions of high knowledge-intensity.

Research on Communication and Technological Innovation

Only through effective communication can we accomplish the teaching, cognitive, and social presences, which collectively constitute the CoI framework's educational experience. This is captured in the bottom caption of the framework by Garrison et al. (1999), 'Communication Medium,' for their schematic for CoI, reproduced in Figure 1. Scholars from many fields have delved into communication. With their focus on performance under knowledge-intensive conditions, studies from the field of technological innovation (Allen, 1977), are particularly relevant to educational contexts. Noteworthy findings from this genre include the strong influence of organizational and physical boundaries in fracturing communication networks (Allen, 2007; Allen & Henn, 2006) and the powers and the limits of technology for mediating information-intensive communications (Allen, 1986; Allen & Scott Morton, 1994). Allen (2006) writes: "A critical success factor in the innovation process requires at least that the organization be able to access, maintain, and transfer knowledge from person to person." That might as well be spoken about education, with 'innovation process' replaced with 'educational experience' and 'organization' with 'students and teachers.' There are deep-rooted similarities in the knowledge transfer phenomena and processes needed for innovation and for education. Therefore, the scholarship on communication for innovation is particularly relevant for education.

Elucidation of the goals for communication is helpful for designing and managing the infrastructure and the environment around it. With this in mind, the types of communication based on desired purposes or goals have been unpacked in the related research. Three types have been put forward (Allen, 1986, 2007): for coordination of activities (e.g., Gulati, 1998; Kogut & Zander, 1996; Malone, 1987; Van de Ven, Delbecq, & Koenig Jr, 1976), for exchanging information (e.g., Alchian & Demsetz, 1972; Argyris, 1977; Daft & Lengel, 1986; Maier, 2007; Shapiro & Varian, 2000), and for creating synergy (e.g., Cattell, 1951; Hackman, 1987; Hall, 1971; Hall & Watson, 1970; Lasker, Weiss, & Miller, 2001; Tattersall, 1984). Scholars in economics and strategy use, instead of synergy, a closely related term of economies of scope (Berger, Hanweck, & Humphrey, 1987; Panzar & Willig, 1979; Panzar & Willig, 1981; Teece, 1980) , which is intended to capture the underlying synergies from bundling of products and branches of value chain. Each of these types has had a long, storied, and somewhat independent scholarly tradition.

Despite the scarcity of their simultaneous presence in the scholarly literature, it would be difficult to argue against the importance of communication for coordination, information, and synergy under knowledge-intensive environments. If you were to ask, what else might be expected from communication, the answers, in all likelihood, can be subsumed in one of these three types. They are, therefore, collectively exhaustive. There is no claim that they are mutually exclusive; communication for coordination may include significant information collaterally provided, which may lead also to synergistic effects. The elements of the communication typology are not exactly orthogonal. Nonetheless, as we saw above in their separate bodies of literature, the underlying constructs, of coordination, information, and synergy, are remarkably unique, and thus have sufficient contrast among them.

A COMMUNICATION-FOCUSED MODEL FOR LEARNING AND EDUCATION (CFMLE)

We can explore fruitfully how the three types of communication might be conceptualized specifically in the context of an educational setting. Structuring, organizing, and sequencing of the learning processes in an educational setting are very important. All those items fall under our first type of communication for coordination. The Learning Management Systems, like Blackboard, shine here. The second type of communication is about transferring information. We use the term information to include all elements in the hierarchy of knowledge, which are sent, received, and cognitively available for use. This is the classic purpose of education. The third type of communication is for synergy without which the educational experience will be incomplete. This sort of communication might usually, though not necessarily, happen outside of instructor-student dyads. It could include cohort learners, the surrounding context, and the

surrounding community in the learning process. The richness and diversity of such a nexus, therefore, if properly embedded in the learning process, can promote unexpected interpersonal creativity. Synergy also is the value-added from 'community,' as envisaged in the CoI (the 'Community of Inquiry') framework. Table 1 provides the listing of the three elements from the communication literature. We will henceforth refer to it as the C/I/S (Coordination/Information/Synergy) typology.

A careful reader would have noticed in the CoI framework three *sub*-elements labeled: 'Supporting Discourse,' 'Selecting Content,' and 'Setting Climate' at the intersections of the three presences. These elements of overlap in the framework correspond to the C/I/S typology fairly directly, which will be shown more clearly shortly. Recognizing such correspondence can unlock for education the insights and lessons from the scholarship on communication, especially for the design and creation of more suitable environment for given educational goals.

Table 1: Different Types of Communication Needed for Innovation - Adapted from (Allen, 1986, 2007)

Purpose	Description
Coordination	Communication to coordinate the learning process
Information	Communication to send and acquire knowledge
Synergy	Communication to promote interpersonal creativity

This table provides the three purposes of communication deemed essential according to the research on innovation. They are collectively exhaustive, although not entirely orthogonal.

It is clear that two of the three labels, 'Supporting Discourse' and 'Setting Climate,' relate to communication-intensive activities.   Garrison et al. used 'Selecting Content' as the third label. 'Selecting' may not appear to be communication-intensive. Since it is at the intersection of teaching and cognitive presences and since the entire framework is enmeshed, as Figure 1 shows, in 'Communication Medium,' it stands to reason that 'Delivering Content' would be more appropriate here than 'Selecting Content.'

It is easy to see with that adjustment how the three elements from the CoI framework correspond to the C/I/S typology. 'Supporting Discourse' would map to 'Coordination,' 'Selecting [Delivering] Content' to 'Information,' and 'Setting Climate' to 'Synergy.' In Table 2, we have the elements at the intersection of CoI framework's three presences and show the mapping to the C/I/S typology. Figure 1 explains this graphically. The mapping shows the correspondence between the communication types undergirding the learning environment with the types identified in the innovation literature.

Table 2: Intersections of Teaching, Cognitive and Social Presences of CoI (Garrison, et al., 1999) - Mapped to Types of Communication (Allen, 1986, 2007)

Presence	Teaching		Cognitive	
Cognitive	CoI:	'Selecting [Delivering] Content'		
	C/I/S:	Information'		
Social	CoI:	'Setting Climate'	CoI: 'Supporting Discourse'	
	C/I/S:	'Synergy'	C/I/S: 'Coordination'	

This table provides the mapping among elements of interest from two research streams. It shows how the interactional spaces in the three presences (teaching, cognitive, and social) of the CoI framework maps to the purposes of communication, as elucidated in the innovation literature.

Interposing the C/I/S typology into the CoI framework has several advantages. The most general of the advantages is that the scholarship on innovation and communication becomes accessible to the field of education. There also are other specific advantages. The C/I/S typology provides the crucial intermediate constructs for making the studies linking CoI framework to learning outcomes much more robust. This will be explained further later.   The typology also provides a lens to examine carefully how the

educational technologies are helping or hindering the goals of learning. A typology for communication in the innovation practice and literature, thus, allows us to link the CoI framework to educational design and performance.

Figure 1: Elements of CoI framework's (adapted from Garrison, et al., 1999) Linked to Purposes of Communication
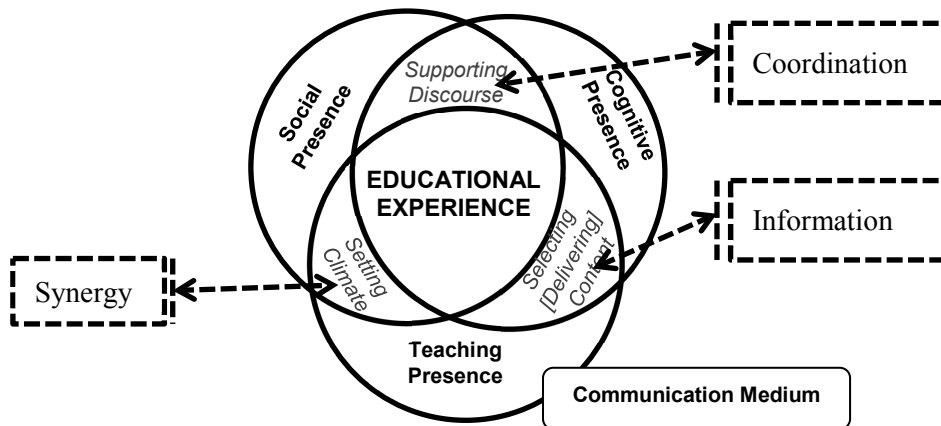
The figure shows the CoI framework. The intersections of the three presences are mapped to the purposes of communication derived from the research on innovation.

Given the importance of communication in education, it would only be appropriate to incorporate its proper role in our conceptualizations and theoretical models. Garrison et al. (1999) presented the CoI framework as a Venn diagram. Although it succeeds in a panoptic capture and presentation of ideas, the linkages and interdependencies are a bit too fuzzy and the role of communication comes across as secondary. I provide first a converted schematic of this framework in Figure 2 showing explicitly the plausible causal linkages, as implied by Garrison et al., among the various constructs. This, therefore, is a 'linearized' version of the CoI framework, which provides a conceptual bridge and a commensurable precursor to a model to be presented next.

To conduct empirical work and to induce convincing new theory from it, we need a crisper model with unambiguous causal linkages. Based on the earlier mapping between CoI framework and the purpose-based communication typology, I propose, in Figure 3, a 'Communication-Focused Model for Learning and Education' (CFMLE). As the name indicates, in contrast to the CoI framework where it was subsumed, communication is ensconced in CFMLE in a primary role. Channels (face-to-face, telephonic, digital, etc.) and related designs (in-class discussions, asynchronous chats in digital bulletin board, document and video archives, etc.) that match the requisite communication determine the adequacy of the social, cognitive, and teaching presences for a particular learning task. The teaching presence needed for an advanced finance class would be different from that needed for an internship class; the social presence for an accounting class would be different from that of a strategy class. Therefore, the presences have to be appropriately envisioned and adjusted and, in turn, the 'right' presences would be accomplished by ensuring proper selection of the communication channels and related design.

Figure 2: Community of Inquiry Model Showing Causal Linkages - Converted from Original Venn Diagram
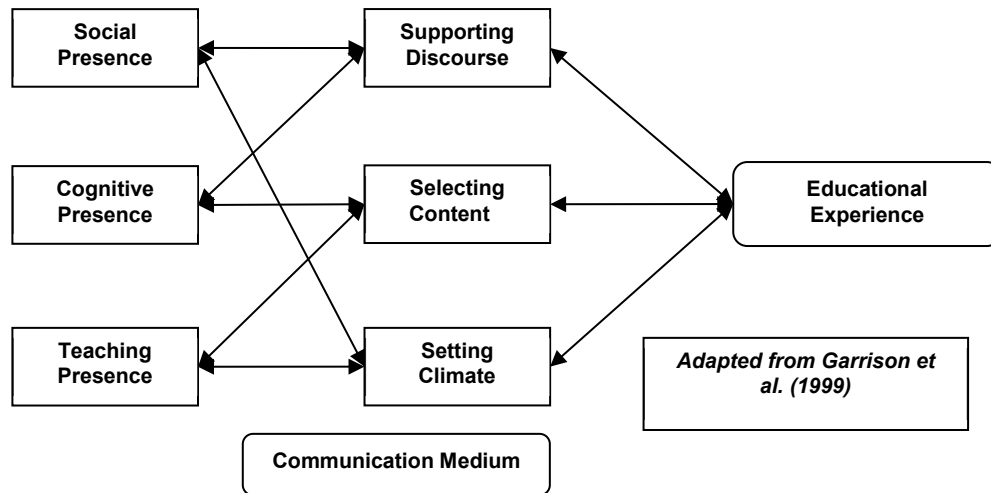
The figure shows the original Venn diagram of the CoI framework flattened to a schematic showing plausible causal linkages. This is an intermediate step towards the model proposed in the paper.

Figure 3 : Proposed Communication Focused Model for Learning and Education (CFMLE)
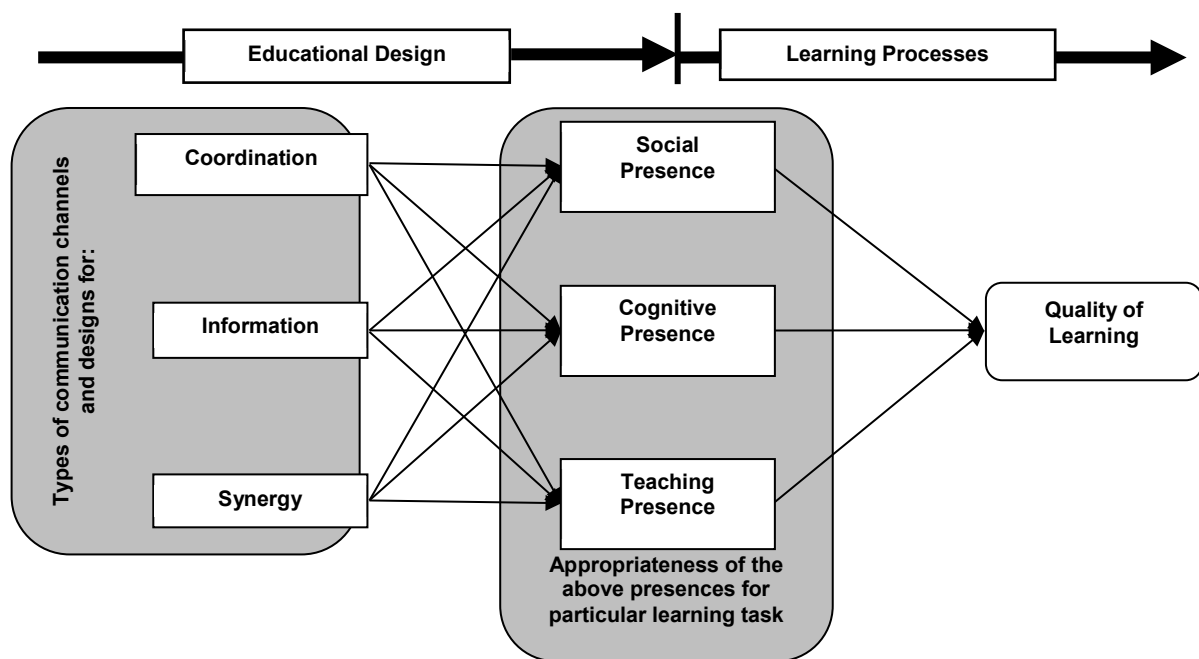
The figure shows the merging of the C/I/S typology from the innovation literature and the elements of the CoI framework to arrive at the proposed model with explicit causal linkages.

CFMLE is roughly bifurcated, unlike the CoI framework, into a first part of Educational Design and a second part of Learning Processes, which lead to Quality of Learning. The full model fundamentally says that a proper, communication-based educational design creates the right mediating environment in which learning processes can thrive and lead to high quality of learning. The original CoI framework had the

label of 'communication medium' at the bottom, indicating that the envisaged process is immersed in communication. We have unpacked communication and its influencing linkages in CFMLE. It would be now possible to check empirically, using the first half of CFMLE, if the 'right' environments have been created. Disentangling communication into components based on coordination, information, and synergy provides many possibilities for such a research design. The differential role of technology-based versus traditional channels for fostering each of the presences will be of particular interest. Which communication channel fosters which presence best, and how, also would be also of great interest.

Partitioned separately or carefully in tandem with educational design, the three presences - cognitive, teaching, and social – also can be tested for their impact on the quality of learning. Thus, the received wisdom about suitable and appropriate environment (in other words, the right composition of the cognitive, teaching, and social elements) for a given management subject can be corroborated or rebutted. With proper empirical design, the appropriateness of technology mediation and its impact also can be teased out.

DISCUSSION

The CFMLE, as amended from the CoI framework based on the research on communication, would allow scholars to move from the earlier (primarily) descriptive posture to a performance-focused posture that can enable vigorous empirical investigations, inductive theorizing, and normative approaches. The model is built on two pillars. First, multi-modal reciprocal communication, supported concurrently as needed with the full gamut of human sensorimotor faculties, is a prerequisite for learning complex and difficult subjects. Second, reliable and unbiased assessment of differential learning should be an essential part of an educational offering. The latter would insure that we are primarily dealing with learning, as distinct from, say, reporting, informing, entertaining, etc. Many conflicting forces and stakeholders influence the design and delivery of graduate and undergraduate management education. Notwithstanding all these, the educator – the management professor – must be able to control and manage the communication for learning.

Research & Design Possibilities

The conceptual bifurcation in CFMLE, of separate educational design and learning processes, makes it eminently more convenient for empirical studies. Testing for the effectiveness of educational designs to create intended environments (cognitive, social, and teaching presences) can be decoupled, if needed, from the nomologically distant educational performance. Alternate hypotheses, confounding effects, and the like are handled sometimes better and easier in more proximal causal chains than in distant ones.

This would be especially valuable in management education as the diversity of our topics can be almost as varied as in all of the knowledge disciplines. Rarely would one find anywhere else the range as varied as the 'hard' skills needed in Management Science, Finance, Accounting, and Information Systems, 'soft' skills needed in Organization Behavior and Human Resources, and the 'balanced' skills needed in Marketing and Strategy all under one umbrella. The cognitive/teaching/social 'presences' in our management classes are largely based on handed-down traditions without much benefit of empirical corroborations about their effectiveness. Given that technology has shifted the entire terrain of communication, this approach simply does not make sense any more. Similarly, although we have operated with cases, simulations, and experiential exercises, in addition to textbooks, assignments, lectures, and discussions, we have never systematically examined in depth communication techniques that would effectively unravel specific knowledge easily for our students. The type of inquiries commonly available for school teachers about what techniques have been proven to be effective in the classroom (e.g. Ball, Hill, & Bass, 2005; Lemov, 2010; Shulman, 1986) has been scarce in management. These and such limitations can be now redressed with the proposed comprehensive model.

Teachers of management have long used case studies that required prior preparation by students followed by intense classroom engagement. The rest of the educational community appears to be independently discovering the same techniques and referring to them with a new label, 'flipped classroom.' (e.g., Pierce & Fox, 2012; Smith, 2013) It has to be obvious from the proposed CFMLE that the 'old' case method and the 'new' flipped classroom are really a particular design or genre of educational design, albeit with some variation within it. The classic Harvard Case Method (Barnes, Christensen, & Hansen, 1994; McNair, 1954) would not be identical to the method used in the flipped classroom in Physics for Biology undergraduate majors (Smith, 2013). Research employing CFMLE in all these diverse areas to tease out systematically the more effective features and practices leading to better learning outcomes has the promise of unlocking and opening creative mixes never before attempted in management education. Thus, CFMLE offers the possibility of launching new and creative mixes of educational designs based on proven and verifiable techniques instead of just based on tradition.

More Immediate Impact for Practice

While the research and its results might take some time to materialize, the lessons from managing innovation leave us with immediate guidance for considerable positive changes for education. Based on how humans teach and learn, what Information and Communication Technologies (ICT) can do, and the insights from the innovation research, we know that it would be prudent to deploy technologies differentially to areas they can be most effective.

ICTs can be more reliable and effective than humans for iterative functions and brutal computations. ICTs are also highly effective as repositories for codified information/knowledge and in transmitting the same. They would be much less effective with less codified information and when explaining becomes necessary, especially based on immediate feedback. Humans, on the other hand, have no match to date, or in the near future, for the power of their sensorimotor functions, which are most essential for the most crucial processes of learning. There are deep evolutionary reasons for the differential abilities of machines and humans (Moravec, 1988, 2008; Pinker, 1995).

Such differences can be used advantageously for designing the three presences of the CoI framework, and, now also of the proposed CFMLE. In summary, ICTs would be most useful, therefore, for coordination, moderately useful for information, and less useful for synergy. Humans would be vice versa. Based on this, professors can fruitfully concentrate almost entirely on the human dimension of the learning process where the need for instantaneous back and forth using the full capacity of the sensorimotors cannot be outsourced to computers. ICTs can pick up most, if not all, 'clerical' responsibilities and 'repository-channeling' functions.

It is quite within the regime of possibilities to get rid of the introductory lectures explaining the class processes and contents of syllabi. It may be noted that without sit-down or online lectures on booking, security, law, transits, and travel controls, the US airlines managed 700 million passenger enplanements leading to about 800 Billion domestic and international passenger miles in 2009. (The Bureau of Transportation Statistics 2010) Similar techniques can be used also to eschew the handholding throughout the term for assignments. Improved coordination also brings closer many other possibilities, such as for synchronizing sections and for exploiting modularizations. Classes that are well modularized and synchronized not only help make things predictable for students, but also permit the most optimal use of the faculty. The pay back for such streamlining can only be substantial. These possibilities above are just practical examples. Many others are well within reach. A communication centered model shows clearly where and what the degrees of freedom are and what can be accomplished within them.

CONCLUDING COMMENTS

This paper showed how asserting the central role of communication at the core of a comprehensive educational and learning framework could help to link it robustly to the sorely needed learning outcomes. An obvious current limitation of the proposed model is that much empirical work remains to be done. Future research on the appropriateness of new instructional designs for creating the intended presences and the effectiveness of such presences for educational outcome will be helpful in corroborating the proposed model. However, immediate benefits from improving the design of an educational environment can be gained by paying proper heed to what is already known about structuring communications.

We also should recognize here that the proposed model is limited due to its sharp focus around processes of learning and education and therefore, can add only little insight about the external forces from the macro environment, such as from the changes in the educational market and from technologies. The design of the educational environment is certain to be influenced, at times even severely, by these latter forces. As the resource-based view (Wernerfelt, 1984; Wernerfelt, 1989; Wernerfelt, 1995) would have it, it is through proper internal bundling as well as flexible deployment of the resources that institutions can build their true advantage. To that end, to discover new ways to respond to external challenges, the proposed model should serve our educational institutions very well. Strategy researchers would find abundant avenues for future research in examining successes and failures of such institutional responses to external challenges.

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