Synchronicity^2

Passing Notes in the Digital Classroom: Boon or Bane for On-line Learning Pedagogies?

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Introduction

Passing notes in the classroom, talking during a presentation, or engaging with another student about the topic while the teacher is still presenting —in a bricks-and-mortar institution, these activities often result in a teacher's wrath and are seldom seen as positive or conducive to learning success. In the not too distant past, the teacher's focused control in the classroom was a sign of a good instructor and good instructional methodology. Students "received" information from the "masters", who decided on the value, quality, quantity and sequence of knowledge and its taxonomies. Old pedagogy, old ways.

Fast-forward to today's information era where the pace and rate of new information and related communication technologies are forging the way for a whole new class of learning and teaching pedagogies. With the introduction of communication technologies such as VoIP (Skype), and embedded communication capacities such as text/chat boxes in web-conferencing systems (Elluminate, DimDim, Blackboard), activities such as the 'passing of digital notes' and 'text/ audio-chat' during an online presentation are not only the norm, they are the expectation – at least for the developers of such programs and for the students who use them to learn. Educational practices have converged on a point within this new environment where technology and synchronicity[1] are fast becoming the leading edge of the curve for educational processes – with or without the permission or presence of the teacher and academic institution.

The purposeful pairing and inclusion of communication tools and technology in distance education planning and delivery, especially during synchronous presentations such as webinars, web-conferencing, and other online real-time learning activities are crucial strategies in emerging communication, learning and teaching pedagogies.

Accordingly, this paper introduces the concept of Synchronicity^2 (S^2) – the emergence of concurrent communication activities occurring in (in)formal learning within the digital distance environment. Synchronicity^2 provides infinite potential for unique forms of engagement across student, content, teacher, and technology sectors within digital environments than previously considered.

Genesis of Synchronocity^2

Technology has been the harbinger of good news for the development of synchronous communication tools online—and the imminent (r)evolution within e-learning. The development of synchronous communication tools has been in response to the demand within the economies of

[1]The principle of synchronicity (the occurrence of meaningful coincidences) has been, for many years, associated with the famous psychologist, Carl Jung (Faber, 1998). The use of the term synchronicity, in this paper, is not associated with Jung's principle of synchronicity but rather, events which occur synchronously (at the same time). The term Synchronicity^2 as developed and used in this paper, relates solely to synchronous activities that occur in a distance learning environment.

business and web-based community socialization. Although academic institutions have been slow to position synchronousness into their web-based offerings, exploring (in)formal knowledge through net-based technology (S^2) helps participants to more immediately identify and define a community of practice that supports interests and learning styles, and a transition into more formal processes of knowledge acquisition, management and transformation. The use of technology, and in particular, communication technologies, to facilitate online, real-time chatting during presentations, is a vital component of S^2.

Distance education is a practice predicated on communication – communication theory, communication design, communication methodologies and communication technologies. In fact, the digital era of communication technologies is spawning an unprecedented diffusion of innovation which is not only challenging theory, design and methodologies in communication such as Moore's Theory of Transactional distance, Anderson's Equivalency Theorem and traditional communication theories, it is also changing how traditional pedagogies in learning and teaching practices are communicated within the digital environment. Further, with the pace and rate of change in information and technology today, there is a corresponding lack of consensus regarding vocabularies, explanations, definitions, pedagogies and theories of practice in distance education.

Fortunately, this period of change provides ongoing opportunities to explore the original premises of distance education, and, on occasion, to refine elements which remain constant within the theory, as well as to revise, rewrite, or create new dimensions of the theories unrecognized prior to technological innovations occurring in distance education today.

These authors have therefore seized an opportunity to consider the creation of a new premise, named Synchronicity^2—an activity which emphasizes real-time private or public dialogue that occurs in the chat/text boxes of web-conferencing systems (such as Elluminate) or that is facilitated through communications technology software (such as Skype) during a synchronous presentation or virtual class.

Synchronocity^2 is best described as the concurrent discussion that parallels a presentation as it is delivered; it is concomitant but separate and distinct from the purview of the larger synchronous exchange. Students engaged in this activity seek to capture and capitalize on the phenomenon of cognitive translation from words to personal thoughts and insights into a representation of cognitive competence (knowledge). It is reminiscent of a type of connective spark that fires the process of authentic learning through dialogue and brainstorming activities. S^2 provides learners with an avenue to synchronously share notes, clarify postulates, (meta)reference^2 to other information or knowledge

[2] Words and terms used in this paper have been modified to reflect the evolution of (traditional) knowledge in web-based digitally-mediated and distributed environments; i.e. the use of the word (meta), inside parentheses, emphasizes the exponential nature of the concept being described and acknowledges the original syntaxical association, while relating the idea or thought more closely with the exponential growth of technologies, systems and information in the wired world of the web; and the use of the word (in)formal vs. informal reflects the amorphous and subtle transformation, or blurring of the lines, of cognitive competence transitions within the digital environment.

sources, and capture divergent thoughts and questions that the topic at hand triggers.

In essence, S^2 references digital dialoguing which demonstrates the exponential power of synchronous opportunities in the learning environment. It also depicts a discussion within a discussion (meta-dialogue) focussing on one or more interaction elements (student-student, student-content, student-teacher) as defined by Moore (1989), and further refined by Albion (2008), who included a fourth interaction—the use of technology—to facilitate learning relationships. Indeed, Albion (2008) wrote "it seems clear that interaction is important to learning and that it occurs with some combination of content, instructor and other learners. Some authors suggest that working with the technology used to facilitate the other interactions should be considered as a fourth type of interaction that affects learners' interaction on the three primary dimensions" (p. 4).

How S^2 Works

The starting point for understanding the concept of S^2 is an acknowledgement that the traditional classroom environment is not conducive for preserving the ideas and thoughts that emerge in and through class discussion (Philip, 2007). However, in an S^2 environment supported by communication technologies, written ideas and thoughts generated by participants in chat and text boxes can be copied and saved long after a presentation's conclusion, when review and elaboration (hallmarks of critical thinking and reflection, and, ultimately, metacognition) can take place.

The ability of learners to capture and preserve their thoughts and to interact with each other by chatting during formal presentations is critical to the success of S^2. Ling (2006) also emphasizes the importance of synchronous chat, stating that "chat interaction...facilitate(s) collaborative sharing of individual understandings and critical negotiation of meaning which are characteristic of the knowledge construction process, in the form of information-sharing and topic development phases" (p. iv) in group exchanges.

There is a visceral nature, essence and energy to S^2 that cannot be replicated in asyncrhonous exchanges. As intimated earlier, the activity of chatting/texting in presentation sidebars or through Skype allows for brainstorming which provides opportunities to apply "new solutions to existing problems, inspire(s) collective creativity, and effect(s) group synergy (Renner, 1994 as cited in Anderson & Kanuka, 1999, para. 64). Of significance to this learning process is that the initial synchronous questioning and brainstorming that occur during the presentation become quickly transformed into critical and reflective thinking following the presentation's conclusion, when chat transforms (either synchronously or asynchronously) into meta-dialogue/meta-discourse—and enters into the realm of Synchronicity^2. The activity of S^2 places the learner "as a full and active participant in the learning process who can consciously control and direct cognition while engaged in learning" (Terrell, 2006, p.257).

S^2 brings with it a quality of immediacy and presence which allows participants to more fully explore and develop their own cognitive construction of learning content. S^2 is an 'adjacency of conversations' which support the creation of the foundational concepts necessary for formal knowledge development, leading from constructivism—a learning model which sees knowledge as being "personally constructed by individuals in an active way, as they try to give meaning to socially, accepted and shared notions" (Boudourides, 2003, para. 22) to metacognition—a learning model which defines itself as "thinking about thinking" (Kanuka & Anderson, 1999; Terrell, 2006; Mednick, 2006).

Elements of (in)formal Learning Which Support S^2 Practice

Any opportunities for synchronous chat, rare as they often are within current distance delivery practices, should be exploited. Synchronous conversation, especially during real-time presentations, webinars, etc., provides "the learner with a context and stimulus for thought construction and learning which (is) the means by which the group contributes more to each learner's understanding than they are able to do individually." (Stacey, 2002, p. 289).

Synchronicity^2 is best viewed as a catalyst for (in)formal[3] knowledge gathering and organization that allows deeper levels of understanding to evolve. (In)formal learning—which does *not* include strictly social exchanges—is defined here as a concurrent, primary level of learning that originates in a formal and synchronous learning environment. (In)formal learning supports multi-modal interactions with the intentional knowledge items and their associated concepts, as presented by the teacher. It is a concept supported by Schugurensky (2000) who postulated three separate forms of informal learning – self-directed, incidental, and tacit (socialization) with vastly differing levels of event consciousness or intentionality.

Merging of previous definitions by Merriam is necessary to understand how digital technologies have changed the essence of learning. Merriam, Caffarella, and Baumgartner (2007) state: "Formal education is highly institutionalized, bureaucratic, curriculum driven, and formally recognized with grades, diplomas, or certificates" (p.29). Merriam (2007) also states: "The term non-formal has been used most often to describe organized learning outside of the formal education system. These offerings tend to be short-term, voluntary, and have few if any prerequisites. However they typically have a curriculum and often a facilitator" (p.30).

(In)formal learning is not to be considered an inferior or lesser form of learning when compared to formal learning, especially given the current opportunities for self-directed learning offered through technology and web access. Merriam, Caffarella, and Baumgartner (2007) further previous research in this area by stating: "studies of informal learning, especially those asking about

[3] Refer to previous note.

adults' self-directed learning projects, reveal that upwards of 90 percent of adults are engaged in hundreds of hours of informal learning" (p. 35).

Given its relative importance in knowledge development, these authors suggest that within current online educational pedagogical structures, (in)formal learning has been largely ignored or treated as extraneously tacit (implied but irrelevant), given the heavy reliance and rationalization of primarily asynchronous delivery models. In his paper, "The (r)evolution of synchronous communication in distance education," Corbeil (2006) referred to this current irrational reliance on asynchronous delivery as a case of "educational convenience" rather than enlightened practice. Although De Schutter (2004) states that "the text-chat boxes typically featured in online audio-conferencing software can be used to provide a means of sharing structured communication in parallel with the audio mode" (p. 3), synchronicity in distance education has not been pedagogically accommodated with strategies that support intentional or systematic inclusion.

Haythornthwaite, Kazmer, Robins and Shoemaker (2000) suggest that the real-time dialogue which takes place during a live presentation enhances community building more than asynchronous conversation, and state that "while a few students find the live sessions an inconvenience, most express a need for this kind of contact" (para.72).

Baggaley (2008) supports this evidence of students' desire to participate in "live online audio contact" (p. 44), stating that even those who have to rise in the early hours of the morning, due to time zone issues, to participate do so gladly. The rewards for providing opportunities for online synchronous activities are not just "the intellectual and emotional content" (Haythornthwaite, Robins, & Shoemaker, 2000) but the real time, student-student, student-instructor contact which diminishes students' perceptions of isolation.

S^2 – Repairing the Disconnect Between Theory and Practice

When discussing distance learning and applicable theories or models that have defined the movement of digital discourse, theories such as Transactional Distance (Moore, 1972) and Anderson's (2003) Equivalency Theorem are often cited. If the over-arching goals in these theories support more relevant forms of communication, more effective use of media and medium, and the consideration of distinctive elements within the online environment, then why do current educational practices support these theories in theory but do not actively demonstrate these principles in action?

One recent study considering similar questions provides telling research with regards to slow educational adoption of online synchronous interactions. In a conference paper by Spencer and Hiltz (2003), "A Field Study of Use of Synchronous Chat in Online Courses," the authors concluded that while there was strong student support for the use of synchronous communication in their online courses, it was in fact the instructors who demonstrated a reluctance to systematically incorporate this type and level of technology into their courses. This reluctance was due to instructors' lack of

knowledge with the technology and/or their levels of discomfort based on initial poor experiences with technology that deterred further exploration or use of synchronicity in their classes.

This finding mirrors that of Corbeil (2006) regarding the dismal commitment of academic institutions for incorporating more synchronous technologies and principles into their distance delivery models in favor of educational convenience and an eye to the bottom line financially. In the absence of solid distance pedagogies, instructors battle their own individual biases which remain rooted in traditional education and communication models featuring the "sage on the stage" as he dabbles with constructivist vocabularies.

A recent example of the theoretical conundrum that underscores this fundamental disconnect between theory and practice occurred during a webinar entitled "Social Networking with Web 2.0: A Comparative Study of On-Campus and Online Students" (Frey & Kearns, 2009). The presenters, both well-studied in the field of distance education, spoke highly of the value of back channel communication , a "communication channel outside of course structure, useful for communicating about content (direct) and developing social bonds (indirect)" (slide 8).

A question arose regarding instructor feelings about participant use of the chat/text box to dialogue with each other *during* the presentation. The presenters responded with comments that although they had never really given this activity any serious thought, "probably, if this were a 'real' course" they would be offended by the activity and might not allow it, and that it distracted them from presenting their material. Within the body of their presentation, the authors stated that "students should be encouraged to communicate *outside* of class, to reach out to one another" (slide 29) while their personal disclosures toward unintended synchronous communication opportunities created a palpable and immediate illustration of cognitive dissonance. Interestingly enough, these comments generated considerable "back channel" discussion amongst a number of the webinar participants.

This example demonstrates the pedagogical limitations of face-to-face communication (expectancy, media richness theory, information richness theory) where it is assumed that the ideal learning model accommodates only one speaker at one time – this is not a communication model that is present or supported within digital environments, as defined within Media Synchronicity Theory (Dennis & Valacich, 1999 as cited in Spencer and Hiltz, 2003).

In fact, media and information richness theories support synchronous text dialogues in digital environments to address uncertainty, and verbal synchronous dialogues to address ambiguity that is created by either the teacher or the content. The fact that all students can respond immediately to questions at hand assists them in the manipulation and sense-making process of new or unfamiliar information – immediate and (in)formal cognitive construction that can be saved (text or audio files) for later review and exploration (Spencer & Hiltz, 2003).

In a 2009 graduate studies course on technology and distance education offered at Athabasca University, a forum discussion entitled, "When Is Elluminate Most Successful" was started by one

student, who suggested that web-conference participants may enhance their learning experience by engaging in private and/or public conversations through text/chat boxes and/or Skype conversations during web presentations.

Backlash was swift and fierce as fellow students responded:

> *I am all for multi-tasking but I am sorry -- to me this is the same as in a f2f session sitting at the back of the class whispering about subjects other than the course.*
>
> *When you are taking a course, don't you think you owe the instructor the respect of listening rather than carrying on a second conversation? How happy are you if your students haven't paid attention in your classes?*
>
> *If you are using these alternating communication mechanisms, does it not distract you so you may miss vital information that is being shared at the time you are engaging in this backroom chatter, even if it is about the subject at hand?*
>
> *The potential for this technology to be used for other non-academic reasons, such as talking about the whether (sic) etc., is extremely high. I think of the discussions that take place in a f2f classroom, and unless the teacher is at arms length of the discussion, the discussion will get off topic.*

However, not all students responded negatively to the idea of passing notes at the back of the classroom," and spoke of the advantages of this type of online synchronous activity:

> *I so agree that the private chat feature of Elluminate has wonderful advantages to enhance the learning opportunity and the connections between students.*
>
> *In Elluminate I have read the chats but do not find them as distracting, especially if they are relevant to the teaching.*
>
> *I would really welcome the "back of the room chatter" in my Distance courses and encourage participants to actively use Skype or other tools that allow them reflect on their own learning or expand it in directions that increase interest, knowledge and capacity!*
>
> *When I earlier described passing notes, I'd seen it as an advantage for student learning. In addition, sometimes in writing notes about an idea inspired from the presenter, I also lose track of what they've moved onto-- Sometimes it's helpful to quietly ask where we are at in the presentation than to either disrupt the class to ask or sit lost in confusion!!*
>
> *Just a quick plug for the 'side talk'. I have really enjoyed this app in Elluminate because it has allowed me to get further clarifications from*

> *classmates. I have also had my instant messaging active in Skype when in an Elluminate Session to provide a private outlet for questions with peers.*
>
> *I'm a big picture thinker so I like being able to ask my questions as they develop and it helps to keep me on track with the presenter. I will say it works better when the topic is somewhat familiar and the peers are well known.*
>
> *Bottom line it's good for those of us who have been tagged as 'blurters' in the past because I don't have to interrupt the flow of the presentation. Plus I often get back on track much faster when confused. I love how different learners are being accommodated in these settings.*

These positive reflections support the research findings of Ling (2006), who posits that in spite of the large amount of literature which "regards chat interaction as fragmented and characterized by interactional incoherence that disrupts the dialogic knowledge construction process...chat interaction is more structured and complex than the literature suggests" (p. iv).

Students who use the chat features of web-conferencing systems or VoIP communication technologies such as Skype to communicate with each other during a presentation use these tools for their ability to keep track of their comments. In essence, these tools constitute a communally shared notepad which documents participants' questions, thoughts, and responses to the material being presented. After the presentation, students' comments can be archived, copied into other documents and used to initiate meta-dialogue.

Summary

As described, the advantage of S^2 and of web-conferencing and communication tools is that they offer learners the opportunity to engage in rich and multiple learning experiences. However, all of these tools have an important part in reducing hierarchical roles and expectations in the distance education classroom, and shape how individual learning can be constructed in a digital environment. With the assistance of these emerging technologies, distance learners are able to control and structure learning, and to change the dynamics of student/content, student/student and student/teacher relationships:

> The model of e-learning as being a type of content, produced by publishers, organized and structured into courses, and consumed by students, is turned on its head. Insofar as there is content, it is used rather than read— and is, in any case, more likely to be produced by students than courseware authors. And insofar as there is structure, it is more likely to resemble a language or a conversation rather than a book or a manual." (Rogers, Liddle, Chan, Doxey, Isom, 2007, p. 13).

Distance learners, and institutions, have enjoyed great success because of the asynchronous nature of course requirements. However, the concept of S^2 combined with the potential of communication technologies suggests that the inclusion of synchronous activities in

distance education delivery should be given serious consideration. Largely understated, synchronousness in distance education courses is a critical component of foundational learning and knowledge creation. And although much of the existing literature points to a prejudice towards asynchronous delivery because it is convenient, flexible and accommodating to many learners' needs, and because it echoes much of traditional education, synchronous learning experiences are coming into their own because of technological advances in the field.

Synchronicity^2 incorporates the richness of metadialogue, and exemplifies the type of enhanced learning which occurs "through a (synchronous and asynchronous) online learning platform that allows individuals to be learner/teachers, tapping into collective intelligence by collaborating in the creation, reorganization, ranking, sharing, and reuse of rich content, assignments, and assessments". (Rogers, Liddle, Chan, Doxey, Isom, 2007, p. 5).

Ultimately, S^2 allows students to fully realize the potential of synchronous online chatting, and paves the way to building new knowledge and unique forms of engagement across student, content, teacher, and technology sectors within digital environments than previously considered.

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