ADIIEA: An Organizational Learning Model for Business Management and Innovation

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Abstract: This paper introduces the Innate Lesson Cycle (ADIIEA) as a uniting and integrated framework for business process operations and organizational learning. Thus far, the Knowledge Management (KM) and Organizational Learning (OL) movements have tried to "teach OL" to organizations as an "add-on" while assuming that current business models are sound. Instead, we find that current business models are based on industrial age factory process work, and fail to keep up with the learning and innovation demands of the knowledge economy. This paper suggests that these current business models be replaced, not complimented, with a learning-based model. In the epistemological formulation of this learning model, ADIIEA is compared with the SECI model, and its underlying assumptions about tacit and explicit knowledge as appropriate foundational underpinnings are challenged. Instead of a "noun" approach to knowledge foundations (tacit and explicit knowledge), a "verb" approach (questioning, reflective, and reactive modes) to knowledge foundations is illustrated to be appropriately compared to required business process operations. Additionally, this approach is shown to be epistemologically aligned with the fundamental symbols of language, where we universally find the question mark, period, and exclamation point, respectfully. From this verb-based foundation, several applications of ADIIEA are then illustrated to address current issues found in education, business processes, policy-making, and knowledge systems.

Keywords: organizational learning, epistemology, theory of knowledge, process management, innovation, knowledge creation, questioning

1. Introduction

This paper seeks to contribute to the foundational epistemological discourses in knowledge management (KM) and Organizational Learning (OL) by proposing the ADIIEA (pronounced uh-dee-uh) model, also known as the Innate Lesson Cycle. This model is intended to provide not just a new learning model, or a new business process model, but a new integrated framework for all business processes—which is fundamentally based on learning.

For an organization in the knowledge economy, the ability to adapt (i.e. learn) is critical to long-term success. So the ability to learn faster than one's competitors is the key to sustainable competitive advantage (de Geus, 1988: 71). Thus far, in this quest to learn faster, the Organizational Learning movement has assumed that business entities have a sound business process model, and that we just need to introduce an additional element that addresses knowledge and learning. But pursuing this approach has led ultimately to this quote from Peter Senge: "Making learning an 'add-on' to people's regular work, has probably limited more organizational learning initiatives than any other factor" (Senge, 2006: 287). Instead of this continued "additive" approach, the question now becomes: how should we "replace" the current business process models with one that is based fundamentally on learning itself? But in answering this question, we should start by acknowledging that learning is more than simply accessing information.

One of the early goals of the Knowledge Management movement was to support the challenges of information *overload* (Levy, 2009: 341). The large consulting companies were the early adopters of KM, but when their approaches to "managing and sharing what they know" were given to other companies, we just ended up with "information junkyards" (Dalkir, 2005: 19). Perhaps, instead of trying to solve for information *overload*, we should be solving for information *anxiety*.

In his 1989 book *Information Anxiety*, Richard Saul Wurman got it right in his description of the problem. Some think that information anxiety is simply due to the sheer amount of information that is available, but Wurman points to the real source of anxiety: the gap between "what we understand and what we *think* we should understand" (Wurman, 1989: 1). And this gap has only widened since 1989. The organizational problem is fundamentally not just about access, but about understanding. The fundamental topic should not be just about knowledge types and knowledge sharing, but about organizational learning.

2. Literary context

The knowledge cycle within an organization has been popularly described as a process of Socialization-Externalization-Combination-Internalization - known as the SECI model (Nonaka and Takeuchi, 1995: 62). The SECI model (figure 1)

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describes a cycle where tacit knowledge is converted to and from explicit knowledge. It rests not on a conceptual model of learning, but on two types of knowledge, with four modes of conversion between them. But as pointed out by Bratianu in a critical analysis of this model (2010), only Externalization and Internalization are truly conversions, and the underlying dimensions to this model are based on a big assumption: "The assumption that knowledge is "created" through conversion between tacit and explicit knowledge allows us to postulate four different 'modes' of knowledge conversion" (Nonaka, 1994: 18). This assumption has placed limitations on the usefulness of this model (Bratianu, 2010: 195).

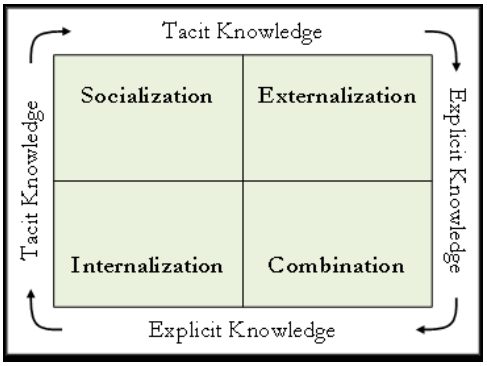

Figure 1: The SECI model based on tacit and explicit knowledge conversions

The current assumption, that explicit and tacit knowledge are the exclusive fundamentals needed, for knowledge sharing and organizational learning, has not been found to be sufficient (Puusa and Eerikäinen, 2010). Puusa and Eerikäinen point to the possible root of this problem - that the origins of explicit and tacit knowledge have been misinterpreted. Polanyi stated that all knowledge has a tacit component, but did not intend that we treat tacit knowledge as a separate category of knowledge outside the holistic view of knowing (Puusa and Eerikäinen, 2010).

And yet, discourses in KM are "still characterized by a dichotomy rather than complementary views" of knowledge (Heisig, 2009). This is a profound issue when solving for both knowledge sharing and also knowledge creation. "This epistemological question about the relationship between tacit and explicit knowledge is important because it lies in the very heart of the KM theory" (Virtanen, 2013). As with any mental model, this mental model of knowledge fundamentals will affect our ability to perform in this field. A mental model is a "concentrated, personally constructed, internal conception, of external phenomena (historical, existing or projected), or experience, that affects how a person acts" (Rook, 2013). In our case, we could add, how a "profession" acts, as we consider our mental model of the fundamentals that drive KM and OL.

In his preface to the revised edition of The Fifth Discipline (Senge, 2006), Peter Senge quotes W. Edwards Deming: "We will never transform the prevailing system of management without transforming our prevailing system of education. They are the same system." It is from this literary context that we need to begin the construction of a new framework. It is not enough to find clarity of where new knowledge is created within the SECI model, when this model is still applied as an "add-on" to current business models. Instead, we must work towards a model of "learning" which has clarity in where new knowledge is created, and can be used not just as an "add-on" to current business models, but can be used to "replace" them.

In constructing a new model that describes a system of learning, which also describes a system of management, the fundamental mental model will be key. Some suggest using a "knowledge navigation" metaphor (Edvinsson, 2010), since it allows us to use the user interface itself to see into and remove barriers from the knowledge set. But, in addition, the "type" of knowledge to be navigated is also important. The mental model construct which "affects how a person acts" can be described as "descriptive" knowledge or "prescriptive" knowledge (Kieras, 1988). And we should be able to logically infer between the two. For example, a "map" contains descriptive knowledge, and step-by-step "directions" contain prescriptive knowledge. We can logically infer the creation of directions from a map, and we can also infer the creation of a map from a set of directions. As we consider the knowledge that "affects how a person acts," it is important to consider if one or both types are presented, and how they are being inferred.

Consider a simple mental model example that we may all have experienced, either directly or by observing other people. If we think that the way an elevator works (descriptive knowledge) is that its inputs are aware of and sensitive to our urgency as measured by the frequency that we "call" it by pushing a button, then we will logically infer that the

correct procedure (prescriptive knowledge) is to repeatedly press the buttons as quickly as possible. This (usually incorrect) mental model applies to street crossing systems as well.

If a procedure is relatively simple, then we usually just provide people with the prescriptive knowledge required, without providing deep descriptive knowledge (Kieras, 1988). But for experts, who must perform trouble-shooting on a given system, we provide deep descriptive knowledge which will allow them to infer prescriptive knowledge for trouble-shooting and problem-solving. And instead of testing students simply for their memorized descriptive and prescriptive knowledge, we can test their ability to infer between the two. Before the term "mental model" was found in the literature, the term "Black Box" was used in Cybernetics and in the field of electrical engineering where it arose as a classic problem given to students (Ashby, 1964). Given a sealed box (usually black), with input terminals and output meters, an engineering student would have to determine the function and components of the box by connecting the input terminals to various voltages, etc., and observing the output. Our understanding of a given topic can be measured beyond our memory of descriptive or prescriptive knowledge by also measuring our ability to infer one from the other.

From this perspective of understanding, it is interesting to review contemporary business models and find that they provide us with only prescriptive knowledge: Do-These-Things-In-This-Order. For example, Six Sigma is based on the DMAIC model (Define, Measure, Analyze, Improve, Control), and the classic PDCA business model is only prescriptive as well (Plan, Do, Check, Act). This is exactly like providing directions, but without a map that allows us to see from where these directions were inferred. It is illogical to operate from directions that cannot be inferred to a map, but this is precisely the state we find with the most popular business models today. This perspective provides a clue into the possible break-down between current business models and the needs of a learning organization. And it also provides a mandate in the creation of a new learning model for business operations: it must be constructed first from descriptive knowledge from which we can logically infer the related prescriptive knowledge. It must first describe a system of learning, and then prescribe a system of management.

3. The ADIIEA construct

The epistemological approach for the ADIIEA construct is based on the study of language and explanations. In reviewing the world's languages, the first fundamental commonality we find is for the types of thoughts we wish to convey—and the clues are found at the *end* of each sentence. The mind is either asking a question, and we communicate this using a question mark (?); or it is making a reflective statement, and we communicate this using a period (.); or it is making an emphatic reactive statement with conviction, and we communicate this using an exclamation point (!). In the Spanish language, acknowledging and communicating these three modes of the mind is so important that we also find clues at the *beginning* of each sentence: the inverted question mark (¿) initiates each question, and the inverted exclamation point (¡) initiates each reactive statement (Lewis, 2013:15).

From the study of language, these are just three punctuation marks, among many others. But from the study of epistemology, we can recognize these as the three response modes of the mind, being represented with symbols, to facilitate the communication between minds.

So now we ask: what fundamental drivers operate on our response modes, for when we engage each one? Our response modes, as reactive, reflective, or questioning, are innately linked with our workability beliefs. Some people say that "it either works or it does not work." But they are skipping over the workability belief that all projects must operate within: "it could work." Figure 2 illustrates this innate link between our three response modes and our three workability beliefs. Within the innate relationships between the three response modes and the three workability beliefs, we find the following:

- Questioning does not innately occur as a fundamental when operating under "does work"
- Questioning operates innately as a fundamental during "won't work" and "could work"
- Reflective does not innately occur as a fundamental when operating under "won't work"
- Reflective operates innately as a fundamental during "could work" and "does work"
- Reactive does not innately occur as a fundamental when operating under "could work"
- Reactive operates innately as a fundamental during "does work" and "won't work"

These innate relationships *produce* the six phases of the ADIIEA construct (figure 3). ADIIEA stands for: Automation, Disruption, Investigation, Ideation, Expectation, and Affirmation. Given it is founded on workability beliefs, ADIIEA does not assume that learning is based on a cyclic conversion between tacit and explicit knowledge (SECI model), but that learning is based on knowing if something works. So the ADIIEA model is also known as the Innate Lesson Cycle (Lewis, 2013:66).

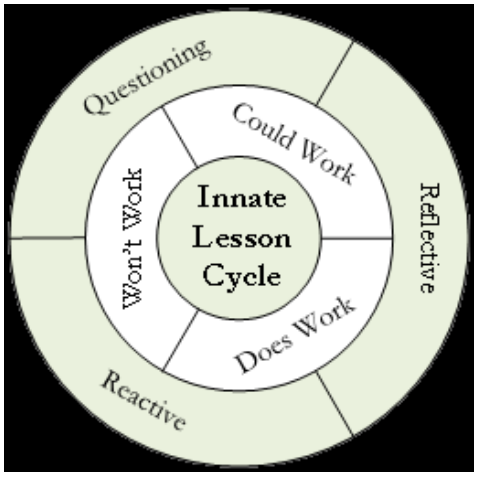

Figure 2: The three workability beliefs and three response modes

The location of each phase is like working against gravity; we tend to rest at the bottom and operate in Automation, on autopilot, without much thought, reactively assuming that it works. The Automation phase is a reactive mode of the mind which can be found operating in both humans and machines. It is not a mode reserved solely for machines. Automation is where we begin and where we end. It allows us to be proficient at doing what works. And we are content at staying with our routine until we find we are in disruption.

Rather than simply listing six phases of a new learning or business model, the value of understanding that these six phases are created by underlying relationships is that it allows us to examine these fundamental elements in more detail. We can examine the nature of each phase and the nature of the lines that we need to cross to be able to enter and exit each phase.

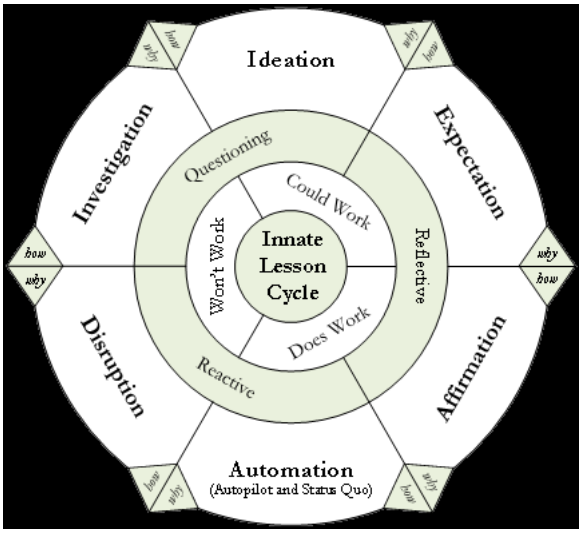

Figure 3: The innate lesson cycle (ADIIEA)

Moving through the Innate Lesson Cycle is unlike moving through current business models, which are simply linear directions, expecting learning to occur like a factory operation. Rather than dictating a "change" process which is linear in nature, ADIIEA allows for moving between phases by simply asking "how" (forwards) or "why" (backwards). This approach allows for a Knowledge Navigation metaphor that rests on a model of learning. Allowing for a "change" project to "rock" between phases is more aligned with our "thought" process than a "factory" process found within the expectations of project management software which imposes linear thinking.

With ADIIEA, and a Knowledge Navigation metaphor, we can visually see the two major types of mental processes: half-pipe and full-cycle. A half-pipe operation would involve only operating within Disruption, Automation, and Affirmation. For example, working reactively within Automation, we notice some anomaly, which moves us to Disruption, where we may have a pre-planned response, or we can move to Affirmation to look-up an answer from a best-practice database. A full-cycle operation would involve moving from Disruption to Investigation and on around to trouble-shoot the situation and come up with our own solution (Ideation) which we implement (Expectation) and evaluate (Affirmation), and then make part of a new routine (back to Automation).

These visual half-pipe and full-cycle operations align with the research that finds there are two modes of thought: fast and slow (Kahneman, 2011). Thinking "fast," aka "System 1," refers to mental operations that are frequent and automatic, which align to half-pipe operations. Thinking "slow," aka "System 2," refers to mental operations that are infrequent and effortful, which align to full-cycle operations. And in the leadership literature (Bass, 1990), we also find alignment with the definitions and requirements of transactional leadership (half-pipe operations) versus transformational leadership (full-cycle operations).

From the perspective of *organizational* learning, we can think of full-cycle thinking as "change" management, and think of half-pipe thinking as "sustain" management. This is how we can picture *learning* as THE business model, rather than *learning* as an "add-on" to business operations. Figure 4 illustrates "change and sustain" management, with the primary management and process functions listed for each phase around the outer ring. These are the "prescriptive" directions that we can now infer for each phase, now that the "descriptive" map has been established by the inner rings.

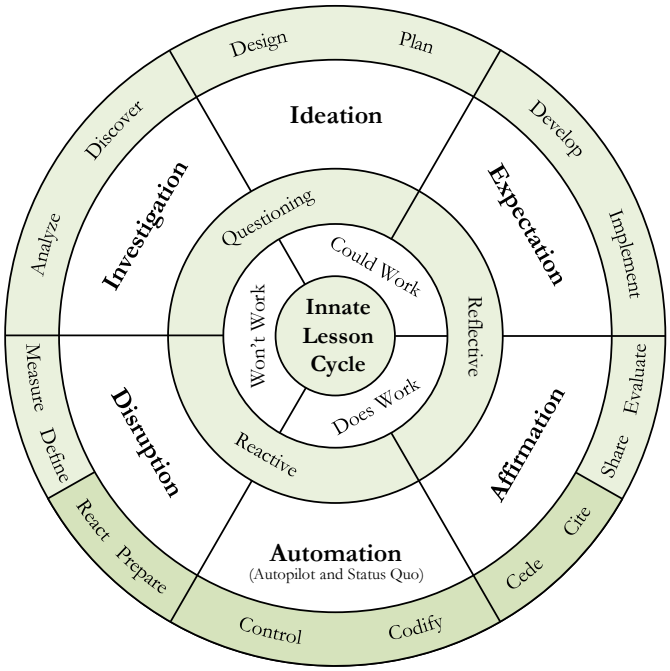

Figure 4: Change and sustain management within the innate lesson cycle

Note that all *sustaining* operations, including risk management, are based on half-pipe thinking. Automation is to be codified and controlled. We prepare and react to disruptions. And we cede to some authority and cite them as a reference for any reflective answers related to what we should be doing in routine (Lewis, 2013:81).

Note that all *change/process management* operations are based on full-cycle thinking. Disruptions are to be defined and measured for scope and prioritization. Investigation is designed to analyze and discover. Ideation includes more than creativity, it requires a design and plan, which can be measured for ingenuity and the risk-reward. Expectation requires something to be developed and implemented, which can be measured for progress and accomplishment. Affirmation requires the evaluation of any ideas, to ensure that they "work," and also that the knowledge of what works and does not work is shared in the organization for those who want to cite this knowledge as they operate in the half-pipe (Lewis, 2013:81).

The purpose in creating an integrated framework for business processes and organizational learning is to stop the current practice of assuming that business models are sound, and therefore any idea of learning in the organization needs to be an "add-on" model or discussion. With the Innate Lesson Cycle (ADIIEA) we innately describe the operations within an organization as related to learning. Learning is no longer something that is *said* to be the core function of an organization; learning is now something that can be *shown* as the core function of an organization. The purpose of ADIIEA is to *replace* the current "box-checking" models with a "sense-making" model, to help prepare organizations for the knowledge economy.

4. Application scenarios

Given that ADIIEA is a generic learning model based on the broad constructs of workability beliefs and response modes, it has broad implications, including education, business processes, policy making, and knowledge management systems.

4.1 Education

Traditional education is based on "half-pipe" instruction, which only supports half of our natural learning cycle. Figure 5 illustrates learning in the half-pipe. Have you ever wondered why the term "Drill & Practice" has two words? They are relative: the first time you have a fire drill, it's a drill—but the tenth time, it's practice. The term "Education & Training" works the same way; "here's what works, now you try it." Half-pipe learning was designed to move students into Automation as quickly as possible. When the task was to prepare WWII soldiers and Industrial Age factory workers, this approach worked just fine. But in the knowledge economy, education needs to support both half-pipe and full-cycle learning requirements.

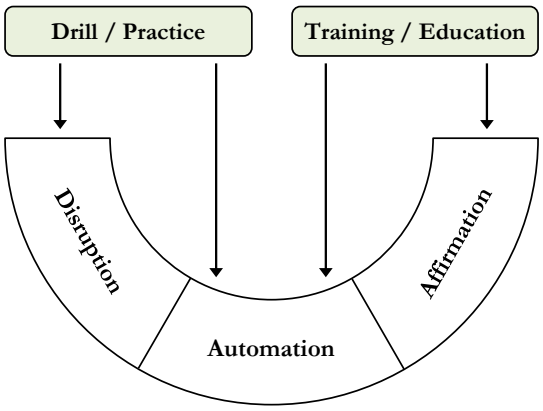

Figure 5: Half-pipe of the innate lesson cycle

The ADIIEA construct differs from the "tacit versus explicit knowledge" approach in several ways. Instead of a dichotomy, there are three core fundamentals. And instead of the focus on the noun of knowledge, it is on the verb of how we are thinking and communicating, in that we are operating in a particular mode: reactive, reflective, or questioning. And instead of assuming that knowledge creation happens somewhere in the conversion between tacit and explicit knowledge, this new construct places knowledge creation directly within the mode of questioning.

The ADIIEA model shows us that questioning does not operate as a fundamental within the half-pipe. Given that an organization's knowledge "is of less significance than are the processes needed to continuously revise or create knowledge" (Dixon, 1999: 7), then questioning skills may be more valuable from an educational program than memorized knowledge. All memorized knowledge provided within half-pipe instruction is based on what currently "does work," yet students will eventually need to know what to do when it "won't work." The Business Intelligence pioneer, Stevan Dedijer, said "I recognized the importance of the question as a basic intelligence-generating tool" (Dedijer, 1999:75) and he "inspired a starting point for the art and science of questioning, which he called Quizzics" (Edvinsson, 2010: 15).

In making a connection between learning and frameworks, Dixon (1997:38) says we "learn within the context of a frame…but learning also pushes against the frame." Lewis (2013: 172) advances the connection between frameworks and question types with the Framework-Question Theory, which is described as a "symbiotic relationship between

what we know and what we are able to ask." He distinguishes between questions "within" a framework and questions "about" a framework, and also between questions from "curiosity" and questions from "conviction." This combination produces four question levels, where a Level 4 question involves a question from curiosity about the current framework, which adds another dimension. An example Level 4 question is "What would I see if I could ride on a beam of light?" We learn that Albert Einstein was "creative" but are not usually taught that his theory of relativity came from his ability to formulate this question (Klassen, 2006).

While some teachers may feel that providing students with questioning skills will undermine the authority they need to deliver the answers in the classroom, other teachers interested in providing a full-cycle lesson will include learning questions along with the learning objectives. This means that educational lessons will be preceded with learning "objectives" (e.g. You will be able to describe the theory of relativity) and also learning "questions" (e.g. What would you see if you could ride on a beam of light?). Instead of just teaching to the answer, we will also teach to the question. A Level 4 question will do more than prompt us to find the right answer, it will move the mind out of the half-pipe to begin to discover and innovate.

4.2 Business processes

In applying ADIIEA within an organization that already operates from a contemporary process model, it helps to directly compare ADIIEA with their existing model. Again, the purpose of ADIIEA is to stop trying to approach organizations with the idea of organizational learning as an "add-on" to their existing operations, and to replace their existing operational models with one that is based on learning rather than factory operations. Table 1 provides a direct comparison between the steps that are performed within ADIIEA and the steps performed in other contemporary process models. The DMAIC model is used as part of a Six Sigma management strategy that has helped many companies bring costs and quality under control through a focus on operational efficiencies. The DMAIC model somewhat aligns with our Innate Lesson Cycle (ADIIEA), but the single step to "Improve" is not broken out into the ADIIEA phases of Ideation, Expectation, and Affirmation. According to the DMAIC mindset, "Six Sigma" literally means that we are only allowed to have three defects per million units. And while this mindset works well for manufacturing processes, do we really think that ideas will pop out of our heads like cans of soup from a factory, without any so-called defects? The only real "magic" behind DMAIC is that it recognizes the need for "control" in the new status quo, to be able to accomplish the factory-like goals of the model. This, plus some statistical tools to help identify the root causes of problems during Investigation, is all this model offers. And by entering into the Investigation phase with questions related to "what went wrong?" it focuses the mind to analyze but not to discover, which affects an organization's ability to innovate.

Table 1: ADIIEA vs contemporary process models

ADIIEA Phases	ADIIEA Steps	DMAIC Steps	PDCA Steps	Making a Law Steps
Automation old status quo	Codify Control			Old Status Quo
Disruption	Define Measure	Define Measure		Interested Party dissatisfied
Investigation	Analyze Discover	Analyze	4 - Act	Interested Party defines the issue
Ideation	Design Plan	Improve	1 - Plan	Interested Party proposes solution Congress member submits the bill
Expectation	Develop Implement	Improve	2 - Do	Bill needs approval from congress Bill sponsor actively seeks support
Affirmation	Evaluate Share	Improve	3 - Check	Bill is signed into law Judicial Branch enforces the law
Automation new status quo	Codify Control	Control		Citizens expected to obey new law New Status Quo

The classic business model PDCA provides another list of steps: Plan, Do, Check, and Act. As the last step, it defines "Act" as the investigation into solving why your plan did not work. Other business models suggest an investigation

before the first plan is developed, but this model says to plan first and investigate last, if the idea doesn't work. Change Agents within organizations that are interested in placing learning at the core of their operations will be able to align their current process model with ADIIEA to be able to move from prescriptive box-checking operations to sense-making operations.

4.3 Policy-making

As we consider a country as a learning organization, we can compare ADIIEA with the process of policy-making. Making a new law is a process that is projected from the mind. From the status quo (Automation), an interested party becomes dissatisfied with the definition of what works (Disruption). Then they define the issue for what won't work (Investigation) and propose a solution (Ideation), called a "bill." The bill's sponsor seeks the votes needed (Expectation), hoping it will be signed into law (Affirmation), thereby becoming the new status quo (back to Automation). For example, when Candy Lightner's daughter was killed by a drunk driver, she formed the organization called MADD (Mothers Against Drunk Driving) to get drunk drivers off the road (Hamilton, 2000). More than just changing laws, she changed the public perception of the difference between an accident, which has little accountability, and vehicular homicide, which does require accountability. She changed the status quo by changing our definition of "Does Work" within our Innate Lesson Cycle for drinking and driving.

We can memorize the steps for how a bill becomes a law, or we can recognize that we are simply projecting our Innate Lesson Cycle onto the social arena. Our textbooks say that to create a new law, the first step is for a member of Congress/Parliament to submit a bill (Smith, 2008). But these prescriptive instructions start at Ideation (submit bill) and skip over the prior ADIIEA phases, which would help the topic make sense, and help empower citizens to see their part early in the process. Transparency should include knowing how one disruption was prioritized over the others; what investigation was done into finding a root cause; and why the given bill (idea) was chosen over other improvement ideas.

Citizens interested in having transparency in their government's policy-making process will understand from ADIIEA that policy-making is mandatory – politics is optional. If there is to be collaboration and transparency in the creation of the next mandated routine, then voting would start within Disruption to prioritize for the next issue that requires a new routine. From there, we should expect transparency into how root causes are determined (Investigation). And from there, we should expect collaboration into the best possible solutions (Ideation). And finally, when a bill does become a law, we should expect transparency into the degree that the new idea "does work" such that a repeal process can be viewed as "learning" and not just "politics" or a "mistake."

4.4 Knowledge management systems

ADIIEA also has implications for the design of knowledge management systems. As we saw earlier, there are two fundamental ways that we find an answer: either we stay in the half-pipe and cite an authority for an answer, or we track the full-cycle answer to understand the options considered for all the phases of the Innate Lesson Cycle.

We see both of these fundamental ways to answer questions within the knowledge systems used in our organizations. For example, a company will have a Web site with "authoritative" answers, usually in the form of FAQ (Frequently Asked Questions), where customers can find the definitive answer to their question. Companies do not want to provide customers access to their internal "collaborative" system, where several people and departments are involved in providing their opinion and rationale for the best authoritative answer for their customers.

Systems that support authoritative answers have progressed to allow many customers to find the answer to their question themselves, in a "self-service" system, rather than needing to call and talk to a person in a "call center" at a company. And systems that support the collaboration of ideas have progressed to allow for many more ideas from diverse groups to be considered.

Sometimes we find a hybrid system that does not try to find the authoritative answer or the collaborative online environment, but will try to find "an authority" on the subject, as an "Expert Finder" type of system. But these are systems designed from the premise that we need to ask the question "who" because answers to "what" and "why" will not or cannot be found directly.

As the demands increase for transparency into the decision making process, the "Expert Finder" systems will be used less as an authoritative output and more as an input into who should be participating in the collaborative environment. In addition to finding technological progress with authoritative and collaborative systems, as separate systems, we will see progress in how they integrate into a single merged system.

Imagine reading an FAQ on a company Web site and calling to complain that the answer does not consider your situation. Imagine a worker in the call center clicking on that authoritative answer to indicate that it should be reviewed. Imagine the executives involved in making that decision getting notified that there may be a condition they did not consider when making that decision, and their entire decision logic appears for them to re-review. Imagine the transparency in the decision making process when you, as the customer, are notified automatically that the authoritative answer has been updated. Now imagine a similar system helping not just corporate organizations but also state, national, and international organizations. Instead of just reciting the "law," we can click to find the bill or court decision, what situations were considered—and even read the "dissenting" votes in a court opinion.
"Learning organizations are possible because, deep down, we are all learners" (Senge, 2006: 4). By replacing an organization's current primary operational model with one that is based on the foundations of learning, then learning is not an "add-on" to business, but the way of business.

5. Conclusion

The current approach to introducing the topic of organizational learning into organizations has been to assume that an organization has sound business processes, so *learning* is an "add-on" topic, or is dismissed as simply individual *training*. Trying to "teach OL" to organizations, outside the fundamental topic of business operations, will continue to have diminishing returns. Instead, this paper recommends a new approach, whereby ADIIEA, as a model of learning, "replaces" the current business processes, to create an integrated framework for business processes and organizational learning. Given that the focus of the ADIIEA model is around lesson-based learning, and the focus of the SECI model (compared in this paper) is around the conversions and socialization of tacit and explicit knowledge, further research is needed on the ideal interactions between these models.

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