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Bridging the Gap Between Theory and Practice: The Role of Protocol Materials in Business Education for 2010 and Beyond

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Abstract: This paper proposes a way to significantly reduce the gap between theory and practice through the use of new technology and a thirty-year old concept called protocol materials. Protocol materials are video recordings of the real world that can be used in the classroom. Technology is evolving rapidly, and in a few years it will be possible to easily bring the real world of business into the classroom. This paper traces the origins of the protocol materials concept in the field of teacher education, and suggests the time is right for business education to adopt the Protocol Materials Process as a way to bridge the gap between theory and practice.

INTRODUCTION

After graduating from college with a degree in marketing, I was fortunate to get a job in marketing research with a consumer products division of a major corporation. Because I was 22 years old, I knew everything about everything. Several weeks into the job, I had a philosophical discussion with my boss about the gap between theory and practice. I asserted that businesses needed to practice more of good theories such as those I just learned in business school.

My boss, Jack Richardson, (the best boss I would ever have), politely asked whether it might be possible that I might have it backward. Was it possible that that the true gap was between practice and theory—with practitioners being more advanced than business theoreticians? I said no, the gap was between theory and practice, and I resolutely defended my position as only a 22 year-old can do.

I did not think much more about the gap between theory and practice until years later when I was working for a major oil company and in charge of developing a marketing information system. The complex nature of petroleum marketing presented a number of unique conceptual and practical problems for the design of this marketing information system. I had some of the best of our 500 systems people working on my project. Many had MBAs in addition to their degrees in computer science. As good as they were with the technical execution of the project, they were not much help on the conceptual aspects. I searched the information systems literature for guidance on how to handle the unique issues we faced, but came up empty. We then developed our own original solutions to these complex problems (O'Gorman 1999).

Then I remembered my previous conversation with my old boss, and came to the realization that the innovative things that we were putting into practice were indeed well ahead of information systems theory. I realized then that the gap goes both ways. Yes, there is a gap between theory and practice, but there is also a gap between practice and theory.

Years later when pursuing my Ph.D., I again encountered the issue of the gap between theory and practice. This time it was in a most unlikely context—how to train prospective teachers for the real world they would find themselves in after graduation. (How a business guy like me got involved in teacher education is quite another story. For our purposes, it was as if someone had waived a magic wand and said, "You—yes, you, the business guy—you are now an expert in teacher education.")

INTO THE FIELD OF TEACHER EDUCATION

My stint in the field of teacher education came about because, as a starving grad student, I took a job as a graduate assistant for a consortium of 20 colleges and universities funded by the U.S. Office of Education (USOE). The purpose of the consortium was to improve the education of teachers for urban schools. The director of the consortium was the Chair of the Department of Elementary Education at the University of Pittsburgh. One day he came into my office, threw a copy of "*Teachers for the Real World*" (Smith 1969) on my desk, and said, "USOE wants our consortium to implement the concepts in this book. I sent a copy to each of our 20 institutions. Now I have people at 20 colleges and universities asking me how to implement the chapters on protocol materials. I don't have a clue. I want you and your buddy here to figure out how to do it."

I tried to squirm out of the assignment by pointing out that my background was in business, that I had never had any courses in education, and knew absolutely nothing about the training of teachers. My boss, Horton Southworth (the second best boss I ever had), presaged Nike when he said, "Just do it!"

And we did. My colleague and I prepared a paper that provided a conceptual foundation for how protocol materials could be produced and used in teacher education (Innerd and O'Gorman 1970). Key people at USOE liked it, and I was appointed to the new U.S. Office of Education Task Force for Protocol Materials. The first meeting of the Task Force was surreal. Our little paper was the main focus of the Task Force. Here I was, a business guy grad assistant with no background in teacher education telling some 15 deans of leading schools of education how they should train teachers.

The USOE took the protocol materials ball and ran with it. They made it into a federal project with millions of dollars of funding going to 10 different universities to produce protocol materials. Unfortunately the federal project became a classic "federal project," (which of course meant that they totally screwed it up by changing our original conception.) It was a total failure (Orlosky 1974). Although the potential of protocol materials was never realized in the field of teacher education, I was gratified to see that a recent paper (Holloway and Longfield 1989) suggested the field of teacher education should restart the protocol materials movement, but this time sticking with the original conceptualization proposed by Smith (1969) and further developed by my colleague and me (Innerd and O'Gorman 1970).

Regardless of what the field of teacher education does regarding protocol materials, on a personal level the protocol materials concept has served me well in teaching a variety of business courses over the intervening years. And now that I am teaching Organizational Theory, I find it particularly useful for bridging the gap between organizational theory and the real world, and believe it has significant potential for the education of business professionals for 2010 and beyond.

ORIGINS OF THE PROTOCOL MATERIALS CONCEPT

To understand the potential for the use of the protocol materials concept in business education, it will be useful to examine the original concept as it emerged in the field of teacher education.

In 1969, the American Association of Colleges for Teacher Education published *Teachers for the Real World.* The principal author was B. Othanel Smith, an educational philosopher then at the University of Illinois at Champaign-Urbana. The intent of the book was to stimulate the improvement of teacher training programs for urban schools, because it was felt there was a rather large gap between what prospective teachers were taught in their college classrooms and what they encountered in the real world.

Chapters 4 and 5 of *Teachers for the Real World* dealt with the theoretical preparation of teachers. In those chapters, Smith proposed the use of video recordings of actual elementary and high school classroom in college teacher education programs. He called those recordings protocol materials, as in "a statement reporting an observation or experience in the most fundamental terms without interpretation" (Random House Dictionary 1968). This led to the following working definition of protocol materials.

> Protocol materials are record or recordings of real, as opposed to simulated events, concerned with the fundamental data of human experience….It is clear that if protocol materials are to be recordings of human behavior without interpretation they cannot, by definition, be simulations, either scripted or improvised, or staged re-enactments, rehearsed or otherwise, of previously observed or assumed events. (Innerd and O'Gorman 1970, p. 2).

The above quote is in accord with B. Othanel Smith's observation that "Protocol materials should not be used merely to illustrate points in education courses. The whole procedure should be turned about so that the principles of the psychological, sociological, and philosophical studies, as well as those of pedagogy, are brought to the analysis of protocol materials, not the other way around (Smith 1969, p. 63).

As mentioned above, the federally funded protocol materials project failed. One of the reasons it failed was the lack of technology that would permit local teacher educators to make video tapes of real classrooms and readily use them in their college classrooms. Although Sony had introduced a line of portable video recording equipment in the late 1960's, it was very primitive by today's standards. The recording medium was ½ inch reel-to-reel tapes, and the battery life of a portable camera was about a half hour. Although using the available technology to record the reality of classrooms was difficult enough, it was even more difficult to find what you were looking for on a tape (much more difficult than even finding something on today's VHS cassettes), and editing was done primarily by physically cutting the tape and taping it back together. Capturing the sound in a classroom was also a problem. Although teachers could be equipped with wireless microphones, picking up sound from the rest of the classroom was problematic.

The federally-funded protocol materials project attempted to get around these constraints by essentially funding professionally produced films in simulated classroom environments. Multiple cameras, professional sound equipment, and professional editing solved the production problems. However, in doing so it destroyed the essential concept of protocol materials, e.g., capturing reality.
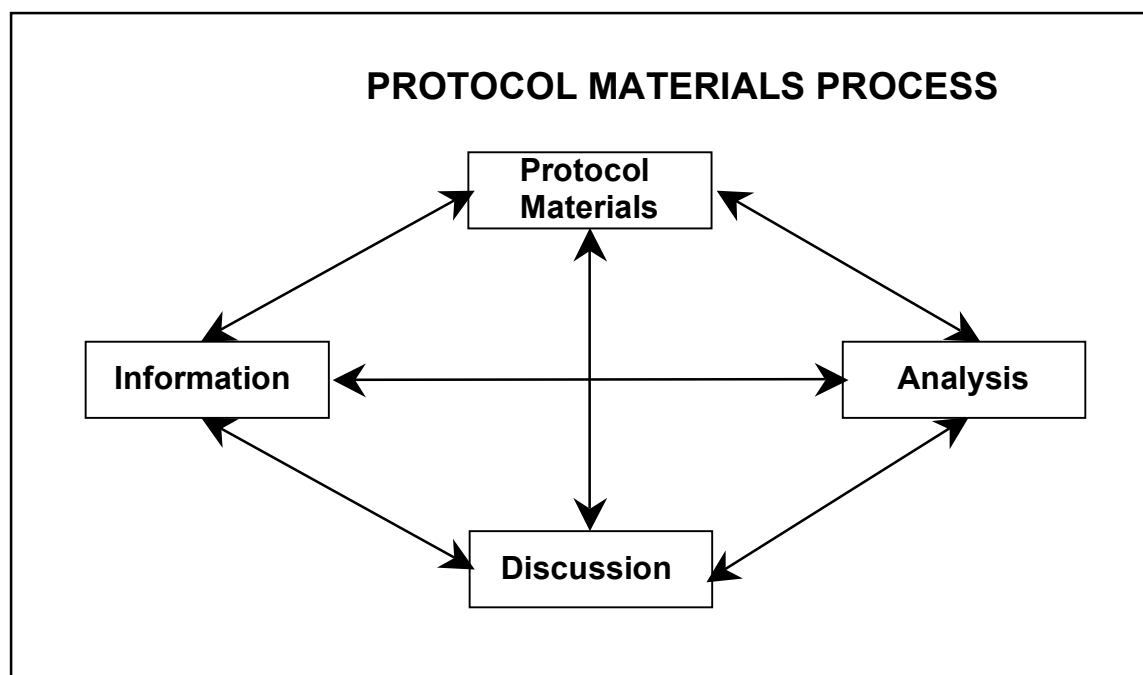
The scripted films were called protocol materials but they were not protocol materials. Rather, they were part of a different category of videos known as training films. There is nothing wrong with training films, but one should not confuse training materials with protocol materials. Protocol materials address the issue of "What is going on here?", whereas training materials deal with the issue of "This is how to do it." As Holloway and Longfield say, "The fact that protocol materials were transformed from a conceptual tool to a training tool played a significant role in the disappearance of their use from teacher education (Holloway and Longfield 1998, p. 22)."

In their paper, "Protocol Materials: Passing fad or an idea whose time has not yet come?," Holloway and Longfield trace the history of protocol materials, describe how the protocol materials trolley got off the track, and suggest that the field of teacher education should revisit the idea of using protocol materials:

> If protocol materials are to become an integral part of teacher education in the near future, this new group of advocates will benefit greatly by becoming familiar with the principle paradigm and production designs originated by creators like B. O. Smith, Innerd and O'Gorman. In their paradigm, protocol materials were used as one component of a much larger system of teacher education designed to develop greater theoretical/conceptual understanding, interpretive competence, critical analysis, and pedagogical art. (Holloway and Longfield 1998, p. 24)

THE PROTOCOL MATERIALS PROCESS

The following are the essentials of the Protocol Materials Process as originally described by Innerd and O'Gorman (1970, p. 8).

PROTOCOL MATERIALS PROCESS

```
                    ┌──────────────┐
                    │   Protocol   │
                    │  Materials   │
                    └──────────────┘

┌──────────────┐                        ┌──────────────┐
│ Information  │ ◄──────────────────►   │   Analysis   │
└──────────────┘                        └──────────────┘

                    ┌──────────────┐
                    │  Discussion  │
                    └──────────────┘
```

1. **Information.** The information box in the diagram has a function that might best be described as "cognitive input." Teaching relevant theory would be available in the form of books, magazines, videos, films or other information. [In today's world, this would include all the information on the Internet and online bibliographic sources.]
2. **Protocol materials.** The protocol materials will probably be video tapes and will be recordings of real behaviors and events which can be related to input from the information box.
3. **Analysis.** While identified as a separate activity, analysis [by individuals] will in reality take place to a large degree at the same time as the viewing of the protocol materials.
4. **Discussion.** This is perhaps the most critical part of the process. Discussion will focus around the question of whether or not the protocol materials tend to confirm or deny the hypothesis or hypothetical construct.

As Holloway and Longfield observe of the Protocol Materials Process proposed by Innerd and O'Gorman:

> This non-linear process allows entry into the process at any point and also permits the student or groups of students to move to any other point in any order at any time. It is of its nature highly flexible and dynamic….This [Innerd and O'Gorman] archetype could, therefore serve several needs in our present efforts to reform teacher education. Chief among the benefits of such a model would be its versatility, its valuing of interpretative dialogic processes, and its linking of theory with practice. The open recursive nature of the design allows students to move through the process in a variety of ways at a wide variety of times. Such flexibility enables groupings, discussions, and leadership to work together much more effectively—particularly if the program is focusing on building depth of understanding, intensity of commitment, and habits of analysis and practice that are consistent with one another (Holloway and Longfield 1998, p. 26).

EXAMPLE OF PROTOCOL MATERIALS IN AN ORGANIZATIONAL THEORY CLASS

The same potential of protocol materials to help bridge the gap between theory and practice in teacher education also exists in the field of business education. This section describes the use of protocol materials in an Organizational Theory course. This description is linked to the protocol materials diagram shown above by an embedded reference to the relevant "box" from the Protocol Materials Process.

One of the theories I teach in my Organizational Theory course is that of single loop and double loop behavior in organizations (Argyris and Schon 1978). I provide to the students lecture notes and a copy of Argyris' (1977) classic *Harvard Business Review* article "Double loop learning in organizations." These become key components of the [INFORMATION BOX]. The lecture notes include a summary of the defining characteristics of single loop and double loop behavior as shown below:

Single Loop Characteristics

1. Thou shalt not confront the policies and objectives of top management.

2. Those doing so are labeled "troublemakers."

3. The upward flow of information is edited so as not to upset upper management.

4. Bad news is camouflaged using organizational games that everyone knows but no one discusses.

5. Decisions are based on subjective opinions, and when "facts" are used they tend to be selected in order to justify decisions that have been made on a more subjective basis.

6. There is a win/lose culture in the organization.

7. There is a gap between what single loop organizations espouse and what they actually do.

Double Loop Characteristics

1. Assumptions are openly surfaced and validated.

2. Employees are encourages to discover gaps between what the organization espouses and what it actually does.

3. Facts are used for decisions rather than subjective opinions.

4. There is a win/win culture in the organization.

Students have no trouble doing well on a test on these characteristics. In other words, by some standards, they "know the material." From the Protocol Materials Process standpoint, it is not clear that they "know" the concept until they can use the concepts to identify such characteristics in a real organization (via videos).

Real world organizations do not come with a sign in front of the building that says "Entering a Single (Double) Loop Organization." Individuals need to be able to decipher the culture in the context of real behavior. Unfortunately, at present there are few recordings readily available of actual behavior in business organizations. Some videos that purport to show actual meetings are instead scripted, and in the parlance of the Protocol Materials Process, would be called training materials rather than protocol

materials. (The difference between the two is that protocol materials ask the question, "What is going on here?" whereas the focus of training materials is, "Here is what to do.")

One piece of non-scripted protocol materials that I use in my Organizational Theory class is from the *In Search of Excellence* (1985) video. The entire tape contains vignettes of Disney, Apple, 3-M, and several other companies. I use the 3-M segment because it contains footage of an actual executive committee meeting in which a division head is making a pitch for a multi-million dollar scale-up allocation to expand production of laser disks. Here is how I use it:

1. I play the entire 3-M vignette in entirety. Then I tell the class I am going to play the laser disk segment again, and that I am going to ask them when it is finished whether they think the laser disk meeting exhibited single loop or double loop behavior. I then play the laser disk segment [PROTOCOL MATERIALS BOX]. After showing it, I ask for a show of hands regarding whether the segment exhibits single loop or double loop behavior [ANALYSIS BOX]. Typically about 80 % of the students say double loop behavior.

2. Then I encourage a debate between those who think the behavior shown on the tape is single loop and those who think it is double loop [DISCUSSION BOX]. As students argue their points of single loop vs. double loop, I refer them back to the lecture notes and article [INFORMATION BOX], and I replay any parts of the tape [PROTOCOL MATERIALS] that they might be arguing about. I again ask for a show of hands regarding whether the segment exhibits single loop or double loop behavior. Typically the percent saying it was double loop behavior decreased from the original 80% to about 30%.   I leave it at that, and say "Well, looks like we will not reach agreement on this."

This illustrates the iterative nonlinear process of using a combination of protocol materials, relevant cognitive inputs, and group discussion. My role is to remain neutral and facilitate the process of discovery. Note that this role is different than the typical instructor's role, i.e., telling the students "the answer." For example, I could have simply decreed that in my option it is single loop behavior. The problem with doing that is that students would not internalize it because they personally have not analyzed the situation. It is the in-depth analysis of protocol materials that sets the stage for a more advanced exercises in organizational design that comes later in the course.

I use protocol materials for a more sophisticated follow-up assignment several weeks after the initial exercise. After covering other topics related to the question of how to implant double loop behavior in organizations, I then return to the 3-M laser-disk project.   I form small groups, and replay the laser disk segment and say something like, "Regardless of whether you believe this represent single or double loop behavior, for this assignment assume 3-M is a single loop organization. How would the approval (or disapproval) of the laser disk project have been different if 3-M had been a double loop organization?"

The insights generated weeks earlier in the Protocol Materials Process sets the stage for creative ideas about how 3-M could change their structure and processes to become a double loop organization. Without the prior in-depth analysis using protocol materials, students would simply have only tinkered with the prior traditional executive decisionmaking process (because they believed it was double loop to begin with) rather than seeing the need for major changes from single loop to double loop.

In summary, the protocol materials were used to help students analyze a real world situation using concepts presented in a lecture and readings. The protocol materials were then used a second time in relation to the redesign of a real world decisionmaking process. This sets the stage for students to apply these analytical skills to real world situations they will encounter after graduation.

2010 AND BEYOND

The conditions for the successful development and use of protocol materials have improved significantly in the last three decades. In 1970, the protocol materials concept was there, but the technology to support its implementation wasn't.

In the early 1970's, the development of protocol materials was impaired by the difficulty of producing them. Locally produced protocol materials could only be made using relatively primitive ½ inch reel-to-reel video tapes, which were difficult to edit and difficult to use in the college classroom. Even with editing, finding a particular scene and replaying it for a class required patience because the counters on a reel-to-reel tape deck were not as accurate as they are on a modern VHS tape player.

Capturing sound was also a problem in the 1970's. Although teachers then could be equipped with wireless microphones, picking up sound from students as they responded to questions was a problem. All of this had to occur as unobtrusively as possible in elementary and high school classrooms because the whole objective of protocol materials is to capture the real world.

Things have changed in terms of video and audio recording capabilities. There has been an enormous improvement in video recoding technology in the past 35 years. Technology currently exists that allows the production and editing of locally produced protocol materials feasible by any college of business. For example, there is quite a variety of options available for small unobtrusive cameras that record on DVD's or hard drives in the camera. Several well known companies offer small one-pound camcorders that operate in low light and can record in digital format over 7 hours non-stop with images that can be easily downloaded for editing. The $1,000 price tag can be expected to decrease, and the capabilities increase, in the future.

There are a number of new options for capturing sound. Wireless collar microphones are very unobtrusive. New shotgun mikes are ideal for picking up conversations from across a room. Audio technology can also be expected to improve in the future, such as new Bluetooth-based wireless microphones. Keep in mind protocol materials won't be shown at the Sundance Film Festival, so the video and audio need not be professional quality, but merely adequate for viewing in a college classroom.

The potential applications of protocol materials to business education are substantial. Here are a few examples of the type of protocol materials that could be produced by a business college for its own use:

- **Sales Management Course (Unit on supervision):** Recording of a meeting of a District Sales Manager with his or her sales representatives at a local restaurant.

- **Operations Management Course (Unit on linear programming):** Recording of a refinery scheduling meeting at the local refinery.

- **Personal Selling Course (Unit on the use of effective questioning techniques):** Recording of a sales representative making a sales call.

- **Financial Management Course (Unit on treasury operations):** Recording of a lunch meeting of a corporate treasurer with his or her bank during which the bank makes a presentation of a new cash management system.

These are just a few examples of the kinds of things that could be recorded in the real world and brought into the classroom, each of which would help reduce the gap between theory and practice. If, for example, most of the classes in a business school used protocol materials, students would have a significantly enhanced understanding of the real world of business by the time they graduated.

The nature and extent of potential recordings is unlimited. And editing technology, which is getting more sophisticated every day, permits the rapid editing, storage and use of recordings of the real world.

Although protocol materials can be developed and used now, the potential for 2010 and beyond is even more significant because of expected technological advances.

CONCLUSION

For our pre-literate ancestors, there was no gap between theory and practice. Learning and doing were intertwined. During the last several thousand years, as formal educational processes emerged, theory became disconnect from practice. Theory is something we learn "at school." Practice is something we do "at work."

Looking ahead to 2010 and beyond, we will have the ability, through protocol materials and other technology, to increasingly bring the workplace into the classroom, and bring the classroom into the workplace. The many online business and management courses being taken by working students is just a small initial step toward bringing the classroom into the business world.   Bringing the real world of business into the classroom via the use of protocol materials is possible now, and will be even more feasible in the near future. At some point after 2010, we will progress to an era in which learning and doing are once again closely intertwined, and the gaps between theory and practice, and practice and theory, are greatly reduced and perhaps someday totally eliminated.

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