

CASE STUDY 3
EXPERIENCING A EUREKA! MOMENT



Case Characteristics

Table 6: Characteristics of the subject matter expert

Gender	Rank	Reason	Time	Availability	No. of sessions	K/ Design	K/ DE	GO/ SO
F	AST	0	2	1	7	1	1	3

Gender: female

Rank: AST = assistant

Reason: 0 = organisational

Time-to-delivery: 2 = beginning in between
2 to 4 months

Availability: 1 = minimally available (1-15 hrs)

Number of sessions = 7

Knowledge of Design 1 = low level

Knowledge of DE: 1 = has never offered
distance courses

General Obj. /Specific Obj.:

3 = GOs + a limited number of SOs

Case 3 was not a lot different from Case 2. We had just a little more time to design this professor's course. However, this faculty member appeared to be just a bit less knowledgeable about instructional design and distance education than the previous one. Before our first meeting, I had asked the professor, as usual, to send me a copy of her current syllabus and I also invited her to go to my website to view both presentations on the congruency principle and the design model we'd be using. To save time, I obtained copies of the other course syllabi in her program from the Dean's office.

Session 1: This professor had never before seen the other syllabi comprising the program in which she taught. Being a relatively new member of the faculty, she had not taken part in the development of the program. As we looked at these syllabi together, we noticed that the objectives pursued, where they were explicit (certain courses contained only a few general objectives), aimed generally at the development of different competencies than those at which she was aiming at in her course. However, considering the wide variety of models used to design these syllabi and the variable level of detail in their presentation, I realized that the degree of certainty as to potential overlap of the objectives pursued in these courses was necessarily rather low.

We continued on, carefully examining her course syllabus. As in the other cases, I noticed that her plan had been designed according to the

usual university model, with the main course components listed one after the other, all in a vertical pattern. Again, I noticed a general lack of congruency between the various parts of the syllabus and saw how arranging them on a grid would allow for a closer degree of correspondence between the objectives, the course contents, the individual and team exercises and, finally, the assessment instruments. I therefore presented the synthesis grid that I had just built for Case 2. She said she was interested in using it to convert her current syllabus but that she more immediate concerns which prevented her from doing so. We decided to discuss them first.

As she talks, my mind is elsewhere. The synthesis grid I had devised to support work in Case 2 could be reorganized to take into account further requirements which professors have vis-à-vis their students. In the synthesis grid, I had posited that the main functions of faculty, as per congruency (Power, 1996; see Appendix 1), were central in course planning. I am now realizing more and more that I have simply been perpetuating a faculty-centered course design perspective, whereas constructivist literature in instructional design (such as Jonassen, Peck & Wilson, 1999; Wilson, 1996) emphasizes the necessity of learner-centered course planning. I'm feeling that my haranguing faculty on the usefulness of writing objectives is a hen who has finally come home to roost in that I myself now have to apply the same logic to the way I approach course design.

As a result, I decide I can keep the grid idea but I have to completely re-conceptualize the synthesis grid (I never did like that name!) components. So I mentally remove the overly complicated Teaching Activities Development, Learner Support Activities Development and Evaluation Instruments Development as well as the Items for Ongoing Improvement categories (see Table 5) and I replace them, in my mind, with three columns: individual activities, team activities and plenary session activities. Any instructional activity has to be done either alone or with others, hence the first two activities, and since we are currently using videoconferencing as the main means of course delivery, planning has to be done for the time spent in class, hence the plenary session column. Each activity will require clearly-presented guidelines and identification of available resources, criteria to be met and points to be allocated.

Having done so, I see that this is probably as close as I'm ever going to get to a Eureka! moment. It doesn't look like a breakthrough but it does have that feel. What I'm thinking is that, for once, students will have a grid in which everything of interest is there for them to see, at a glance. Moreover, each and every component is logically linked. This, in turn, leads me to think that perhaps a solution has been found to the perennial problem of the vertical course syllabus model in the sense that, in almost every course syllabus I have ever seen, objectives (if there are any) are found in a nice, tidy list somewhere towards the top of the syllabus but there they stay, unconnected to either course content or course assessment instruments. By linking all of these components on the horizontal plane, faculty can plan their course according to their intentions (objectives), linking these to the resources (readings) they put at their students disposal. Again, linking the resources to the actual activities they expect students to undertake, either individually or as part of a team, allows students to quickly understand what is expected of them, as well as when and how. In a matter of minutes, I feel I have arrived at something that will greatly change the focus of my course design pattern for some time to come.

Coming back to reality, I hear the professor telling me about her immediate concerns, to which I now turn my full attention.

Her major problem concerned course delivery, i.e. the planned weekly videoconferences. She was worried about how to conduct these sessions, about the difference between teaching in-class and at a distance and she wondered if her pedagogy was going to suffer as a result of it. I explained to her that there were no fundamental differences between the two modes of course delivery because videoconferencing was really just the technological extension of what she was already doing in class. That said, I decided I should nuance my answer somewhat, so I added that there was, of course, the “distance factor”—transactional distance (Moore, 1993) does exist—and that the use of media in distance education can indeed affect pedagogy. However, the actual impact of such could vary from one professor to the next and from one class to the next. As this was her first time teaching via videoconferencing, she was naturally preoccupied with the technological dimension. I recommended that she get in touch immediately with the Continuing Education technical service so that

she could get some practice using the V/C equipment, so as to feel more comfortable with it before beginning to teach in this environment.

We returned to her syllabus and I immediately went back into reflective mode on the synthesis grid idea.

My mind returns to the grid and the newly-emerged categories. I see that I have probably come to re-conceptualize the grid because of the severe constraints under which I have been working with faculty since Case 1. Lacking time, faculty availability, technical support, and so on, I have been frantically been searching for a solution, a short-cut in effect, something that would allow me to focus on design essentials, nothing more. I see that learning activities are the key...which brings to mind what Janovy (2003) said in Lessons from Cedar Point: "course design consists primarily of the activities you ask your students to perform" (p. 67). That was it. The penny had dropped. So I get out some paper and redesign the grid on the spot (see Table 7).

Table 7: Version 2 of the synthesis grid

Week	Objectives	Content or Themes	Individual Activities	Team Activities	Plenary Session Activities

Using this new grid, we started assessing the work required to convert her current plan into a new one. Because this course had a strong theoretical component, its primary didactic resource was readings from various sources. She had already distributed these texts throughout the course but there was no weekly division. As I explained this new grid to her, I also explained the usefulness of dividing her course into weeks of study (rather than units of study), to give her students a better idea of what was expected from them and when.

There is no universal standard for the length of any given course and many possible variations—a "regular" course can last from 12 to 15 weeks but, during the summer, it necessarily has a shortened schedule. This variance creates a supplementary difficulty when designing an online, media-rich course because they require a fixed schedule considering the planning

required because of the use of technology and also the quantity of work demanded (generally greater than in “regular” courses). For the moment, because we are using V/C to replace on-campus classes, increased workload is not yet a problem, but I can see it looming. The administration is trying to get more and more faculty to develop full online courses to be delivered asynchronously to self-pacing students.

After a temporary weekly distribution of her texts for the term, we started discussing learning activities. I told her about the *individual activities* and *team activities* concepts and I explained the usefulness of writing such for each week of class. She already had a number of exercises and assignments in her original syllabus. We therefore began reconstructing her syllabus using the new grid, switching over exercises and assignments, identifying which would best be completed individually and which as a team. This session ended with our having partially completed the grid.

Session 2: At the very beginning of this session, the professor asked me to explain what modes of assessment I thought was best in her newly-redesigned course. By mode of assessment she meant:

- The *way* in which the assessment will be conducted, such as in either real-time (or synchronous) mode or in deferred (or asynchronous) mode, and
- The *formula* according to which assessment will be conducted, i.e. the form of the different assessment instruments.

To begin, she explained how she assessed students when her course is offered on campus. She usually gives a mid-term, development question-based exam, sometimes called a *complex production* (Scallon, 1993) in class. She also had a final, take-home exam. Moreover, she added oral presentations to the assessment mix, done by two-person teams. I explained that it was possible to evaluate her recently-enrolled distance education students using the same assessment instruments she used on campus, with only a few minor modifications.

Mid-term: students who attend her course at a distance could write her usual mid-term exam either in a room with a supervisor (by proxy,

an established practice at this university), or via videoconferencing, where the professor herself would supervise, keeping a watchful eye on her remote classroom.

Final: instead of handing in a hard copy of their final exam, students could simply send her it by email, as an attachment. There are student-accessible computer laboratories on all three satellite campuses. Furthermore, everywhere in the province, students have access to community-based, Internet access centres (such as at libraries, etc.);

Oral presentations: she could continue to mark oral presentations presented by teams via videoconferencing.

In addition to the real-time assessment methods of videoconferencing and email, I told her about the university's new automated or semi-automated evaluation tools in the new Learning Management System (LMS). These tools, implemented in asynchronous mode, allowed teaching personnel (professors, sessionals or adjunct faculty) to post their contents in a password-protected environment. They required about 12 hours of training to learn how to use. I also spoke to her about automated evaluation tools in synchronous mode that the team and I had been investigating, various software and online systems that allow for real-time, two-way dialogue with full sharing-screen, etc. She said she was interested in discovering how useful these types of course delivery systems would be for her as soon as she has more time.

We continued with a discussion of the objectives and content of the weekly plenary sessions. Instead of asking her students to do readings and activities before class, she intended to conduct a weekly, open-style lecture on a given theme with a continuous and spontaneous flow of questions and answers. Then she would ask her students to complete a team exercise followed by an individual exercise, to be completed after class. The activities sequence she envisaged seemed, at first, to be the opposite of the approach practiced by most of the other professors I had encountered to date in that they required their students to prepare before coming to class. I figured I had to ask her whether or not she provided feedback to her students on work accomplished after class. She answered in the affirmative, indicating that that was the first thing she did every

week. Consequently, to accommodate what she felt was “her pedagogy,” we made the required changes in the columns of the synthesis grid (see Table 8). In actual fact, what was accomplished after class was, of course, done before the next class so we were talking about the same thing.

Table 8: Version 2B of the synthesis grid

Week	Objectives	Content or Themes	Plenary Session Activities	Team Activities	Individual Activities

Using a reworked version of the synthesis grid, we began transferring components from her old syllabus to her new one, dividing the course contents into weeks of activities. Since she had not identified objectives for every week, we also identified a general objective and several specific objectives for each one. The professor didn’t seem to be enthralled by this work but she did agree to do it for the first three weeks of her course.

Once again, that the designer is in a vulnerable position while undertaking this work as long as faculty question the very foundations of instructional design. If designers have to justify their methodology every time they start designing a course, the work will not advance very quickly. There seems to be a fundamental lack of confidence in the process of designing a course among faculty who doubt the usefulness of the exercise. How does a designer establish a climate of confidence? How can one persuade professors that instructional design is a domain of inquiry which is just as serious as their own fields? Decades of research have clearly demonstrated the relevance and the importance of a systematic method for designing instruction, the foundations of instructional design, which include identifying learning objectives. The lack of recognition of the instructional design profession by faculty members seriously delays the design of their course. Why can’t they trust the ISD process? Is the field so little known and respected that instructional designers and researchers have to constantly justify themselves when working with other disciplines?

On the other hand, as mentioned earlier, Reiser (2001), made a point of saying that ISD has had little impact on higher education. It does ring true (from what I’ve seen)...for instance, although ISD is taught at university,

it is rarely applied there...so why is that? Is there something about ISD that makes it incompatible with higher learning? Is it too basic a methodology – a process emerging primarily to respond to military and industrial exigencies in order to meet baseline training requirements – so, is it too basic to encompass the complexity of training highly qualified personnel (i.e. at the university level)?

Our conversation now returned to the issue of objectives with regard to assessment activities. We discussed two types of assessment, formative and summative. The professor said she was confused because, although she wanted to ensure proper supervision of her students, she did not want to spend all of her time correcting their work. We discussed finding a happy medium and developing instruments that could either be manually or automatically corrected. Basically, this gave me another chance to “sell” the need for objectives-writing because assessment items could only be developed for written objectives. “What other basis could there be for assessment?” I asked her. Given our limited selection of objectives, we managed to distinguish between what was most important to her in terms of learning outcomes and what was secondary. Finally, she told me that she wanted each of her students to process each of the case studies presented to them in the hope that they would be able to apply that knowledge in their work. So we returned to the objectives we had set for the first three weeks to begin work on developing the rest (GOs and some SOs) for subsequent weeks. After making some headway, we reviewed her learning activities in order to reflect the weight (in terms of points) attributed to each case study.

Session 3: We continued our work on student assessment. We had not yet defined what shape team activity assessments were going to take. The professor said she was against the principle of assessing teamwork because, in her experience, team members never provided the same level of effort in completing tasks. She preferred to encourage personal initiative rather than offering a “free ride to slackers.” On the other hand, I emphasized that teamwork was in itself an excellent means of promoting certain types of learning, whether it was marked or not. I mentioned several constructivist-inspired studies (i.e. work by Bruner and Jonassen¹) which shed light on the importance of negotiating meaning

among learners which, in turn, facilitates knowledge accommodation and assimilation (Piaget, 1972). Without dialogue, without one's ideas confronting those of others, experience would be lessened.

We concluded by deciding to integrate teamwork as a preliminary requirement to individual work. It would be strongly suggested that students work in teams of two before completing individual activities. Oral presentations would henceforth be individual but that did not exclude preparation being conducted in teams. Because the professor felt she was unable to supervise the full participation of all students during their teamwork, she decided to assess them individually. She added that she aimed at monitoring individual student progress because, once out in the workforce, they would normally be called upon to work without the support of others, making decisions on their own and then assuming the consequences. For these reasons, she considered that her approach was justified.

Afterwards, we got into the details about the kind of professional tasks her students would have to carry out once they had graduated, to make sure that the different parts of her course effectively addressed the skill requirements. She explained that students, once in the field, would mostly be in "reaction mode," i.e. problem-solving. Hence, they would have to develop a strong capacity for resourcefulness. This exchange prompted me to speak to her about the heuristic approach based on algorithmic thinking. She didn't seem to understand just what that involved but she did demonstrate immediate resistance to the idea. "No, we don't do that," followed by "ahh, what is it exactly?" So I summarized some of the research in this field, e.g., Landa (1974) and applications of it by Zemke (1982). I explained how the approach was used in many fields, such as nursing, engineering, and computer science. Because her students would have to solve problems on an ongoing basis, the algorithmic approach might very well help them better understand the mental processes involved and which are activated when encountering a new problem. By first articulating their thoughts on to a given problem and then attempting to represent it visually in algorithmic format, they might experience improved levels of problem identification and problem-solving strategy sharing. We continued discussing this approach and, as we did, I started sketching out various schematics using simple cases to

demonstrate how an algorithm constitutes a form of cognitive mapping (another concept I had to explain on-the-fly).

The example which seems to tilt the balance in favour of her using this approach is the one that I often use, that of an automobile mechanic who is training to become an automobile mechanics teacher. Having numerous years of experience as a mechanic, he is skilled in diagnosing problems and solving them. On the other hand, what he needs to develop is the skill of putting his diagnostic skills into words according to a logical sequence, thereby leveraging his honed skills of deduction and induction. For example, imagine the mechanic is faced with an engine problem. Now, according to the experts, most engine problems result from faulty electrical or mechanical components or a lack of fuel or air. The mechanic starts up the car and he immediately discovers a mechanical-sounding noise emanating from the starter. When hearing this, he immediately hypothesizes an electrical problem, thereby excluding a gas- or air-related problem. He knows, almost at once, that this is likely an electrical problem because of the sound the starter has made, it being an electrically-powered mechanical device connected to the battery. This simple example demonstrates that the mechanic, when confronted with a problem, has several hypothetical scenarios in mind, any one of which may turn out to be the problem, until he can exclude them one by one by testing. He is obviously going to lean towards one heuristic track rather than any other based on his intuitive, experience-based assessment of probable cause. It is this type of heuristics which he has to learn to put into words, ideally to model, and to present and represent to his students. This is the very foundation of competency and his ability to present it to students constitutes the quality of his mental models which, in turn, he may use to enable students to forge their own.

The more we spoke about this approach, the more the professor became interested in it as an instructional strategy. She recognized that she had actually used algorithms in her teaching (without knowing, before this discussion, what they were called) which helped her students understand the mental progresses they would have to implement in solving the problems they would likely encounter. We schematized examples from her field on-the-spot. In visualizing the various ramifications inherent in

her algorithms, she said she was convinced of the interest in developing her students' competency in applying this skill during her course.

Session 4: As time was getting short, the professor wanted us to focus on a number of decisions she had to make for her course. For example, she asked me what needed to be designed for her course. She saw a lot of work before her and not a lot of time to do it. I told her about various levels of course design, referring to Boettcher & Conrad's continuum (2004), i.e. *Web-supported courses* (i.e. low-level design), *Web-centered courses* (i.e. medium-level design) and *Web courses* (i.e. high-level design). I explained to her that most of the professors I worked with had neither the time nor enough didactic resources to create complete Web courses. Consequently, their courses were more often than not simply Web-supported courses in the sense that they used the Web to post a variety of documents intended for student access. She explained to me that, while some of the readings she intended to use were already available on the Web, others would require taking into account copyright restrictions before posting. Moreover, she informed me that she had personal notes, guidelines, exercises, case studies, etc. which she wanted to post on her site. After this discussion, we did an inventory of her existing didactic resources, identifying what was missing and we set a calendar for producing the latter resources.

Following this discussion, we moved on to the readings she intended to post for her students and the usefulness of adding reading assignments for them. She said that she wanted her students to be able to draft their own reading reports without her having to supply an assignment, yet she knew that, by not providing one, they would likely spend precious time trying to figure out what to write and how to write it, time she felt could be better spent in their reading and "digesting" the course contents. To resolve the dilemma, we returned to the course objectives. Indeed, the objectives we had set aimed at their assimilating and applying the concepts presented rather than their simply analyzing the contents of the readings. The professor wanted students to be able to develop their own intervention strategy based on the principles discussed in the readings. The result was the realization that we should, if time allowed, provide students with some type of reading assignment to focus their attention on specific aspects of the content.

I believe that the design process has finally been proven successful because the professor seems to recognize the importance of developing course contents and learning activities based on set objectives. However, the objectives we set were far from being as developed as the three-component, performance-based objectives as prescribed by Mager (1997).² It appears unlikely that any professor would agree to take the time required to provide that level of detail. The most that I have managed to do is have them draft their general intentions and then provide a few details on specific objectives. Indeed, there is always resistance on their part to identifying objectives, even once they have identified their contents or subjects. However, a basic principle of instructional design requires the identification of objectives before any discussion of content (i.e. the means required to meet the objectives). Sometimes, I'm under the impression that ISD is almost an article of faith.

The subject of using videoconferencing to teach resurfaced because she found the idea particularly irritating. She told me she was in the habit of interacting frequently with her students, of “reading” their faces, and she feared that videoconferencing might interfere with her pedagogy. She expressed her uncertainties as well as her anger at a situation over which she had little control. (The university had negotiated an agreement to offer her course at a distance because before she had been hired.) I tried to encourage her by saying that, although V/C may indeed impose some limits on her pedagogical relationship with her students, there were certain advantages in using it, such as the possibility of reaching students located all over the province who would otherwise not be able to take her course. Moreover, given the fact that distance delivery would allow practicing professionals to attend her course, the depth of understanding which they would bring to debates and exchanges would most likely raise the level of dialogue in the classroom. These arguments seemed to carry the day.

The next subject to require our attention was how work was to be assigned to her students. She asked me what other faculty members were doing in their classes. I told her about different strategies implemented in higher education. In my view, there were four main strategies (see Figure 1). I used a schematic drawing to explain that some professors start their classes by requiring a considerable effort on the part of their students and then reduce the workload as the term unfolds (model A).

Other professors begin slowly, reach the maximum level of their course requirements by mid-term, then the workload tapers off (model B). Still others promote a more gradual approach, reserving the greatest workload for the latter part of the course (model C). Finally, some require about the same amount of work from students throughout the term (model D).

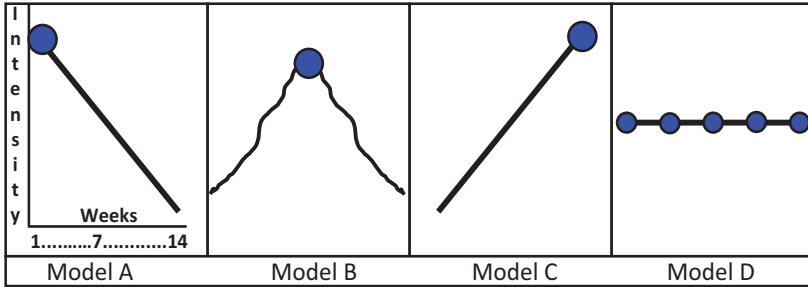


Figure 1: Diverse strategies for designing student workload

She considered that her expectations best fit model C, because she required her students to take a major test at the end of the course. We returned to her syllabus to ensure that this choice was reflected in her course activities and requirements between weeks 5 to 10. Having made these changes, we continued identifying objectives for these same weeks.

Session 5: Because the professor still felt ill at ease with the idea of videoconferencing, we began by continuing our conversation on what the medium would allow her to do and what it wouldn't. She was still not sure of how much time the Continuing Education department (CED), in charge of logistics, would give her and she was afraid of having to shorten class time because of the cost of using the V/C system. We decided that we needed more information from the CED to be sure that she could have as much videoconferencing time as she had when the course was offered on campus.

Now we broached the topic of “contact time” between professors and students (as one wag called it, “bums in seats”) in a distance education context. We discussed instructional strategies vis-à-vis student needs in terms of real-time support, as in the model I presented to her during our first session.

Of course, as we all know, the “teaching” component of a lot of courses is often one-way oral transmission on the part of faculty, i.e. lecturing. However, in a distance education setting, a variety of documents, didactic resources and/or audio, video recordings provided to the students usually replace lectures. However, as we have seen, the problem faculty face in dual-mode universities is that there is rarely sufficient time or resources to develop quality mediatised resources. As a result, there is no clear distinction between teaching resources and learner support activities as there is in distance education courses developed by single-mode universities (such as TELUQ or Open). Hence, dual-mode university faculty tend to try to teach and provide learner support simultaneously (very much as they would on campus), using whatever two-way technology their institution has adopted that is available to them.

In this faculty member’s case in particular, considering that her course was to start almost immediately and that there wasn’t enough time to fully mediatise her course (as recommended by the design model I was using), we had to adopt a “design-light” approach, that is, something more like a traditional, on-campus course than a DE/Web course. Afterwards, once the course started, it might be possible to gradually mediatise it and to provide an increasing number of teaching resources online (such as recordings of her lecturing) while preserving real-time contact. In any case, this time, she would have to teach her course while providing learner support as she was used to doing in class. Doing so was possible with videoconferencing, but it was a departure from the classical DE model, a model which seemed increasingly inapplicable in the dual-mode university setting.

Since beginning work with this professor, I’ve not been able to establish a logical and orderly course design process and I haven’t managed to apply the prescribed design model. Consequently, we seem to have entered an iterative cycle where nothing seems to get resolved and where the same elements, only partially treated, keep reappearing. I realize that it’s because we have so little time to work together. It’s like some odd “touch’n go” cycle. We start one thing and then, before we know it, we’re off doing something else, only to have to go back to where we were. Panic seems to be gripping our small design team of two because time grows short and

the course design requirements loom hugely unmet. The resulting pressure compels us to take shortcuts which eventually become a long and winding road, seemingly leading nowhere.

We then arrived at the topic of plenary sessions and how to organize them. The professor firmly intended to make certain her students did the required readings before coming to class. To make sure they did so, she planned to moderate weekly discussions during which she would ask students questions at random, in the hope of pressuring them to prepare themselves before coming to class. Afterwards, she would move on to the weekly case study which, in actual fact, was the same ongoing case study but simply another episode in the life of a fictitious professional experiencing a variety of problem-laden circumstances. I moved the conversation toward the degree of congruency which should exist between the way these sessions would be conducted and the overall course objectives. However, since we had not fully identified the specific objectives for the course, we had to return to the syllabus and together started drafting these for the plenary sessions. I emphasized that during these sessions she should aim at enabling her students to meet the highest-level objectives (i.e. the most difficult to attain in Bloom's taxonomy) whereas during the individual activities and the team activities, lower levels of cognition would likely be achieved. To make these sessions operational, we reorganized her syllabus by adding separate compartments for every objective. In this way, we could see exactly which objective would be met and when (i.e. during which activity).

The results of this session seems critical to the development of the model. Thus far, we have been unable to see the link between learning objectives and learning activities. Now, we are able to anticipate the required linkage and thereby develop the necessary resources. The syllabus grid is evolving into a planning tool, a natural outcome of the design model process. In fact, I see that a progression of sorts is occurring: where the model of course planning most widespread on campus is clearly faculty-centered, the model I have been promoting can best be described as design-centred. Now, as we move closer to student needs, a student-centred design model is emerging because it identifies the objectives to be reached, the activities necessary

for their accomplishment as well as the resources that are made available to students. I think we are on more solid footing.

Session 6: We had now arrived at the point where continued identifying the objectives for the remaining weeks of the course. This was done with relative ease, considering the amount of work which had already been carried out. We were both keenly aware that these objectives would still have to be improved, i.e. to better represent the professor's real expectations with regard to her students, but we were satisfied with what we had accomplished.

With regard to the required linkage between current learning objectives and prior learning requirements, I explained the prerequisites testing (PT) concept to her, i.e. how the use of such a tool would allow her to determine out how well prepared her students were to take her course, before even starting it.

This is a design practice well anchored in corporate training, where every hour spent in training translates into bottom-line lost earnings, but there is rarely any implementation of such in higher education, simply because of the time and effort that would be required. Moreover, in higher education, students enrolled in programs of study may not need this since they always have to be eligible to enter a program and often have to take preparatory courses, two elements which diminish the need for front-end testing.

She assured me that she always asked students questions at the beginning of her course to get to know them better and to get a feeling for their previous acquisitions. However, this was never done systematically. I explained to her how useful such tests are for students because PT identifies gaps in their instruction, thereby allowing professors to introduce them to palliative resources. We also discussed the Pre-test concept, the results of which indicate where students are situated on a continuum with regard to mastery of the objectives of the upcoming course. For instance, if some of her students have already mastered some of her course objectives, they could be given credit for such or be asked to contribute their time in helping their peers with those topics.

Now, we got to the subject that inevitably appeared once we had set up the basic structure of a course: the most difficult parts, the grey zones,

or even the black holes (as I liked to call them). These were the parts of her course that gave a lot of students difficulty and produced the lowest test scores. We identified concepts arising from the most complicated theories seen in class that inevitably wreaked havoc among her students. We discussed various teaching strategies which might improve student understanding, such as using a visualization technique to simplify these abstract concepts.

Visualization is a highly specialized sub-domain of design which has numerous applications in fields as varied as physics, administration and physical education. However, extreme care must be taken when using visual representations of complex phenomena since there is, on the one hand, a danger of over-simplification. On the other hand, there is an advantage to be had through the judicious use of metaphor or analogy to help students grasp and retain various levels of complexity.

I'm starting to see I need to develop a tutorial on using analogies and metaphors for educational purposes. I'll have to look at various educational software (such as Inspiration) to see what I can put together. I notice that, in a lot of courses, professors tend to rely overly on text to insure student learning. Some faculty naturally draw diagrams on the board in class but these drawings, quite useful in promoting student understanding, disappear with one wipe of the brush. According to Hodkins (2000); Mayer & Massa (2003); Prensky (2004); Reiber (1994) and www.visual-learners.com, visual learners, who are the natural products of a video game era, are increasingly populating our classes. To respond to them adequately, we need to supply the visual cues they need to process concepts. Such visual cues are as necessary to them as auditory cues were to an earlier generation.

We started work on a very complex and abstract concept which was recurrent in her course and, as she explained it to me, I started doodling. Together, we fielded a variety of metaphors and analogies to try to find the one which best represented the professor's mental model. We both agreed that there were obvious limits to using a diagram and that it would be, at best, simply one expression among many which might be used to determine some of the parameters of any given concept. That said, it still represented, to a degree, the main aspects of the professor's current mental model. We then agreed that this graphically-represented

concept (or graphic representation, or GR) we had developed should be presented with caution to students by first identifying its limits and by then emphasizing that it was but one representation of the concept in question. Nevertheless, the professor seemed to have gotten a lot out of this exercise and she said she was interested in developing others. We decided to put this GR into the hands of the technical support team so that they could professionally mediatise it, either in 2D or in 3D, animated or not.

As a person with a keen visual sense, I feel perfectly capable of developing such GRs and quite comfortable in doing so. This exercise seems to be crucial to the design of her course. I make a mental note to try to insert GR development as a permanent activity in the design process because it seems to allow professors to release themselves from their prejudices, to handle concepts freely and even to question them. I vaguely recall a saying of Plato to the effect that, to develop a concept, you must first start with a mental picture of that concept. However, it should be recognized that this can often be a destabilizing exercise for professors. But, after all is said and done, it is usually quite well received, a difficult but satisfying exercise. According to anecdotal student reactions to GRs, they seem to think it is one of the best didactic tools to have in a course.

While still working on the most difficult parts of her course, we discussed her ongoing case study, appearing in weekly episodes throughout the course. In her mind, it was geared to developing specific skills. So I asked her about the situations in each episode to ascertain to what extent each was based on real life.

I'm asking her this because I have doubts about how useful her ongoing case study will be in developing the skills she feels her students must develop. I feel I have to make sure that the professor, when drafting her scenarios, has not fallen into the domain of pure fiction.

I'm skating on thin ice and I know it. For an ID, this kind of manoeuvre is always delicate. As soon as the designer ventures into the domain (or should I say the den) of the professor, the barricades go up, dialogue becomes difficult and frustration is evident (on the part of the professor). This seems to be due to an impression, in the mind of the professor, that

the ID has doubts about his/her competency as a subject matter expert. As an ID, I'm not aiming to do that but I feel that I have the duty to make sure that what is being presented to students is actually based on knowledge and not impressions. Consequently, by testing the quality of the information, the ID runs a risk of being accused of trying to wrest control of the design process from the professor, rather than doing what he or she has been paid to do: counsel the professor and design whatever the professor decides he/she wants designed. This, of course, reminds me of how rare the professor-ID tandem is in traditional universities where there are so few IDs compared to the number of professors. As a result, most professors have difficulty understanding the role and responsibilities of the ID, whose discipline is virtually unknown.

This session ended with a bit of stand-off. We both stuck to our guns and decided it was time to break for the day.

I'm thinking: "I must be nuts!" risking seeing the professor drop everything there and then after what may only amount, at best, to a Pyrrhic victory on my part. But this episode leaves me deeply troubled about the extent to which an ID must assume responsibility for his/her work. At what point does the professor's work become the ID's work? Is there a solid membrane separating the two... it doesn't feel that thick...

Session 7: At the request of the professor, we started discussing oral exams that her students have to take towards the end of the course. It became clear that, given the large number of students and the lack of time in class, she was going to have students team up for these presentations. Yet she maintained that every presentation would be individually marked, even though students would jointly present a single subject. They would have to divide it in two parts and each would take an equal part. A question loomed: how were we going to get students to divide up their presentations? She explained that she expected each team would present one theory from a list of theories that were all connected to her domain. I proposed she adopt a classic approach whereby one student would present the theoretical aspect and, the other student, the application of the theory with examples. She immediately opted for this approach and we started to establish a presentation calendar according to the amount

of time available in class. The length of time assigned to each student was necessarily going to vary according to the number of students enrolled in the course. Using figures from earlier class enrolments (averages), we quickly put together a provisional schedule.

The professor then asked me to look at the objectives she had drafted between sessions to make sure that they expressed her true expectations. I noticed that she had several difficulties.

1. She used verbs such as “discuss, get acquainted, familiarize yourself with,” when she should have chosen verbs indicating observable, measurable behaviours, as prescribed by Mager (1997).
2. She tended to describe what she does and drafted her objectives from her own point of view rather than identifying what she wanted her students to achieve and writing course objectives from their point of view.
3. She didn’t distinguish between general objectives and specific objectives.
4. She had difficulty distinguishing between specific objectives and exam items.

As time was shorter than ever (her course was starting next week), we decided to return to the subject of student presentations. During the last working session, she had told me that she intended, during the first weeks of the course, to present the main theories of her domain. Then, she intended to ask her students to choose a theory from those that remained and present it. She justified doing this by saying that she wanted to be absolutely sure that they understood the fundamental theories in her field. As for the secondary theories, she said “they are less important.”

Since Dewey, we know that when students are active participants in their own learning they have a better rate of acquisition (or of accommodation and assimilation according to Piaget, 1951, 1972) and that they demonstrate a higher level of competency (Gagné, 1985). I’m wondering why she thinks they will understand the theories she presents in lectures better than the theories they present after research and planning their own presentations...

In this regard, I asked if she thought her students would be more likely to master the main theories she would be presenting or the secondary theories they themselves would be presenting. We discussed the instructional consequences of this choice while examining other possible strategies. She agreed with me on two points:

- a) The main theories were of the greatest importance in her course.
- b) The students would likely have to master the theories they had been assigned in order to be present them adequately.

Beyond that, our ways parted when she insisted that, because she was responsible for the course, she must ensure that her students understood the fundamental theories. Consequently, she believed that it would be unprofessional to delegate this duty to her students. She said: "I am the most competent person to present these theories to them." This turned out to be a learning moment for me.

The slightest insecurity on the professors' part can quickly degenerate into frustration and into a decline in enthusiasm for the design work which must be done. Most of the professors with whom I am working have never worked with an ID. Moreover, they rarely discuss pedagogy with their colleagues. As a result, when they begin the design process for the first time, some of them feel judged, reprimanded, depreciated (likely given the fact that they have no formal training in education, let alone design) and even threatened because of the instructional choices they espouse. The ID has to traverse these moments as a land mine removal expert would move about a minefield.

We returned to the question of presentations and I suggested a slightly less professor-led and more student participatory approach. She said she was perfectly all right with that. So we got to work on developing a scenario for one of the theories she would be presenting. We put some slides together with GRs illustrating various aspects of a given theory, adding questions here and there and inserting at times on-the-spot exercises for individuals or teams. The result was a presentation model which activated learning among students, required continuous class

participation and highlighted concrete examples solicited from the participants. The situation had been defused. We even started having fun!

The very last subject we tackled was attitudes acquisition. She explained how her course aimed at helping students develop more than just theoretical knowledge, that is, it also had to help them develop a professional attitude. I relayed Gagné's (1985) position that attitudes are much harder to develop and take much more time to acquire than verbal information and intellectual skills.

Although her course is based on different theories which are supposed to have a direct application in her field, I wonder about how appropriate and to what extent they can be applied by her students. According to Gagné (1985), the acquisition of an attitude is only visible when one examines choices made by a person. I wonder how she will be able to examine choices made by her students since they will occur long after her course is over.

According to the professor, no one theory was superior to any of the others. They all explained phenomena but from different points of view. As in any domain, certain theories applied in some circumstances better than they did in others. I asked her if she had ever wondered whether her students acquired said attitudes during her course or if they already had them before coming to class. We discussed this a bit and we arrived at the conclusion that it would probably be better if we drafted a series of objectives which dealt specifically with such things as scientific neutrality and unbiased application criteria.

This was the end of what had been, at times, a harrowing experience. There had been strife, tension and misunderstanding but we had achieved something: this course was a go.

Ex Post Facto Interview

On writing objectives: "How to write objectives, that was important learning. Everything got so much clearer; I've always written objectives but it's never been so clear!"

On developing team activities: "I have my students work in teams of two to better understand the material; work by twos allows students

to confront and criticize one another's work...something that doesn't happen in class."

On developing an instructional strategy: "I see it happening in three stages; prior readings (chapter X), sharing (I ask them questions) and then students present chapter X et cetera. I supply them a[weekly] quiz to facilitate their understanding of the material."

On experiential learning and applying the weekly assignments concept: "Originally, we were going to develop weekly assignments based on various aspects of the schools of thought presented in class), on their analysis of and reflection on such. The readings provide the theory, the explanations I provide anchor the theory in real life and the weekly assignments foster student application of theory in their own lives. But it ends up being too much work to correct... then they are boring to correct!"

On the purpose of my instructional strategy: "I wanted to maximize the impact of the reading material by using weekly assignments linked to my course objectives to help them better integrate the course contents"... "I need a template or a model for my assignments, like a kind of universal reading-based assignment model which could be adapted to any kind of reading analysis."

On course delivery: "This course has never been taught at a distance but it's almost ready. But I don't see myself doing that. I don't like videoconferencing. If there was strong demand for the program, that would motivate me to deliver it at a distance. That would force me to further develop my assignments and my exercises. I think that a distance course makes you become more meticulous. If I did [if I offered my class at a distance, I would [likely] be satisfied with the results, with well-developed exercises but that would put me under a lot of stress." (Although this professor had been mandated by her department to deliver her course at a distance, she was obviously not at all sold on the idea. At the time of this interview, she was hoping to get a sessional to give her course.)

On plenary sessions and technology: “When you are with people, you start a conversation... a conversation can start with a question from a student”... “the non-verbal [the non spoken] is important.”

On the importance of eye-to-eye contact: “We have to be able to hear each other; we don’t have to see each other. A written exchange just doesn’t cut it, it has no strength... the human voice is important to convey emotion, sarcasm, even irony.”

On course delivery: “It’s the technology that is a major obstacle, from what I’ve seen. Technical glitches... it looks like videoconferencing has a lot, it cuts out, it stops, it’s just not reliable.”

On control: “I have control over my presence in class but I have no control over the technology. Unless I’m sick, I am in class.”

On teaching via distance education: “I believe in duty. If I was told that I had to do it, I would do it.”

On whether she is motivated or not to teach via distance education: “No, I’m not. But, if it means teaching students in the developing world, yes. For us (in our province), I can adjust my schedule, even travel rather than use videoconferencing. (...). So long as I have audio, I’m OK. If it is reliable, OK I’ll do it. I am so afraid that it won’t work, that I waste my time and that lowers my motivation.”

On design of her course: “It required a lot of my time, short-term, but [what we’ve produced] remains. I give three courses regularly and three others from time to time. (The regular ones) I work on them every year. I’m satisfied with this one [the one we worked on] but I want to do more. But I don’t want to have to write up an assignment for each reading; I’ll try to find another strategy.”

On the future of her program with regard to distance education: “The future of the program delivered via distance education depends on the reliability of the technology...I can invest in teaching at a distance, I can allow myself to take risks...it’s as though I was walking on a tightrope

without a net below or, if there is one, it can be removed at any time. [Of course] I risk breaking my neck just as much in class...I have to be fully prepared but if there is a breakdown in technology, that just breaks my legs...it's kind of like when my classroom is locked, that gets me down. Technology is my safety net of sorts; it looks like it is getting better but, right now, it is not reliable."

Notes

1. See G. Kearsley's site on J. Bruner: <http://tip.psychology.org/bruner.html> and Jonassen's site: <http://tiger.coe.missouri.edu/~jonassen/>
2. Objectives development was in conformity with guidelines from the UNESCO site: <http://www.unesco.org/webworld/ramp/html/r8810e/r8810e00.htm#Contents>