
Concepts de continuité et de rupture dans l’évolution …………

Figure 1: This first representation of the concepts of “continuity and rupture” throughout time (over 1200 years) is rather abstract.

Figure 2: The original analogical representation (Figure 1) was redrawn with colour to better emphasize the “continuity” concept and its juxtaposition with “rupture.”
Figure 3: This figure is yet a further evolution of Figures 1 and 2. The analogical nature of the representation (the cylinder) appears here more clearly.

Figure 4: This final figure is but a variation of Figure 3. The horizontal display depicted here was preferred by the faculty member as opposed to the vertical display presented in Figure 3.
“The Congruency Principle”: A summary

ORIGINAL TITLE: Congruency: A fundamental principle in instructional design
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SUMMARY
This article will propose a basic, conceptual model for course design in higher education. It first defines the three functions all faculty members carry out in their work, namely, course planning, course delivery and student performance evaluation. Moreover, using Venn diagrams, these functions are schematized so as to visually demonstrate the importance of establishing a close concordance among all three. This quality of concordance or interrelatedness is termed “congruency.” Finally, the consequences of a lack of congruency in higher education will be examined and examples provided.

1. Towards a “congruent” model of teaching
Nowadays, technology is playing an increasingly important role in most sectors of human activity, such as in industry and manufacturing. Nonetheless, in the field of human resources development, human involvement is still considered to be a requisite element, at elementary, intermediary and advanced levels. This can be explained by the fact that an educator’s task is, ipso facto, a communicative one as well as one that requires a high level of versatility and flexibility given the variety of learning styles that exist among students. Furthermore, an educator’s task becomes more and more complex as learning needs expand, both in terms of quantity and quality. Take, for instance, the following current trends in higher education:

• the number of individuals requiring higher education is continually increasing.
the quantity of knowledge and skills to be learned is also continually increasing.
• the level of competency (quality) required in the market place is continually increasing as well.

These trends coexistent with yet another one, that of financial limits on budgets allocated by governments to higher education. To sum up, university professors have to educate more and more students, over a longer period of time, to a higher level than ever before, teaching new skills and capabilities to face an information technology-driven job market while having access to lower budgets and fewer means.

In such a context, faculty are required by their institutions to re-evaluate the effectiveness and efficiency of their academic programs in order to take into account these factors. Time-, cost- and effort-saving techniques and strategies have to be developed in order to remain competitive and fully accountable while improving success rates among students. Failure to do so takes on a social dimension and cost since an individual failure eventually translates into a social failure as society in general ‘picks up the tab’. Therefore, faculty are increasingly required to demonstrate how their programs fit research-documented and evidence-based needs, meet acknowledged professional norms and, ultimately, can guarantee success.

This process of increased expectations on all sides represents, in our view, the advent of nothing less than a new era in higher education on a global scale, the advent of technology-enhanced, cost-effective, learner-based, needs-driven and skills-oriented higher education. In light of the above, this article is an attempt to lay a framework for improved course planning, delivery and student performance evaluation.

1.1 Concept definitions

1.1.1 Function

Every faculty member carries out a number of functions and, to attain efficiency, he or she must harmonize such in order to design, develop and deliver a quality course. In this article, the concept of “function” relates to the three basic tasks that every professor teaching at a university must, to a greater or lesser degree, carry out, namely: course planning, course delivery and student performance evaluation.
1.1.2 Congruency

The term “congruency” is already a well-known concept in the field of educational literature in Quebec (Brien, Nadeau, Girard, Scallon, Morissette, Tousignant, etc.). For instance, in the *Dictionnaire actuel de l’éducation* (Legendre, 1994), it is defined as the correspondence between an attribute and the part of an instrument that is supposed to measure said attribute. It is also defined being a high degree of harmonization between the course goal, general objectives and specific objectives (Morissette, 1984) or between specific objectives and test items (Tousignant, 1985). These definitions are limited however, given the possibility of extrapolating the congruency concept in a more general sense. A new definition of congruency that illustrates the need for continuity and connectedness between a professor’s functions will therefore now be proposed.

As was just mentioned, congruency is often defined as a degree of harmony or correspondence between two or more entities, simultaneously. In just this sense, congruency, as defined here, is the necessary harmonization of all three functions carried out by faculty and aimed at improving learning among students.

To specialists in educational research who may suggest that the definition proposed with regard to the congruency concept already exists as "validity", such as "content validity" or "construct validity", or even “communality,” it may be stated that these concepts are far too limited in scope to describe the concept of congruency as it will be develop here.

2. A professor’s functions in light of congruency

2.1 Description of a professor’s functions

2.1.1 Course planning: Planning, according to the ADDIE model, involves the process of course design (analysis-design-development-implementation-evaluation) ending in the production and validation of requisite didactic materials. At its very core lies the identification of the essential knowledge, skills and attitudes that will best respond to learner needs. This function requires the elaboration of both course content and form. The three sub-functions inherent in this work are:

- planning course objectives and content (including prior needs assessment)
- planning course delivery (including means and methods).
• planning student evaluation instruments (including assessing learner performance before, during and after instruction).

Course objectives and content planning first involves a front-end, learner-needs assessment analysis followed by the subsequent identification of a course goal and multi-tiered objectives that correspond directly to pre-identified competencies as well as course resource supporting materials (such as Web-based, written, audio or video materials).

Course delivery planning involves elaboration of a teaching strategy which includes the identification of a teaching method while taking into account available means (resources) and thereby adapting existing didactic material or developing new material.

Student performance evaluation planning includes the elaboration of a prerequisites test, a pre-test and a post-test based on choices made during the above course design phases. The development of these instruments as part of the planning function insures, as it shall be demonstrated, a higher degree of congruency with the other two functions.

2.1.2 Course delivery: In chronological order, “course delivery” (actual teaching) is the second function that an educator usually undertakes once his or her planning is complete. During this function, the professor delivers exactly what has been planned in his or her course syllabus, no more, no less. This may seem axiomatic but experience has shown that faculty often stray from set objectives and end up delivering content which does not correspond to set course objectives. Moreover, content delivery must also correspond to the instructional method identified during the planning stage, as set in the syllabus. When done in this fashion, it can be said that delivery is congruent with prior planning, i.e. there is absolute, or a relatively high degree of concordance between these two functions. In this sense, one can speak of course congruency. Or, in other terms, the more complete the intersection or overlap between functions, the higher the level of congruency.

Figure 1 represents the teaching activity of two professors, one who teaches in a less congruent fashion (Professor A) and one who teaches in a more congruent fashion, Professor B (right), i.e. in that there is a greater level of overlap between his or her planning and teaching. Hence, a lesser
level of congruency can be observed for Professor A than for Professor B (right). It can therefore be posited that Professor B has remained more faithful to his syllabus whereas Professor A has likely strayed ‘off course’, as it were, perhaps pursuing objectives that were not planned or lacking the time management skills necessary to reach the objectives that had been set. The end result is that Professor A’s students will likely not reach all the objectives by the end of the course.

![Figure 1: Congruency between planning and teaching](image)

So as to fully explain what it meant by a lack of congruency, or incongruency, here are two examples of typical situations that sometimes occur.

1) Imagine a history professor who has a special interest in peasant life in the seventeenth century in rural France since this was the subject of his dissertation. Despite the fact that, in his course syllabus, he had only planned to spend a limited number of hours on the subject, he ends up spending twice as much time on it, given his marked interest in the subject. However, by doing so, he necessarily neglects another part of his syllabus.

2) Consider a professor of physical education who is a world renowned specialist in a given sport. Since she excels in this sport, she naturally tends to frequently refer to it and to have her students practice it in her course. However, by doing so, other sports to be taught in her course tend to be either hastily covered or even completely left out.

### 2.1.3 Learner performance evaluation

The third function carried out by all teachers and professors is learner performance evaluation. If the faculty member has planned his/her evaluation instruments while
planning his objectives and content, she or he will already have the requisite means to adequately evaluate his/her students’ performance. This function can, in turn, be subdivided into three other categories: *administering a test, correcting it and returning it.*

Linking evaluation to planning and delivery is essential because true congruency cannot exist in a course until such time as it has been successfully achieved. Using the model elaborated above, let’s now add this third function to the first two.

![Figure 2: Congruency between planning, delivery and evaluating](image)

In Figure 2, we see that all three functions must tend toward a central position where there is as high a degree as possible of overlap between functions. This occurs when

• what has been planned has been taught and
• what has been planned and taught has been evaluated accordingly.

The likely result is a high degree of congruency. Furthermore, we posit that there is a higher probability of student achievement when high-level congruency has been achieved by a faculty member in a given course, the same applying equally to a program of studies involving numerous professors. This said, we are of course aware of numerous other intervening factors which may alter results, factors such as faculty and student motivation, faculty communicative skills, students perseverance and assiduity, etc. So the congruency principle as presented here looks only at the probable impact of instructional design, teaching practice and student evaluation as conducted by faculty with regard to student performance.

This of course begs the question: what happens when congruency
2.2 Various configurations in function overlapping

We will now turn our attention to an analysis of variations in function overlapping which we believe are fairly typical of situations that arise in higher education. Figure 3 presents three profiles of incongruency that can be found in the teaching practices of some faculty members. These variations may seem somewhat extreme but they are being presented to better illustrate the congruency principle and underlying and related problems with regard to student achievement.

**Variant A:** In variant A, planning appears to be more than ample, the professor having fully designed the course. However, once the course actually begins, the professor appears not to have followed the
plan but rather appears to have diverted away from the syllabus to the extent that what is being taught bears little resemblance to what was planned. It should also be noted that what was planned turns out to be more substantial than has been actually taught. Furthermore, what has been evaluated is only partially to what has been planned and to what has been taught. This situation places students in a precarious situation, where they must depend on knowledge acquired elsewhere in order to pass this course.

**Variant B:** In this case, we observe a professor who appears to be little interested in course planning (or design), being more interested in actual course delivery and expanding on subject matter well beyond the bounds of what was planned. When it comes to evaluation, again we observe that students are disadvantaged in that what is evaluated has little to do with what was planned or actually taught. Such a professor is likely quite spontaneous in the classroom, animating discussions that can take various paths but few which were anticipated. A certain rigour would likely enable this faculty member to help improve the academic results of students.

**Variant C** is a case of a professor who appears to be overly rigorous in his marking. In actual fact, given the fact that what is being evaluated goes above and beyond what has either been planned or actually taught, severity is simply a disguise for a lack of congruency.

### 2.3 Congruency on a systemic level

#### 2.3.1 Horizontal Congruency

In light of what has just been examined, it is posited that, should each and every faculty member in a university strive for greater levels of congruency, student achievement would most likely rise markedly whereas absence of any concerted effort to improve congruency would likely result in falling grades and student dropping out. In order to understand how congruency might apply in a systemic way to a group of professors working in the same program, let us look at the following illustration of horizontal congruency.” Horizontal congruency occurs when there is an adequate level of congruency in courses taught by a group of faculty in the same program.
In this Venn diagram-based illustration, three professors are each offering the same course to three separate groups of students (say Psy 101). It can be observed that Professor X’s course has the lowest degree of congruency whereas Professor Y’s course is the second-least congruent course. Indeed, in relative terms, a higher level of congruency has been achieved in Professor Y’s course when compared to Professor X’s course. However, when these two courses are compared to Professor Z’s course, they pale in comparison. Indeed Professor Z appears to have achieved almost complete congruency his or her course. As a result, students who happen to be part of Professor Z’s class will likely benefit it in their studies in a way that the other students will not, even if they are not the best students at the university. To extrapolate, an average, even weak, student who benefits from congruent teaching over several years may well succeed better than a strong student who, by chance, ended up in classes where the professors lacked congruency in their teaching. The question that comes to mind is: should chance play so great a role in student achievement? Given the issues of student achievement and overall efficiency in higher education as raised at the beginning of this article, shouldn’t any factor which might compromise student achievement (such as chance) be removed from our institutions?

2.3.2 Vertical congruency
We will now attempt to demonstrate the consequences of a continuing lack of teaching congruency on student achievement, i.e. on a systemic level.
Imagine a group of students who received instruction which was virtually totally devoid of congruency during their first year of studies but who, during their second year, access more congruent teaching on the part of their professors. Their entry into second year will likely be somewhat arduous given the quality of their instruction in first year and their consequent lack of preparation. Should these students, or most of them succeed in reaching third year and experience an even greater degree of congruency in their professors’ teaching, will they be able to make up for lost time and lost opportunity? It is, in our view, altogether plausible that an alarming number of setbacks, failures and even drop outs are directly attributable to incongruency. Figure 5 illustrates the dilemma of just such a group of students as they move from one prerequisite course to the next on their way towards third year and graduation.\textsuperscript{1}

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**Vertical congruency**

The portrait of three university professors from the same faculty who are teaching ‘linked’ courses in the same program.

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1. Professor X

2. Professor Y

3. Professor Z

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Figure 5: Vertical congruency
In this figure, a rather incongruent path is followed by these students until they reach third year. Of course, despite the difficulties encountered along the way, a good number will graduate regardless of the quality of the teaching received during their studies, benefiting here and there from episodes of congruent teaching, as evidenced by the third year professor. However, one can only imagine the efficiency possible, not to mention academic achievement rates that could be had, were the degree of congruency enhanced among faculty members at all levels and within all groups.

**Conclusion**

The main objective is writing this article has been to describe gaps in student achievement which may be attributable to a lack of congruency in teaching practice among university faculty using a series of Venn diagrams in the hope that such will provide impetus for change in higher education through an improvement in course quality thanks to improved levels of congruency with regard to faculty teaching functions. We have attempted to indicate some of the consequences, on both individual and collective scales, of a lack of congruency in higher education. We firmly believe that the congruency principle, if applied adequately, will result in improvements in academic achievement among students as well as improved relations between students and faculty.

**Bibliography**


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**Notes**

1. In Quebec, many university programs are three years rather than the four customary elsewhere in North America because students in Quebec go to High School for 5 years rather than 6, attending Community College (C.É.G.E.P.) between HS and university.
Appendix C

Examples of teaching activities
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The following is a list of individual and team activities used in distance education and online learning. They were gleaned from various sources, such as learning materials in courses developed at the Télé-Université in Quebec and the Open University in the UK. A number of these types of activities were developed for use in the courses which were the focus of this study.

Algorithmic Design: based on a logical sequence of actions, events, steps, etc. the student is required to draught an algorithm visually setting out the optimal sequence to be followed during an operation, the decision branching points and perhaps acceptable alternatives, etc.

Analogical representations: An activity requiring the student to complete or design a diagram, graphic representation, visual mental model, etc. which may facilitate understanding of abstract concepts, hierarchies, systems, processes, etc.

Analysis: a protocol for the study of text-based documents or excerpts from such based on set parameters, criteria, requirements or categorisations, etc.

Application: after having studied an abstract concept, a strategy or a technique, the student is required to use what s/he has learned by finding a concrete use for it, thereby demonstrating his-her mastery of the learning involved.

Assessment and auto-assessment: the student is provided with an object, a text, or a resource of some kind and is asked to evaluate it according to set parameters or criteria; s-he may also be requested to assess his or her own production using a grid or tool of some kind which is provided or of his or her own making.
Assessment instrument development: an activity that requires that the student demonstrate competency in synthesis, application or assessment;

Categorisation: given access to a data bank or even to a number of odd and even objects or concepts, the student is required to sort them out and establish groups based on shared communalities such as degrees, levels, types, etc.

Comparison: using two or more profiles, situations, case studies, data sets, etc., the student is required to identify similarities;

Creativity: an exercise where the student is left completely free to express himself or herself through the creation of a work of art, an invention, a solution to a problem, etc. using whatever means at his or her disposal, thereby allowing him or her to achieve higher levels of problem-solving, visualisation and cognitive processing.

Decision-making: confronted with a problematic situation, the student is required to analyse, compare, distinguish and select elements which allow him or her to reach a logical and justifiable decision, having weighted the pros and cons within a set timeframe.

Definition: faced with unknown entities (either concrete or abstract), the student is required to define them according to existing standards, protocols, conventions, etc. or to new ones of his or her creation.

Exploration: an activity which can take a number of different directions and, as such, is quite similar to creativity activities. The main difference with this kind of activity is that the student is not always given complete free rein in his-her explorations but, rather, is introduced to, for instance, an author’s body of writings, a new environment, virtual or physical, or even a philosophy which has been borrowed from another milieu and applied in a new setting.

Interviewing: the student is requested to select someone to interview based on a set of preset criteria. She or he can ask open-ended or
closed-ended questions or a mixture of both in an attempt to unearth new information.

**Gaming (educational or ‘serious’):** activities involving access to, or development of, ludic events, objects or environments, whether real or virtual, for the purpose of learning.

**Planning:** macroscopic or microscopic development activities based on an event, a production, or some form of achievement. The student must establish a plan of action, identify subsequent steps, set a timetable, using software like MS Project, etc.

**Projects:** activities which require that the student plan, carry out and report on some kind of a project based on set criteria. This may include events such as a show, a play, a variety hour or an object such as an elaborate child’s toy, a playground or a hot rod.

**Psychomotor:** an activity requiring the student to use his motor skills to achieve an acceptable result, often involving sporting events or team events.

**Reflection:** an activity requiring the student to become acquainted with a situation, a problem, an event or an issue etc. that needs a period of time for thinking and subsequent discussion. Such activities are often less rigorous than analytical activities sometimes simply resulting in a new procedure or protocol for doing something constructive.

**Research / literature review:** an intellectual activity requiring the student to undertake a library search for a given thematic or author or problem, etc., in order to develop a systematic and organised databank or data set or collection.

**Simulations:** activities that allow learners to experience a reality which is dangerous, costly or complicated in a safe, cost-effective and easy-to-access environment.
**Story-boarding**: activity that requires a learner to write a story while sketching out visual cues to enable the design and development of an educational product, process, production or event.