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Integrating Decision Cases into the Design of Courses

H. Christopher Peterson

Abstract: *This paper examines strategies for integrating decision cases in the design of college courses. The benefits of decision cases are acknowledged but teaching strategies that rely solely on decision cases are challenged. A lack of real-world experience and knowledge among students can limit the effectiveness of teaching exclusively with decision cases in undergraduate or graduate classes. In such classes, decision cases need not be the sole teaching approach. Cases are much more often combined with lectures, problem sets and other teaching techniques. Suggested guidelines for incorporating cases into the design of courses are based on five critical topics: 1) course educational objectives, 2) the sequencing of case and other course material, 3) necessary facilities, timing and support, 4) the number and mix of cases desirable in a course, and 5) evaluation of students.*

Key Words and Phrases: *Decision cases, Course design, Mixed pedagogy, Case-content sequencing.*

A significant body of literature exists about the researching, writing and teaching of individual decision cases, particularly in management education and specifically about the Harvard Business School model (Barnes et al.; Culliton; Dooley and Skinner; Gragg; Seperich et al.; Towl). Much less literature has addressed the issue of how to integrate cases into the design of courses. The Harvard model presumes that a course is given over entirely, or nearly so, to case usage as the pedagogical method. The author's own experience with courses in colleges of agriculture and elsewhere suggests that cases are much more often used in mixed pedagogy courses combining lectures, problem sets and other teaching techniques with cases. At either the undergraduate or graduate levels, cases need not be the sole teaching approach and may be even more effective if they are not. Especially with undergraduates, the students' lack of real-world experience and/or theoretical and conceptual knowledge may mean they bring relatively little to a case discussion unless the conceptual material is first presented in some other manner. In addition to differing levels of experience and knowledge, students bring a variety of learning styles to the classroom and thus create a need for faculty to respond with variations in pedagogy.

When faculty want to add cases to their mix of pedagogy, they are faced with a host of decisions about the effective integration of cases into their course outlines.

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This article presents some useful guidelines for incorporating cases into the design of courses. The suggested guidelines are discussed in relation to five critical topics: 1) course educational objectives, 2) the sequencing of case and other course material, 3) necessary facilities, timing and support, 4) the number and mix of cases desirable in a course, and 5) evaluation of students.

Before the discussion proceeds to these five issues, two comments provide context. First, the material is presented from a practitioner's point of view. Although it draws from the referenced scholarly work on case teaching, it also arises from the author's eighteen years of experience as a student and teacher of cases, including the design of fourteen separate courses using the case method with a variety of students (two-year agricultural technology students, all levels of undergraduate students, graduate students and business executives) and a variety of course subject matter, e.g., finance, cost accounting, management information system, strategic management, and human behavior in organizations. The goal then is to establish a useful framework for designing cases into courses that might be more rigorously tested in future research on design effectiveness.

Second, although the discussion focuses on incorporating cases into a single course, relegating case teaching to one course in a curriculum is probably less than optimal. Multiple course use of cases can help develop the breadth of faculty and student skills needed to use the method effectively. This raises many issues concerning such things as colleague reactions to case use, time commitment to write and teach cases, development of appropriate case publishing outlets to support promotion decisions, broadening the traditional notion of scholarship to include case research, and interrelations of courses within a curriculum. It is beyond the scope of this paper to address all these critically important issues, but ultimately a department or program must address these issues if case use is to become a long-term effective pedagogy for students and professors.

Course Educational Objectives

The beginning point for any decision about integrating cases into a course has to be the educational objectives of the teacher. The case method has been argued to be effective in achieving any or all of the following educational objectives for students (Barnes et al.; Culliton; Dooley and Skinner; Gragg; Seperich et al.; Stanford et al.; Swinton; Towl):

- Applying knowledge and skill to real situations.
- Discovering the need for special knowledge and skill.
- Integrating knowledge and skill.
- Grappling with complexity and ambiguity.

- Developing teamwork skills.
- Defining problems and opportunities.
- Developing systems thinking and action.
- Dealing with pluralism and diversity.
- Thinking critically.
- Balancing ethics, economics and science.
- Discovering knowledge and skill.
- Gaining experience in decision making.

The above list heavily emphasizes "process" objectives as opposed to "content" objectives. Cases are particularly effective when the teacher wants students to learn process skills, i.e., those skills that can be learned most effectively by engaging in the process of using them. Process skills include such things as applying learning, decision making, integrating knowledge, and critical thinking. Conveying theoretical and conceptual content knowledge is less effectively done with cases (Dooley and Skinner), although cases can be used to convince students of the relevance and power of such content knowledge, which will be discussed later. From the perspective of course design, cases are thus best incorporated into courses that have the development of process skills as an explicit objective. So-called "capstone" courses for senior undergraduates fall most naturally into this category, but courses at all levels in a curriculum have some level of process orientation that could be enhanced by the inclusion of decision cases.

Faculty do need to recognize that using cases does tend to reduce the content coverage of a course. When time is allocated within a course to develop process skills, the trade-off will be less time available for specific content. If the content objectives of a course are heavily weighted toward exposing students to a wide range of topics, e.g., a survey course, the knowledge of which is to be internalized later in a curriculum series, then fewer cases or no cases may be appropriate. However, if the course objectives are designed for the exposure to, and internalization of, concepts, then cases can play a significant role. In this latter instance, the loss of content coverage is usually more than compensated by the added student command of the content actually covered. To experienced case teachers, the loss of content that was never really internalized by the student is, in fact, no loss. However, teachers newer to the case method or departmental colleagues not familiar with the method may be uncomfortable with the content-process trade-off inherent in case use. This discomfort can only be resolved through using cases and observing the improved command of knowledge exhibited by students so taught. In the final analysis, the content-process trade-off must be made course by course, and based on the educational objectives of the course, as a stand-alone entity and as a component of a larger curriculum.

The trade-off is also dependent on the skill and background of the teacher. There are exceptional lecturers who are skilled at helping students see the process issues related to the content material. There are also skilled case teachers who can communicate content within the case teaching process. Finally, some faculty are more comfortable with other process-oriented teaching techniques, e.g., in-class writing assignments or out-of-class critical thinking exercises, that may be less class-time-intensive than cases. The critical issue here is that case use does involve some trade-off in course design between process and content. The teacher needs to take this into account as part of the course design process.

Sequencing of Course Material

Integration of cases into a course centers on the sequencing decision. In a content-driven course, the structure of theory largely determines the sequencing. For example, corporate finance courses frequently sequence content material based on the theoretical progression from basic concepts of asset valuation and risk to considerations of capital budgeting and capital structure. In a process-driven or mixed content/process course, sequencing is more complicated. The structure of theory is still useful to general course design, but additional decisions need to be made about how content and process elements should be sequenced. When cases are the desired process elements, case-content sequencing can be conceived as having five basic "building blocks" that can be arranged and rearranged to form different course structures.[1] These five building blocks are as follows:

1. **Case-Concept Sequence.** When teachers want students to discover the need for knowledge and skill, they can open a course segment with a case and follow it with lectures and readings that develop relevant concepts and skills. This sequence is most useful when 1) the student's need to acquire the knowledge or skill is not readily apparent to the student, or 2) the student is likely to question the credibility or usefulness of the knowledge or skill. For example, the time value of money is not an intuitively obvious concept to most students. A case that portrays a decision maker wrestling with the investment choice between several long-lived assets can show students how important time value is in the real world, and thus open them to learning the conceptual and technical material necessary to master time value techniques.

2. **Concept-Case Sequence.** When teachers want students to apply knowledge and skill, they can conclude a course segment with a case that requires the application of concepts taught in that part of the course. This is probably the most commonly used case teaching sequence because most students come into a course

with little background in the subject matter to be taught. The presumption in using this sequence is that the student needs to have some conceptual foundation before the case analysis and resolution can be attempted. No prior knowledge is needed for the student to engage in this sequence, but the motivation for why the student should learn the concept needs to be readily apparent if the student is to cooperate in the learning.

3. **Case-Case Sequence.** When teachers want students to discover knowledge and skills, they can develop an all-case sequence in which students are continually challenged to discover the conceptual material that emerges from the multiple-case experience. This sequence is best left to upper-level undergraduate and graduate courses. It is the classic Harvard Business School model in which no conceptual material is explicitly taught to the student. Instead, the student is to draw the conceptual material from the cumulative experience of the case sequence plus personal research into the relevant concepts. This is a messy way to learn, but it does mimic how professional decision makers learn outside of formal educational experiences. It also mimics how professional scholars are to learn through inductive methods. This sequence must be selected with great care as to whether or not the subject matter can be reasonably "discovered." For example, the author's own experience in discovering decision trees through the case process was deeply painful. However, once discovered they were never forgotten. In an undergraduate course, this sequence can be quite effective for a course segment focused on discovery of professional knowledge, such as, current industry trends, that can be readily gleaned from a series of cases.

4. **Integrative Sequence.** When teachers want students to integrate knowledge and skill, they can develop a series of course sequences in which each sequence is focused on individual concepts and then the series concludes with a comprehensive case solvable only by integrating the individual concepts learned. For example, in an agriculture labor management course, some combination of building blocks 1, 2 and 3 could be used to introduce individually the concepts of individual employee motivation, group behavior in the work place, and incentive pay systems. After the individual concepts are presented, a comprehensive case focused on a decision about redesigning a firm's wage and salary plan could be used to have students integrate the three areas of conceptual material. Any level of course could potentially use this sequence as long as the material lends itself to building from individual concepts to some broader, inclusive framework. A further example of this sequence will be provided below.

5. **Analysis-POA Sequence.** When teachers want to explore critical thinking and decision-making skills in more depth than one class period allows, they can divide

the case discussion into several days focusing on analysis of the decision situation on one day and making the decision with an associated plan of action (POA) on the second day. Highly complex single-concept cases and most comprehensive cases lend themselves to this approach. Generally, the case should have enough material about implementation issues to allow the student to formulate a somewhat detailed POA that can generate useful learning from a second day of discussion. - If the selected case is not of sufficient complexity, it may be difficult to maintain student interest and discussion momentum from one class period to the next.

The above building blocks can be mixed and matched to create a large variety of course designs depending upon the educational objectives of the teacher. For example, the "case sandwich" of case-concept-case (Towl) that combines building blocks 1 (case-concept) and 2 (concept-case) can be a powerful motivating and learning package for students. An introductory case motivates the need for knowledge which is then shared with the student through conceptual material found in lecture(s) and readings. The sandwich then concludes with an application case that has the student use what he or she has learned. Depending on the case, the introductory case and concluding case may be the same case. This is most effective when the case is of sufficient difficulty that students struggle just to understand the facts of the case with they first encounter it, but then discover their ability to analyze it effectively after the conceptual material has been presented.

To further understand how the five building blocks are used to design a course, it is helpful to examine an extended example. Table 1 presents a major segment of a freshman level course in agribusiness management – a segment covering the classic management processes of planning, organizing, directing and controlling. Traditionally, the theory on management processes has suggested the logical ordering of the individual processes as starting with planning and ending with controlling. The theory (or content objective) thus gave an overall structure to the course segment. Building block 2 (concept-case) from above was used to present each process in turn. For example, the planning lecture was thus followed in the next class session with a planning case, "Bill Bayer's Grand Idea." As a freshman-level course, students were not expected to have any conceptual background about the processes and thus the conceptual material was designed to be presented first followed by an application case. A motivating case consistent with building block 1 (case-concept) might have been used to kick off the course segment; but, students had tended to accept the legitimacy of the management processes without such a start-up case, and learning in the course had been better served by more work on comprehensive cases at the end of the segment. (The design did evolve over several years of experimentation).

Table 1.
An Example of a Major Course Segment With Cases

	Part 2: The Management Processes[a]
Date	Topic
9/22	Planning: Preparing for the Future (Lecture)
9/24	Joe Bayer's Grand Idea (Planning Case)
9/27	Organizing: Preparing for Action (Lecture)
9/29	Plains Rural Electric Cooperative (Organizing Case)
10/1	Directing: Taking Action (Lecture)
10/4	Agristores: The Distribution Center (Directing Case)
10/6	Controlling: Sensing Trouble and Making Corrections (Lecture)
10/8	Agristores: The Budget Cycle (Controlling Case)
10/11	Sun Grain - Analysis (Comprehensive Case)
10/13	Sun Grain - POA (Comprehensive Case)
10/15	Terry Axle Farm (Comprehensive Case)
10/18	Exam 2 (Comprehensive Case)

[a]Part 2 of a freshman-level Agribusiness Management course.

After the four individual concept-case sequences, building block 4 (integrative sequence) was used to tie the whole segment together. This was important to student learning because management life rarely offers a business problem that is solvable by focusing on only one of the processes. Therefore, the comprehensive cases forced the students to analyze which of the management processes were particularly relevant to the situation and to work on issues of how the processes interact with one another. The Sun Grain case was quite complex in comparison to the level of the students, and the course had only fifty-minute periods. As a result, the case was taught over two days with analysis done on day 1 and, on day 2, a POA (building block 5). A second comprehensive case was then used to further solidify the learning and create expectations for the exam case. Finally, the exam for this course segment was itself a short comprehensive case for which the students wrote an analysis and proposed a solution within the standard classroom period.

The five building blocks presented above give faculty some useful techniques for integrating cases into the design of a course. The individual blocks help implement specific learning objectives; and, as argued directly and by example, the building

blocks can be mixed and matched to help create the desired learning environment throughout a course.

Classroom Facilities, Timing and Support

Case teaching is facilitated by classrooms with movable chairs, extensive blackboard space to track discussions, and good visibility between teacher and students and among students. Any classroom arrangement that encourages an atmosphere of open discussion is preferred. A tiered, amphitheater design is ideal but not essential, particularly with smaller classes. Physical arrangements within the classroom are especially key to managing case discussions with large classes (75-150). Visibility among case discussion participants is even more critical, and harder to achieve, with large classes than with smaller ones. Using a tiered lecture hall is essential to help assure visibility in large classes.

When designing a course with cases, professors need to structure discussions to fit the time period available. Most cases of any complexity need seventy-five- or eighty-minute periods for proper discussion. Simpler cases can be handled in shorter time periods, e.g., the traditional fifty-minute period. The teacher does have some options when fitting the discussion to available time. If a teacher has a relatively short time to devote to a particular case, the teacher can: 1) select a short case with very focused issues, 2) if using a longer case, assign highly specific study questions that focus on a limited number of important issues, or 3) emphasize some subset of the decision-making process, e.g., analysis only, rather than push for a complete solution to the case. Generally, as students gain experience with case analysis, they become more efficient at it. Therefore, later in a course more effective discussion can be achieved in a shorter time.

Managing the length of discussion can also take other forms. Some limited lecturing related to a case can establish certain common understanding of the case situation with students then being assigned to focus on alternatives or plans of action. Case discussions can be broken into two days with the first day focused on analysis of the situation and the second day focused on solutions and plans of action (see building block 5 above). Teams may be assigned certain pieces of analysis to be done outside class in order to more efficiently get key issues on the table during class time.

There is one additional consideration when making decisions about timing. The literature on case teaching and the author's own experiences suggest that the best case discussions are student-directed, i.e., the students drive the direction and flow of discussion with the teacher managing the discussion process in an open manner. As a result, all of the teacher's efforts at planning the timing may go for nought if students take an unexpected turn in the discussion. What makes this course of events even

more problematic is that great learning often results from these unexpected turns. In the final analysis, student learning must drive timing and not vice versa. To minimize timing concerns, the teacher can be prepared to share with students a list of unresolved and unexamined issues at the end of the case discussion or have students follow up with short memos on these issues rather than taking class time to discuss them.

Teaching with cases also demands that a ready supply of cases exists or can be readily written. Copying and copyright permissions, data access to supplement analysis, and case writer networking all are needed to ensure access to a significant quantity of quality cases. Most major business schools, especially Harvard, have case libraries that are accessible, with per-case fees, for agribusiness management. Agricultural cases have also been written by faculty at several land grant universities. The University of Minnesota and Michigan State University have developed a number of such cases, e.g., Stanford et al., Swinton.

Number and Mix of Cases

After the above discussion of educational objectives, sequencing and resource needs, it should come as no surprise that there is no magic number of cases necessary for their successful use within a course. Anything is possible from using one case through using cases in every class period. Cases might only be used to start a course (building block 1 – generate motivation for learning) and conclude it (building block 4 – integrate course concepts). Table 1 showed a course segment in which two-thirds of the sessions were given over to case discussion, including the exam session. Although any combination is possible, several issues need to be kept in mind as a teacher incorporates cases in a course.

First, there is a "learning curve" to using cases. Students tend to gain more from the method if they get to use and re-use it over time. This learning curve arises from the transaction costs that exist for both students and teachers in learning how to engage effectively and efficiently in the method. Two specific examples of these transaction costs come to mind – one for the students and one for the teacher. Individual students often need to overcome their fear of speaking before their peers and the teacher. If too limited a number of cases is used, not enough students may have the opportunity to overcome this fear and experience the benefits of participation. Teachers need enough experience to manage discussion without interfering with its flow and with the learning taking place. If too few cases are used, the teacher may have a tendency to use each case merely as an example of one or another concept without truly engaging the students in active case discussion. Given these transaction costs, using more than one or two cases is often advisable. If cases are broadly used across a curriculum, the minimum number required to gain

effectiveness can be rather small, and one or two may be effective. If a particular course is the only course or one of a few courses in a curriculum using the method, then four or five cases may be needed to gain full effectiveness.

Besides this issue of learning curve effectiveness, the number of cases in a course should reflect the educational goals of the course. Generally, this means that as the level of the course or its process-orientation increases, the number of cases used should increase. At upper levels, students have more background to bring to the discussion and a greater need for applying and integrating material learned in prior courses and in the current course. Upper level courses also tend to move students more clearly toward specific career preparation that makes process goals and cases particularly relevant to learning.

As with any teaching style, the teacher ought to be searching for a mix of cases in terms of difficulty level, subject matter and variety of teaching settings. Some kinds of subject matter lend themselves better to the case method than others. For example, highly technical material may be better learned with more traditional problem sets than with cases. Particularly in highly technical areas, good case material may not currently exist or may be very limited. Cases can be used at any level of difficulty that might face a real decision maker. Broader, more complex cases tend to be more appropriate for upper level courses, while specific cases with narrowly targeted issues can be used effectively in lower level courses. Within the Table 1 example, all of the individual management process cases were highly structured and coordinated with the lecture material in such a way that students directly applied the techniques presented in lecture and readings. The Sun Grain case (used for integration) was relatively unstructured and demanded that students stretch their command of the concepts. In contrast to its use in this freshman course, the Sun Grain case is taught successfully in a 400-level course in one fifty-minute period. The different level of student preparation makes such a disparate use of a single case possible.

In deciding on a case mix, a teacher should also consider whether the case is a field-researched case reflecting an actual situation. The Harvard Business School orthodoxy suggests that decision cases must be completely real situations. At upper levels, students may have enough background that anything less than a completely authentic case may be viewed as insufficiently credible to be seriously analyzed. On the other hand, "armchair" cases (fictional cases based on limited fact supplemented with the author's experience or knowledge) can have a place in teaching various levels of students, particularly when the goal is having students struggle with the difficulties of limited-information decisions. In some instances, insufficient availability of field-researched cases may necessitate the use of well-crafted armchair cases. In the Table 1 example, the Plains REC case and the two Agristores cases were contrived although based on the real experiences of the case author. The other three cases were based on actual situations.

Evaluation of Students

Grading the quality of participation in case discussions is critical to the method's success. Case discussions fall flat if students are unprepared, and graded participation creates an incentive for students to prepare for class. Participation grading really means contribution grading, i.e., quality of contribution to discussion, not amount of "air time." The most effective grading involves giving each student a participation grade on each day of case discussion. This requires that faculty know their students by name and track contribution mentally during class. A teaching assistant can also be effectively utilized to grade student participation while the faculty member leads the case discussion.

Getting and grading participation is more difficult in large classes, and thus some special strategies are needed. For example, a daily written quiz can be used to count toward participation and to provide adequate incentive for students to prepare for class. Also, occasionally, students can be required to write and submit a one- or two-page memo on a case at the beginning of class. Equity of participation is a major concern in large classes. In part, a combination of written quizzes and oral participation addresses equity. In addition, seating charts can help manage participation. Use of small groups or discussion teams to prepare for class or during class can facilitate participation evaluation of the "team" contribution.

Cases can also be used as exams. At lower levels, short cases (one or two pages) can be used as in-class exams. The questions should ask for essay responses on such issues as what the problem in the case is, what caused it, what the alternatives are, and what the best alternative is. At upper levels and with graduate students, case "exams" should be done as case write-ups and/or oral reports that require analysis and writing outside the classroom.

Concluding Remarks

Case teaching is a powerful method of pedagogy drawing its strength from its ability to facilitate process learning, e.g., application of knowledge, decision making, critical thinking, in the student. This article has attempted to complement the literature on researching and teaching individual cases by addressing the issue of incorporating cases into the design of a course. In summary, the guidelines for such course design are these:

1. Have appropriate process-oriented course objectives that allow cases to be fully utilized in the learning process.

2. Sequence the course material to promote desired learning by using the five "building blocks" of case course design (case-concept, concept-case, case-case, integrative, and analysis-POA).
3. Arrange for the proper classroom facilities, timing and case material.
4. Use the number and mix of cases that match course objectives with student levels.
5. Evaluate student participation in case discussions and use cases to test command of course concepts.

Following these guidelines should provide a course environment in which both faculty and students gain the full benefits of case teaching.

Given that the material in this article has been pieced together from what little exists in the literature about case course design and from the author's own experiences, it seems appropriate to end with a reminder that a practitioner's view has been used throughout. With these course design guidelines now articulated, more systematic research should be done to evaluate the effectiveness of case teaching generally and of alternative course designs specifically.

Notes

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1. Although the articulation of these five building blocks owes much to the author's own experiences in case teaching, Andrew Towl's 1969 book, especially pages 111-116, prompted the thought that resulted in this presentation.

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