



This lecture article has been peer reviewed by the editorial board of the International Journal of Marketing Education (IJME). For further information on this textbookjournal please visit the Senate Hall Academic Publishing website at www.senatehall.com.

Learning by Doing

David J. Reibstein

The Wharton School, University of Pennsylvania

Abstract. This paper discusses alternative pedagogical styles to be considered for teaching marketing and the factors that should determine the selection of when a particular style should be used. It looks at a specific class topic, resource allocation, walks through the decision of which approach to use, and then details the particular application. In the example, which is built around an s-shaped response function, it is clear that simple linear solutions will lead to erroneous allocations. While this is a well-known fact, what is presented is a teaching approach to drive the lesson home in a memorable context. This is all described in the form of a “one-time” simulation—a useful way to provide student experiential learning.

Keywords: simulation, experiential learning, teaching styles, resource allocation, sales response function, and regression.

1. Introduction

There are many different ways to learn. Sometimes we can listen to what someone tells us and be able to process and absorb how the concept, theory, or application might be used. Other times we can observe others and be able to learn from both their successes and failures and extract what led to those results. Still others learn best only by doing. Through the *experience* we “see” what works and what doesn’t, how things are done, and how they should not be done.

Stick our hand on a hot stove and we learn it burns. Of course, it would have been better to be told that stoves burn and putting our hands there is bad. We may not have believed it or we may have. If any of us had an older sibling who was the first to stick his/her hand on the stove while in our presence, we had a great opportunity to learn and probably never repeat the exercise ourselves. Yet, those of us that did not have a sibling nor fully believed our parents and had the experience of unfortunately touching a hot stove, we bear the scars of our lesson, and like a scar, it sticks with us for life.

The stove has other signals that should warn us without having the true experience—the coils get red serving as a warning or the flames are in front of our eyes. Even if the visual was not enough of a deterrent, the heat as we get close sends other signs of danger ahead. As a result, many of us did not have to bear the wound to understand the danger. Yet, few of us have been able to understand or empathize with the shock from a battery to know what it really felt like without having the experience of sticking our fingers on both ends of a battery, or worse, putting our tongue to the two extending prongs (tell me I am not the only one to have done this.)

As academics we have many choices as to how we deliver our materials—we can lecture, generate class discussions, hold field trips, present case studies, and provide simulations—which are the dominant forms used in business schools today. Each has its own value. Let me begin by saying, each individual has their own comfort zone with each of these approaches and there is not one approach that is best for all people, both as instructors or students. Further, I am a firm believer that some topics are better illustrated using one technique over the other. I also assume the audience, its character, experience, and its size should play a large role in the approach used as well.

There are some institutions that are relatively dogmatic about teaching style and their dependence on the case method. While I might be in disagreement with the requirement of all faculty and for all topics, use the same method of learning, the advantage is that it provides some consistency for the student, and a learning style might develop. That being said, I would think that in teaching marketing research where more methods are to be taught, more lectures might be appropriate than in the introductory marketing course, where more cases might be taught. I have always marveled at the concept of teaching accounting principles via the case method—the application and decisions derived from it, yes; the rules, I would think, would be more difficult.

This paper is not intended to be critical of the case method, as I am a big believer, nor is it to proselytize any other approach. It is more to look at the choices we face as professors, and to give an example of selecting an approach for a specific class session.

In the first part of this paper, I will describe my perspective of the influence of the topic to be covered on the method selected followed by the influence of characteristics of the audience. Next will be a discussion of simulation as an alternative teaching approach. This will be followed by a specific example detailing the selection of a pedagogical approach and detailing it for a specific application.

2. Influence of the Topic

There is undoubtedly a tradeoff on time consumed versus depth and breadth of coverage we each make when deciding how to teach a particular session. I would think that lecturing is a much more efficient way to cover material. We know what we want to cover and can race through it uninterrupted, if we so choose, at our own pace. The question is whether the lesson is learned with sufficient depth and retention.

I would suspect if we were providing definitions, rules, or lists, lectures would be the preferred method. As mentioned earlier, if wanting to explain various multivariate approaches to be used in marketing research, I would prefer lecturing, with plenty of opportunity for questions and answers. So, any topic where I would be considered the bearer of the information and it needed to be conveyed, it would make sense to lecture on the topic. Of course, so the student might be able to understand the actual practice, it would be common to give “problem sets” or data which would allow the student to actually follow the steps being outlined. It would be meaningful in this lecture to provide the motivation as to why one needed to use such an approach and when it would be appropriate.

For the application of the approach, it may be more appropriate to use a case for a discussion, particularly when there are choices of which approach would be used. The purpose of using a case in this context would be to force the student to grapple with making the decisions and thereby ingrain in their thinking when certain approaches might be more appropriate than others. Most conceptual and problem solving topics are well adaptable to the case method. Of course, that always presumes there is a good case available for such discussion.

Another great advantage of the use of a case is if the best approach is context-specific. In this instance, bringing in different student perspectives from various parts of the world, types of businesses (e.g., b2b b2c, etc.), company sizes, or types of customers, help define under what context which approach is best. Frankly, I find the richness of student experience in these different contexts to be much broader than mine, and invaluable in the class discussion. Of course, this depends on the students’ experience base, as discussed below.

3. Influence of the Audience

The composition of the audience should be very important when selecting the appropriate method. This will be discussed in terms of cultural background, experience/knowledge in the topic being discussed, and the audience size. All three play key roles in selecting the most appropriate method of instruction.

Westerners in general, and Americans in specific, are very used to an educational system where they are encouraged to participate, ask questions, and to question what they are being told. To encourage this behavior, I have on numerous occasions said things I think are totally wrong, only to see if someone will disagree with me. When done, positive reinforcement is always important for others to be able to observe that questioning is acceptable and even laudable. Of course, I would discourage taking “wrong positions” very often as it leads to total loss of credibility, if not done carefully. Ideally, the desired behavior is for the students to be questioning what they hear from other students. By having students question what the instructor says, then anybody is fair game. This does take time. It allows for wrong things to be said, and the instructor not to have to play the role of always correcting, thereby putting the onus on the class to come up with the “right answer”.

But this type of learning is acculturated over time. Students coming from other cultural backgrounds are not used to such form of instructions. Many cultures, such as in Japan, are very hierarchically based, where the elder professor is never to be questioned, nor are colleagues to be questioned in front of others. This makes use of the case method more difficult in cultures where open questioning is not commonplace. The issue then becomes if one is teaching in a Western business school, does it make sense to try to force everyone to adapt to the Western norm? In most cases, that is done. Non-Western students not accustomed to open questioning and discussion not only have to struggle with public speaking in their non-native language, they are also trying to adapt to a new learning style. It is not uncommon for these students to shy away from case oriented classes. I do not know if this is why so many of our Asian students end up majoring in Finance, which is less case oriented.

I might note that when teaching a group of Japanese executives, I once tried the approach of taking a wrong position with the hopes of someone disagreeing with me and leading to a healthy discussion. Instead, I was greeted by nodding heads. I suspect they were not in agreement with me, but rather trying to be respectful while inwardly thinking of me as a fool. Faced with that or them taking away an erroneous position that I had advanced, I quickly had to correct my earlier treatise, and abandon any hope for an open confrontation of my, or for that matter, others' views. While the Japanese might be evolving into more of a Western learning style, that is certainly not true for all cultures, and these different learning styles need to be taken into consideration.

The experience of the class should also play a critical role in the selection of teaching method. Dealing with young and less experienced students should drive to more lectures than cases. The value of the case approach is to be able to capitalize on, and for everyone to learn from, the breadth of experience that resides in the class. Normally what happens is the student might have experience in a particular approach, since working for one or two companies before coming to business school. They may have generalized in their own mind what is the best approach for a particular problem. Having the benefit of hearing what worked at IBM in the US does not apply for IBM in Japan, nor for a small startup in China, can be a very broadening experience. It provides the class the benefit of learning from other peoples' experience. This, of course, presumes the experience. In the absence of such depth of experience, more instructor, and less student airtime is more appropriate.

An alternative position can be taken. It could be argued that students without the previous experience can most benefit from a case approach, as this provides them with the context that they might otherwise be missing. Students with previous experience do not need the context to be provided, since they already have it, and depend more on the depth of structure and critical thinking that can best be provided via a lecture.

The class size should be one of the biggest determinants of pedagogical style. A very small group is most conducive for seminar style discussion. Some would argue that there is a minimum optimal size for a case discussion. We would all disagree with that number, but to provide a number, it might be as high as twenty-five. What is desired is a number of different opinions that could be voiced. Having everyone converge on the same point does not lead to a robust discussion. So, having a large enough group to insure different perspectives is what is required. (This again is why it is difficult to teach cases to cultures that are unwilling to publicly disagree with previous statements.) Of course, there is an upper limit as well. This is because it is desirable that those that want to participate have a reasonable chance of being able to; otherwise, they would not even bother to prepare. Also, there is the issue of a class being able to adequately hear what others are saying, if they are to build on or disagree with previous statements.

4. Simulation as an Alternative Teaching Method

Thus far, I have really only talked about lecturing versus cases. Of course, of ever growing popularity is the use of simulations. I fully anticipate this will be a method that becomes more and more popular as computerized simulations become more developed.

Usually when we talk about simulations we think of computerized simulations. It should be recognized that there are various forms of simulations. Perhaps most common is the human simulation. Law schools for years have used mock trials for many years—a simulation of a real trial. Theatrical groups have used dress rehearsals to prepare for opening night. These are simulations of the real event.

While we often think of cases as a different pedagogical approach, it really is another variant of a simulation. Usually a case is taught as a simulation of actually being at the company faced with the dilemma of the day, and “what are you going to do?”

The computerized simulation is different in that:

- a) It does not have the depth of context that a real company case would have.
- b) It does force the student to make explicit decisions rather than just to talk about the decision process, with the benefit of getting feedback on how well the decision did.
- c) Further, there is often the (B), (C), (D), etc. versions of the case, that is, the student has to bear the consequences of the decision and to live with it moving forward to more and more rounds.
- d) Depending on the complexity of the simulation it can take up a considerable amount of class time.
- e) It can be done away from class time and results and learning principles can be addressed in class afterwards.

The best-known marketing teaching simulation is Markstrat (Larreche and Gatignon, 1978), which has been around since the late 1970's and still holds a dominant share of the marketing educational market.

There, of course, are other simulations, and there is no reason any simulation has to last for considerable periods of time. It is possible to build and use one-session simulations where the student is confronted with a problem, specific data, has to make some decisions, and then gets feedback on the quality of the decision made. An example of such will be discussed in the next section.

5. Teaching Resource Allocation

When designing my elective course on marketing strategy taught to a group of second year MBA students at the Wharton School, I felt it was important to address the question of resource allocation. We had already spent some time on the topic of resource allocation across businesses (SBUs) and needed to focus on the topic of allocation of the marketing budget across marketing mix elements, segments, and brands. Interestingly, there is not an abundance of teaching materials on this topic, yet it seems this is an important decision confronting most senior marketing managers and is at the heart of the marketing's job.

My personal belief is that one of the critical ways to address the allocation decision, is to build a regression model to reflect how each of the budget items has an impact on the objective function of the firm. Presuming the objective was profit, both long-term and short, one could build a sales response function that could be fed into a profit function, and then optimized. Of course, one can always think in terms of other objective functions. To teach this concept, there are several approaches that could be used.

1. Straight lecture – Here it would be possible to discuss how one would build such a sales response model, the type of data that could be fed into such a model, how the parameters would be estimated, and then how this would be fed into a profit function and how the optimization could be done. This would be followed by examples of companies that did so, with illustrations of the data they had available, and the decisions they made. This could be done relatively quickly and efficiently.
2. Case approach – This would entail finding a case where a company would be in a position to have to decide how much to spend on various elements of their marketing mix, providing context and decisions confronting the key managers in the case. This has the advantage of illustrating the application as well as some of the issues of making the allocation decision. While it might take more time to provide the context, it might serve to be more memorable as well as easier to identify with, given a specific character and his/her plight. It would even be possible to provide the historical data available to the company at the time.
3. Provide the data, and force them to make a decision – In this alternative, the historical data would be provided of what has led to sales at various levels of historical spending, with the specific task of having to determine a budget. This would not be determining a budget for someone else, but rather for themselves, which they would have to develop and defend. In many ways it is without the background context of the case, but with a clear expectation of diving into the numbers and developing a budget. There is no question that the students would have to grapple with doing analysis and have to make a specific decision.

There is a difference between a simulation such as described herein and a normal “problem set”. In a normal problem set, the approach to solve the problem is provided in advance, and the student is asked to see if they have learned the approach by applying it. With the simulated approach, the task is one of solving a problem, and through struggling to reach the answer, and often by failing to reach it, they recognize both how difficult of a task it is and hopefully how to solve the problem through trial and error, or at least through the summarizing lecture on the assignment.

It is the third approach, which I ended up using, that I will detail below.

6. Specific Assignment

The students were given the data in Table 1 below. In this table there are twenty periods of data for one brand as spent for one segment. The students were to determine what the budget should be for quarter 21 for the three elements of the marketing mix—advertising, promotion, and distribution. Also provided for the students were plots of the data as shown in Figure 1 below, along with the initial assignment, which included a budget they had to allocate. This was step one of the exercise. Step two was identical but with a higher budget. This was to determine how incremental money

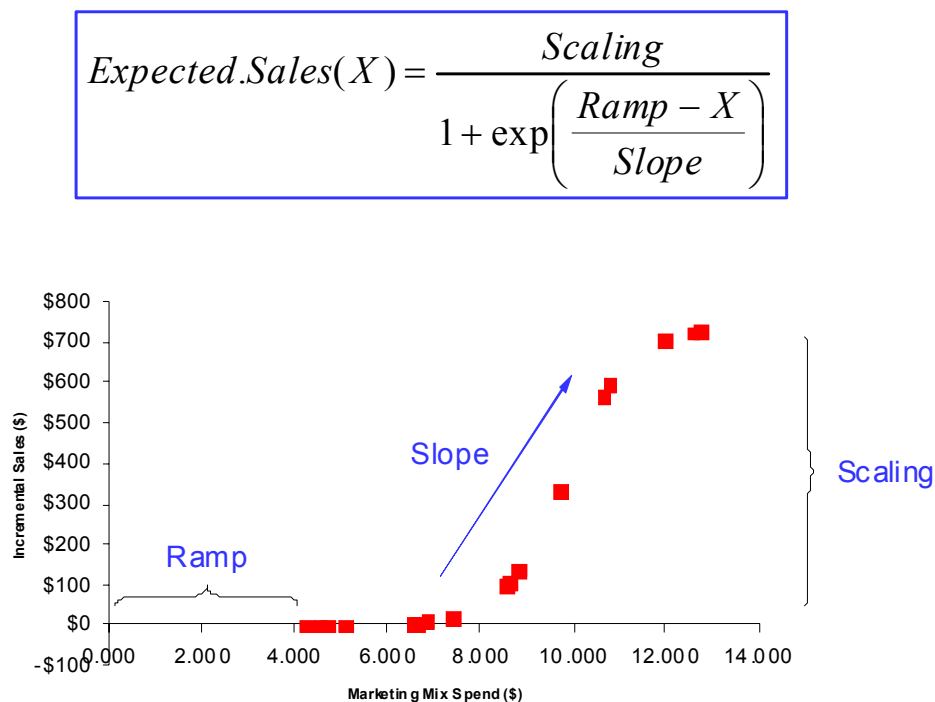
would be allocated. Step three was with an unspecified budget. Hence, the assignment was to establish what would be the optimal budget and then how to allocate it.

For the next part of the exercise, the students were then given another table for the same brand but for a second segment (or region), and the task became one of allocating the budget not just across the different elements of the marketing mix, but also across segments or regions. This again was extended to an increase in budget exercise as well as an unspecified budget amount.

The last segment of steps in the exercise was to again extend the task to three brands over two segments/regions, first with a set budget, then an increased budget, and lastly with an unspecified budget. This last step required determining the optimal budget, how to allocate it over the three brands and two segments across the marketing mix.

The students had to reach their decisions and then submit the decisions on-line prior to class. This enabled me to see everyone's answer and assess whom to call on, and to anticipate his or her answers.

Figure 1: Underlying Model in Simulation



7. The Dilemma

A bivariate plot shows no particular pattern, simply a scatter or an apparent random relationship. This is because of the other variables affecting sales, coinciding with the various levels on any one predictor variable. Thus, the nature of the relation between any of the marketing variables and sales is less clear. This should force the student to a) build a multivariate model and b) rely on some theory of the underlying structural relation.

The second difficulty is the relationship used to generate the data in Table 1 was not simple. It involved a non-linear response function, with lags, errors, and interactions. This was done not simply to be maniacal, but more to be a representation of actual data confronting a firm.

8. The Lesson

The students found the assignment to be realistic, but very difficult. An approach used by some of the students was to “eyeball” it, looking for the previous best performance, and then doing something similar. Most students, however, built regression models to estimate the sales response function. They then ran their estimated model through an optimization routine, such as “Solver” within Excel. Those that ran a linear regression ended up putting their entire budget into the variable with the highest overall slope. This should have been recognized as an illogical solution. The logical thing to do was to use some non-linear regression.

The major lessons were:

1. Resource allocation can be done quantitatively if the data exist. The objective can be specified, and the variables can be used to determine the best way to achieve this objective. It can be both long-term as well as a short-term objective. A healthy discussion can develop around different objectives, such as sales, market share, or profit, as well as the time-frame for each. The modeling approach with data makes this conversation come to life and the tradeoffs become abundantly clear rather than just conceptual.
2. Most response functions are not linear, but instead are diminishing. Most likely they are negative exponential or even more likely S-shaped. Even if the data exist in a linear range, the optimal spending cannot be based on a linear relationship. Some intuitive decision must be made of where and how the diminishing effect starts to take hold. The students should soon realize that given this decision must be made to allocate resources, it would be best to let the data inform that decision.
3. Given the relationships are diminishing, the optimal spending across the mix is based on a tangent of equal slope across all the elements of the mix, until the marginal returns no longer justify any incremental spending (see Figure 4 below). It is this latter point, which demonstrates the overall optimal budget, not just the allocation across the mix elements.
4. With lags in the relationships, the higher the overall lag, the higher the optimal level of spending, all other things being equal. Again, this might not have been clear without data to reflect on this issue.
5. The two brands in the exercise had different margins. The margins play a role in the profit function used for assessing the optimal allocations. It should become transparent, both conceptually, as well as mathematically, that the higher the margins, the higher the overall budget allocation. To make this abundantly clear, it is easy to look at the extremes—with zero margin, no money should be spent to generate sales. With very high margins, generating any incremental sales could compensate for spending money.
6. We rarely discuss error in determining our optimal allocation levels. Each of the variables in the data had varying levels of error in influencing sales. Just like any other investment decision, there is a tradeoff between risk and return. The greater the risk, the much greater the return needs to be.

9. Why Simulated Data Rather Than Real Data?

A legitimate question that could be asked when assessing pedagogical approaches is: Why simulated data rather than using real data from some existing case? As was shown in the graphs, it was difficult to determine any pattern in the data because of the multi-variate nature of the response function. Adding in real data would make this pattern even more difficult to detect. Further, the real pattern would not be known. In the simulated environment, the underlying pattern was known and it was easy to be able to extract this from the data provided. This made the task of teaching from this data become simpler. The structural form was known, as well as the lags, error, and interactions. As such, it was easier to make a point of the impact of each of these on the budgeting question. It also is simpler to do a sensitivity analysis around each of these parameters to demonstrate how the allocation decision should be affected.

Of course, this begs the question of what one should do in a realistic setting where the data is noisier. This becomes the challenge, but in the very least, the process for assessing the relationships is hopefully learned, and the impact of each of the factors is known.

10. Conclusion

There are many different pedagogical approaches that can be used to teach marketing. Each has their own value and appropriate time to be used. The choice of which approach depends on the topic, the audience, as well as the instructor. Undoubtedly, there is some need for a combination of lecture, cases, as well as simulation. They are not distinct alternatives to choose from but a portfolio of teaching techniques which need to be balanced offering detail about concept or technique through lectures, examples of application and challenges of student perspectives through cases, and the confrontation of actually having to apply such learning via simulation.

One-time simulations, as described above, will become more and more commonplace thanks to the advancement of computer technology and student familiarity with computers. They provide the student with “hands on” experience,

allowing them to learn from “touching the stove” hopefully leaving a lasting lesson, but with minimal pain. We often have heard the expression that experience is the best teacher. One-time simulations allow us to provide students the learning without the high cost of making mistakes on the job.

The simulation used in the resource allocation exercise is available from the author and the Wharton Learning Labs.