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Adapting the Survivor Game to Create a Group Learning Term Project in Business Finance

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Abstract

A large and growing body of research supports the view that the small-group learning structure can be an effective tool to enhance student performance and encourage innovative problem solving. This paper explains in detail how the framework of the popular television reality show Survivor has been adapted to form a vehicle for a college level group project in business strategy. The example presented is a term project in Real Estate Finance, but this teaching strategy can be applied to any complex business problem. The use of this revised version of the Survivor Game in the curriculum has been associated with intensified group interaction, and a very enthusiastic, analytical and creative attitude toward learning. The game proves to be a catalyst to critical evaluation of complex business problems that would be nearly impossible to explain in a traditional lecture format, and encourages students to find creative strategies to address these problems.

Keywords: *Group learning; small-group learning, self-directed learning; business education; real estate finance, computer-assisted learning*

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Introduction

A large, consistent and growing body of research supports the view that learning in the context of small groups can enhance student performance, and encourage the development of innovative and creative problem-solving strategies (Schwartz 1995; Ortiz et al. 1996; Slavin 1996; Johnson et al. 1998; Johnson & Johnson 1999, 2009; Springer et al. 1999; Johnson et al. 2007; Gaudet et al. 2010; Gregory & Thorley 2013; Neidigh 2016).

Moreover, several studies present evidence that the transferability of learning is enhanced when learning takes place in the context of small groups (Kirschner et al. 2009; Sears & Pai 2012; Pai et al. 2015). Transferability refers to the ability to achieve learning in one context, and then apply this knowledge in a different context. Transferability is especially important in business education, where student knowledge is of little value unless students can apply it in a real-world business environment.

Other scholars have focused on business education *per se*, noting that it is essential for students to develop small-group learning skills to prepare for workplace demands, since an increasing number of businesses use group project approaches to problem solving, and to the development of ideas and products (McKinney & Graham-Buxton 1993; Harker & Harker 2007; Brutus & Donia 2010; Tribe 2013; Boud 2014; Lee et al. 2016; Betta 2016).

This paper explains in detail the manner in which the framework of the popular television reality show Survivor has been used to structure a group learning game in a college level business curriculum. The example I present is in the discipline of Business Finance, but the same approach can be used to structure group projects in almost any business discipline.

This adaptation of the television show, referred to here as the Survivor Game, is a valuable vehicle for encouraging student groups to analyze the details of complex business problems that would be nearly impossible to explain in a traditional lecture format. Participation in the game intensifies constructive group interaction, and encourages the development of creative solutions to difficult business problems. It would not be an exaggeration to note that the quantity and the quality of creative ideas emanating from competing student groups is breathtaking, and exceeds the value of ideas that even a talented teacher would be able to develop on his or her own.

The Television Reality Show Survivor

No doubt most readers are familiar with the reality show Survivor, a successful show that has been featured on primetime television for many years, and continues to be popular today. Still, it may be helpful for us to review the fundamentals of the show, which really is a group game.

In Survivor, sixteen or more persons are transported to a remote, primitive location, and are given no modern conveniences to help them cope with a challenging physical environment. Immediately, these "Survivors" are divided into groups. These groups then engage in competitions involving physical and intellectual challenges such as races through obstacle courses, and the solution of puzzles. While many of these challenges are physically demanding, all of them continually force the groups to devise strategies for winning. The losing group suffers significant consequences, in that one or more of its members will be voted out of the game, and will lose the opportunity to win the financial prize of $1,000,000. At the end of the game, just three survivors remain, and the winner of the prize is selected by the majority vote of a jury composed entirely of persons who had previously been eliminated from the competition.

The Academic Model

The academic model, the Survivor Game, converts the reality show model into an appropriate term project. The game retains the idea of group competition and group reward, and the idea of staged eliminations leading to a significant end reward for the winners. The challenges also remain, but take the form of recommending an optimal solution to a complicated, though typical, business problem. In this case the business problem takes the form of structuring financing for a real estate investment; but the Survivor Game approach can be effectively used to address any complex business problem, or, indeed, many non-business problems.

In the following, I discuss exactly how this game is structured in my business school classes at Hofstra University. The reader will readily observe that many variations to this application can be developed to suit the special needs of other curricula.

The Groups

The group process itself is central to the learning experience of the game. Most business projects are completed in groups. Therefore, the manner in which the groups are formed deserves careful attention. Not all instructors will favor the same strategy. For example, some instructors like to assign group members randomly, while others like to impose diversity, attempting to balance demographics such as gender, age, or business experience.

My preference is to allow the groups to select themselves. While it has some disadvantages, this procedure tends to minimize complaints later concerning the "luck of the draw", and it reduces potential friction between students who may have negative personal issues with each other. Results from the literature indicate that group conflict can disrupt group cooperation and exert a destructive influence on learning (DeDreu & Weingart 2003; Felps et al. 2006). Another advantage to my approach is that it makes group formation itself part of competitive positioning, as is the case in real business competition.

Consistent with this approach, I invite students to organize their groups as they wish, controlling only for group size. For example, I may limit the size of the groups to a minimum of four and a maximum of five. If the class size is in the low 20s, this approach will result in the creation of about five groups. If the selections result in a small number of unassigned students, I will assign each of them to one of the smaller groups. However, I have found that students are usually able to get all of themselves assigned to a group without my help.

The Business Problem

The class becomes the Board of Directors for Real Estate Finance Company (REFC), a firm that structures and provides financing for commercial real estate investment. As the classroom instructor, I am the CEO of REFC, and President of the Board. I want to exploit the talent on my board to structure the best solution to a challenging business problem.

REFC has developed a proposal to provide "plain vanilla" mortgage financing at the prevailing market rate to our client, Developer; however, when the company details the expected cash flows for the first five years of this mortgage on a spreadsheet, it is evident that the liquidity risks in the early years are unacceptably high, both for us and for Developer. Unless we can structure a financing proposal that is acceptable to our client, and at the same time provides to REFC an acceptable balance of risk and return, we will lose a valuable client and a potentially rewarding investment.

Table 1 shows the fundamentals of the conventional financing arrangement. Developer needs $800,000 in mortgage financing toward the purchase of a $1,000,000 property. The current market rate for similar loans is 6.0%. Table 1 also shows how these fundamentals translate into a cash flow analysis for a five-year investment.

Table 1:

"Plain Vanilla" Commercial Real Estate Mortgage Proposal – A Summary

Terms:					
Acquisition Price	$ 1,000,000				
Mortgage Amount	$ 800,000				
Mortgage Rate	6.0%				
Year One NOI	$ 68,000				
Annual NOI Increase	$ 3,000				
Analysis of Cash Flows:					
Year	**1**	**2**	**3**	**4**	**5**
NOI	68,000	71,000	74,000	77,000	80,000
DS	68,777	68,777	68,777	68,777	68,777
Net Cash to Equity	(777)	2,223	5,223	8,223	11,223
Sale Price					1,220,588
Mortgage Balance					679,197
Total ROE - Lender	5.91%				
NOI = Net Operating Income. DS = Debt Service. ROE = Return on Equity					

Two important features are evident from this cash flow analysis. First, the Debt Service requirement is too high to provide an acceptable margin of safety for the project in the early years. Second, we observe that cash flow prospects for later years improve substantially. This evidence indicates that we have a solid investment from a business standpoint, one with good prospects for future income growth. At the same time, we have a cash flow deficiency in the early years which would expose the investment to unacceptable near term risk if the conventional mortgage were used.

As CEO, I have decided that the best way to solve the problem is to structure an Equity Participation Mortgage (EPM). In an EPM, the lender often accepts a below-market rate on the base mortgage, in exchange for receiving a share of future cash flows that would normally be received exclusively by the equity holders (See: McDonald 2012). In this manner, the mortgage lender (mortgagee) accepts reduced cash flow initially and in exchange receives increased cash flow later. EPMs are commonly used in the financing of commercial real estate investment.

The idea is straightforward, but in practice proves to be extremely complex. As soon as REFC begins to structure a claim on cash flows that normally belong to equity holders, the options for that structure become almost unlimited. Each alternative students consider has complex implications for the timing of cash flows, the riskiness of the investment for both lender and borrower, and the rates of return. Moreover, the effects of these alternatives are different for different measures of return, as in the tradeoff

between Current Return on Equity versus Total Return on Equity (See: Kelley 1987; Roulac & Friedman 1993; Fisher & Webb 1994).

It would be impossible for me to explain these complex financial connections in a lecture. I would create far more confusion than I would resolve. When learning takes place in a student-directed manner under the pressure of group competition, however, students discover these things for themselves. They are forced to organize these connections in a group context and, using computer-assisted analysis, they apply this information to the development of creative solutions to the business problem. To help the reader understand how complex and creative EPM structures can be, in Table 2 I present a summary of the kind of structure that EPMs often take on in commercial mortgage lending.

Table 2:

Commercial Real Estate Mortgage Proposal – A Possible Equity Participation Structure

Terms:					
Acquisition Price	$ 1,000,000				
Mortgage Amount	$ 800,000				
Mortgage Rate	5.4%				
Lender's Preference (Cumulative)	$ 4,800				
Owner's Priority	$ 5,000				
Lender's Current Share	0.60				
Lender's Reversion Share	0.20				
Year One NOI	$ 68,000				
Annual NOI Increase	$ 3,000				
Analysis of Cash Flows:					
Year	**1**	**2**	**3**	**4**	**5**
NOI	68,000	71,000	74,000	77,000	80,000
DS	65,496	65,496	65,496	65,496	65,496
Lender's Preference	2,504	5,504	6,392	4,800	4,800
Preference Cumulative Carry-Forward	2,296	1,592	0	0	0
Owner's Priority	0	0	0	1,022	2,822
Sale Price					1,220,588
Value Increase					
Lender's Reversion Share					
Mortgage Balance					
Total Cash In to Lender	68,000	71,000	71,888	71318	
Total ROE - Lender	7.05%				
NOI = Net Operating Income. DS = Debt Service. ROE = Return on Equity					

Clearly, the development of an optimal EPM design is a complex, challenging task. It is also a task that is well-suited to capture the potential benefits of learning in a small group context. Because the task is structured around a common business problem in real estate finance, students' understanding of transfer opportunities is enhanced. At the same time, the complexity of the problem makes it an appropriate candidate for small-group learning. The literature documents significant advantages of group learning

when the task is complex and technical, while it reports little advantage for group learning when the task is simple and straightforward (Webb 1982; Chi et al. 1994; Schwartz 1995; Andersson & Ronberg 1995; Laughlin et al. 2008; Roscoe & Chi 2008; Sears & Reagin 2013).

The Rules

Each group has the same assignment: To recommend a revised proposal to present to Developer. In doing so, the CEO specifies that they must consider not only the risks and expected returns for REFC, but the acceptability of the plan for Developer. REFC is competing with other potential providers of financing; there is no point in proposing a plan that is wonderful for REFC there is reason to expect our prospective client to reject it. The groups have ample time to develop their proposals, usually three to four weeks.

The product of this group work takes the form of two required submissions. First, each group prepares a hard copy submission. I do not permit this presentation to be more than three pages long, but it must include a Cash Flow Statement on an Excel spreadsheet specifying the key cash flows expected under the proposal, the resulting Current Returns by year, and the expected Total Return on Investment for REFC. Each group prepares copies of this report for distribution to each member of the Board.

Second, each group must make an oral presentation of their plan to the Board in class. Visuals such as Power Point are welcome in the presentation, but no set format is prescribed. I ask for a presentation that is clear, that summarizes the primary features of the plan, and that identifies the advantages of the plan as well as the limitations and drawbacks that the plan entails. It's important that the group discuss the risk/return dynamics of this plan. Each member of the group is required to participate, and the entire group will stand at the front of the room while the presentation is made. The group distributes the hard copy of their report to each member of the Board, including the CEO, at the commencement of the presentation, and each member of the Board will keep that hard copy in his or her file for the remainder of the competition. No private communication occurs between the group and the CEO; he or she receives all submissions at the same time as the rest of the Board, and has no input into their contents.

I allow fifteen minutes for the presentation, followed by a period for questions and comments from the other members of the Board. Each member who asks a question or makes a comment must first identify himself or herself, and identify the group to which he or she belongs. The CEO makes a record of participation in the Q&A by group, and by individuals within the group, and this record will become part of the instructor's evaluation of group performance. Both the quantity and the quality of the questions and comments are valid considerations in this evaluation. The group responds to questions in the manner that they choose, but all members of the group are standing at the front of the room at this point, and are available to participate in responding. The quality of the responses and the degree of group participation in them can also become valid considerations in the instructor's final evaluation of group performance at the end of the competition.

To facilitate the discussion of the rules, let's assume that there are five competing groups. In Round One, then, after all presentations have been made, two groups are eliminated. This elimination occurs as the result of group voting. Each group votes for the two groups that they believe have the least valuable plans. If the vote occurs at the end of a class session in which one or more presentations are made, a "time out" is taken so that the groups can caucus to decide on their choices. The votes are submitted directly to the CEO on paper, identifying the votes as well as the group making the vote. Only the CEO knows what the vote was from each group; other Board members know

only what the vote was from their group, not from the others, although everyone will know what the totals are. Tie votes are unusual, but when they occur the CEO asks for a runoff vote. This procedure will always result in a resolution, provided there is an odd number of groups in the competition.

The members of the two eliminated groups can no longer win the competition, but they are still members of the Board. They continue to be involved in the process as a group, and their contribution is important. They are involved in the Q&A sessions in future rounds, and they continue to have a group vote in each subsequent elimination.

In Round Two, three groups remain in contention. I give each remaining group a reasonable amount of time to structure a modified proposal. I have found that a week is about right. This revised proposal may reflect input from the Q&A sessions, or the group's response to what the other two groups are doing. In fact, they may want to incorporate ideas from the presentations of the two groups that have been eliminated. The CEO gives them complete latitude in restructuring their proposal – they may make modest changes, radical changes, or they may prefer to make almost no changes at all. I have observed that, while some groups do not want to alter their proposal very much, they will always make changes to the oral presentation.

The structure of Round Two is the same as that of Round One. The groups develop a revised written proposal, and they pass out copies of it to each Board member at the beginning of the presentation. The structure and timing of the presentations are the same, and the voting is the same. If the project begins with five groups, only one group is eliminated in Round Two, so that only two groups remain in the competition.

The rules for the Final Round are different. The CEO permits only minor adjustments to the proposals. In the presentation, the CEO invites each group not only to stress the comparative advantages of their proposal, but to attack the soundness of the one competing proposal. Each group is given a brief opportunity to rebut these criticisms, so that each group will take the floor twice. No Q&A session takes place. In the end, each of the five groups votes for the winner. As is the case in the Survivor television show, the vote here is for the proposal that is to be accepted, not the proposal that is eliminated.

The reader may note that the structure of this game is such as to encourage aspects of small-group learning that the literature has shown to be positively related to learning success. Researchers present consistent evidence that teamwork, communication, and participation from all group members is positive for learning success (Pfaff & Huddelston 2003; Rom & Mikulincer 2003; Johnson & Johnson 2009). Teamwork and participation levels are not always clearly observable from written group submissions. The Survivor Game model compels every group to present a business plan as a group at least once, usually more than once. To do that requires group planning, coordination, and communication. If these things are absent, that will be observable to the instructor and will become part of the group's performance evaluation, so the group will be motivated to do these things well.

The level of teamwork and social interaction in the group is also observable in the way the group responds to questions during the Q&A sessions. Moreover, these characteristics are visible in the group's contribution to forming questions and making comments during the Q&A sessions. Students know that the instructor is mapping their participation in these sessions. If a group demonstrates a high level of contribution, and the participation is balanced across the group, that will exert a positive influence on the instructor's final evaluation of group performance.

The Survivor Game structure is also effective in mitigating some of the influences that researchers have found to be negative for learning success. Researchers have noted the

potential negative effect of "social loafing" when it occurs. The term refers to the tendency for some members of the group to back away from participation, and allow one or two group members to do all the work (Latane et al. 1979; Felps, Mitchell & Byington 2006; Harker & Harker 2007). In the Survivor Game, the requirement that every group member must participate makes extreme forms of social loafing impossible. Participation levels are also visible during the Q&A sessions, even when the group is not presenting, but is forming questions or comments from the floor, and the balance of these contributions within the group is evidence of group teamwork, a criterion in the instructor's final evaluation.

The CEO's Participation

The Survivor Game model requires the instructor to decide what level of participation he or she will have in the formation of the proposals. My preference is, in general, not to participate at all. I believe that, were I to participate in any way, my influence would be disruptive to the group process, would reduce the intensity of focus within the group, and might even have the effect of increasing group conflict, or the effect of guiding the group in a less favorable direction. I believe that when the group is entirely responsible for the content of the proposal, their interaction is likely to be more cohesive, and they are more likely to be fully committed to the product.

There is one important exception to the above. I retain a once-only right to veto an elimination if I believe it to be a serious mistake, or if I suspect that it may be compromised by personal considerations, or by a desire to eliminate a strong contender. REFC's business success should be the only consideration in any vote. I have never used this veto power. The fact that I have it has been fully effective in eliminating this agency problem, if in fact it was a significant problem in the first place.

The Reward

The reward is in the Term Project grade, which is 20% - 25% of the course grade. Grading is by group. Everyone in the group receives the same grade. I make no effort to distinguish among student contributions within the group. Everyone in the winning group receives a grade of 100. Participants in the other groups receive a grade between zero and 95, at the discretion of the instructor.

This grading structure creates a learning context that researchers often call "positive interdependence". Positive interdependence means that individual success depends exclusively on the group's success. A substantial body of research supports the view that positive interdependence is associated with improved small-group learning outcomes (Slavin 1996; Johnson & Johnson 1999, 2009). On the other hand, it is a danger associated with positive interdependence that it may in some cases encourage an increase in social loafing. However, some features of the Survivor Game structure tend to mitigate this danger, as discussed above.

The winners' grade of 100 is a highly significant reward. It will bias students' final grade substantially upward. This reward is strong enough to motivate students to become fully engaged in the competition. On the other hand, the groups that were eliminated can still receive very good grades in the end, and that motivates them to remain focused on the competition, and on the group's overall performance. Elimination alone does not reduce the grade below a 95, which is in the A range. Students realize that the instructor's opinion of the right proposals to reject may not always be the same as the judgment of the students, and this awareness will motivate them to stay in the game and emerge with a favorable outcome.

Overview of Learning Objectives

A wide spectrum of learning experiences can and will take place within the context of the Survivor Game model, but the primary objectives of the exercise are just three in number:

1) *Analysis*. Using computer assistance, student groups come to understand how alterations in cash flow structure operate to change returns on equity, and business risk.
2) *Critical Thinking*. Students learn to apply the knowledge in (1) to form a plan that has an efficient impact on the risk-return relationship.
3) *Group Problem-Solving*. Students improve their ability to work effectively in a group context to find solutions to a complex business problem.

The outcomes for the first two of these objectives will be most evident in the written group submission. The outcomes for the third one will be most evident in the group presentations, and the group's performance in the Q&A sessions. I present specific suggestions for the assessment criteria that may be used to evaluate these two products in the following sections.

Assessment Criteria

A scoring scale from one to five may be used to assess group performance on the written submission(s) using specific criteria that I suggest in Table 3, and to assess group performance during the class presentation(s) and the Q&A sessions using criteria I suggest in Table 4

The criteria in Table 3 connect primarily with Learning Objectives (1) and (2) above, while those presented in Table 4 connect primarily with Learning Objective (3) above.

Table 3

Suggested Assessment Criteria – The Written Presentation(s)

Assessment Criteria Ratings for Written Submission – The Survivor Game. 5 = Excellent; 1=Unacceptable					
Citeria:	**1**	**2**	**3**	**4**	**5**
1. Clearly present all specifics of the plan					
2. Computational accuracy of the cash flow spreadsheet					
3. Clear and professional formatting of the spreadsheet					
4. Accurate and understandable explanation of the plan's benefits for REFC					
5. Complete and accurate explanation of the plan's risks for REFC					
6. Accurate consideration of issues related to the plan's acceptability for Developer					
7. Correct sentence structure, grammar and organization of written presentation					

Table 4

Suggested Assessment Criteria – Oral Presentation(s) and Q&A Sessions

Assessment Criteria Ratings for Oral Presentations and Q&A Sessions – The Survivor Game. 5 = Excellent; 1=Unacceptable					
Citeria:	**1**	**2**	**3**	**4**	**5**
1. Professional attire of all group members					
2. Well-organized, coherent presentation					
3. Balanced participation by all group members					
4. Presentation consistent with contents of written proposal					
5. Thoughtful, informed responses to questions and comments					
6. Balanced group participation during Q&A Session					
7. Quantity and appropriateness of contributions during Q&A Sessions following other groups' presentations.					
8. Balanced group participation in Q&A sessions following other groups' presentations.					

Student Feedback

At the end of the game, students provide anonymous, unstructured, written evaluations of the experience. I have used this game twice and received feedback both times.

Not even one student was critical of the Survivor Game. A few expressed disagreement with the outcome of the voting, but none criticized the game itself. The most common response was that the student simply enjoyed the game, describing it as "a great experience", or simply as "fun". Some said that they enjoyed the group interaction and socialization. A few who were currently employed in the commercial mortgage market said that they had gained knowledge that was immediately useful to them at work.

Perhaps the most telling feedback, however, came to me from the Final Exam. The exam included a question on Equity Participation Mortgages. It was the most successfully answered question on the test.

Conclusion

This paper presents a model of small-group learning entitled the Survivor Game, and shows how this model can be used to design a Term Project at the college level. The paper describes in detail how the model can be implemented and managed. The Survivor Game is structured in a way that enhances many of the group learning features that researchers have found to be associated with more successful group learning, and it also contains elements that tend to mitigate the dangers of features that researchers have found to be negatively associated with group learning success.

It is interesting to note that the Survivor Game is a competitive group learning structure. The groups not only collaborate in the learning process, they also compete with other groups to gain a significant reward. Intuitively, one would expect that the competitive aspect of the game would enhance group cohesion and encourage teamwork. To this observer, such does appear to be the case, but literature providing empirical support for this intuition is extremely thin. Research examining the impact of intergroup competition on small-group learning would make a valuable contribution to our understanding of the group learning process.

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