

Chapter 2

Beyond Survival: Using Games to Thrive in Lecture

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Abstract Music theory presents a challenge for both students and instructors. Students enter the course with extremely varied levels of prior knowledge and are expected to become fluent with the nomenclature of the discipline in a relatively short period of time. Adding to the challenge is the fact that music theory is commonly taught in a traditional lecture format, in part because instructors perceive it as efficient lack of training in alternative pedagogical techniques. In order to be successful, a teaching approach for music theory (and other courses with similar characteristics) needs to be both efficient and effective. Theory Survivor is an instructional strategy that utilizes the efficiency of lecture and capitalizes on the academic and social benefits of cooperative learning with the added motivational benefits of a games-based approach. This strategy has an innate popular appeal and capitalizes on group cohesion, extrinsic rewards, and positive peer pressure as motivational factors. Theory Survivor goes beyond mere survival to produce a rich educational environment within which students thrive.

2.1 Prelude

It is the beginning of a typical day on Music Theory Island. My students enter the classroom and take their seats in one of the several small, circular groupings of desks. They greet the other members of their tribes, get out their homework for me to check, and await instructions for the daily challenge. Today, I give a brief review lecture to the large group and answer any questions the students have about their homework assignment. I then post the challenge on the large screen at the front. Today, the challenge consists of several lines from a workbook page on key signatures. The tribe leaders answer any additional questions from their fellow

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members and make sure everyone understands the task at hand. Then, the “beep” of stopwatches being started, followed by the furious scratching of pencils on paper, can be heard throughout the room as the serious business of the challenge begins.

As the class progresses, excited chatter, peer teaching, and occasional eruptions of laughter can be heard as the students work their way through the challenge. A typical comment often overheard at this stage in the class is something like, “I know it. I just need to know it FASTER!” Any expressions of frustration or lack of understanding are met with sympathetic reactions from tribe members and often followed up with further explanation or helpful suggestions. Amid the often chaotic looking and sounding scene, I circulate offering help and encouragement as needed, but more often simply observing and staying out of the way. To an unfamiliar observer, the room looks more like a cocktail party than a lecture class, which is precisely my intent.

After reading this description of students actively engaged in challenging work, collaboration, and peer instruction, you might think that my students are motivated to participate in this manner by the incentive of a good grade in the course or, conversely, the fear of a poor one. Although on some level, it is true that the students care about their learning and want to do well on an individual level, this is not what drives them to succeed on a daily basis. In *Theory Survivor*, it is quite simply all about winning the game.

This is my class. I acknowledge that it is not a “normal” class in terms of the instructional method I use. If a person were able to simultaneously look in on all of the music theory classes that take place each day in the United States, I would hazard a guess that mine would stand out. What *is* normal about my class is that I teach the same content to the same type of students as hundreds of other college music theory instructors. My students come to me with extremely varying degrees of prior knowledge in music theory and certain expectations about what, and how the course will be taught. With regard to the former, many have had performance experience on their instrument in high school, but relatively little specific instruction in music theory. With regard to the latter, most of them picture sitting in a classroom with desks in neat rows, taking notes while a professor stands at the front and lectures. They expect that the course will be boring and perhaps difficult and view it simply as a requirement that they will have to somehow survive in order to obtain their degree.

In fact, at what I would estimate is a majority of institutions, these initial perceptions and expectations are very close to reality for students in entrance-level music theory courses. What is different about my class is that students’ initial expectations are immediately thwarted as they encounter an instructional method much different than their preconceived notions. These students may exemplify the norm at the outset, but after their experience in *Theory Survivor* their perceptions about and attitudes toward music theory are much different.

2.2 Ready to Play: Setting the Context

Theory Survivor is an instructional technique I developed to teach and reinforce the fundamental concepts and nomenclature in music theory. It is a cooperative, games-based method, based on the popular CBS reality show *Survivor*, which incorporates both the efficiency of the lecture approach and the effectiveness of active learning. In order to fully understand this technique, it is necessary to first understand its various facets and to situate it within the contexts of music theory instruction, active learning, and cooperative and games-based instructional methods.

2.2.1 Music Theory Instruction

Music theory is a universally required course for all music majors in every college that offers a music degree. Typically, it is a course that is endured, rather than enjoyed, by both instructors and students. Students often find music theory boring and dull. There are fundamental concepts and nomenclature to learn like note names, scales, intervals, and key signatures. On top of these, there is a seemingly endless litany of rules to learn and procedures to master. In short, it is a very content-laden course in which students must assimilate information and develop skills within a relatively short time frame.

Instructors, on the other hand, may find the course difficult to teach, as the content is very elementary and obvious from their perspective. They can be frustrated when students do not understand basic concepts and may lack the ability to effectively explain them to a novice-level learner.

Music theory is also a course that students typically enter with a wide diversity of backgrounds. This diversity is in part due to the fact that many American colleges do not have a specific prerequisite or entrance qualification for the course and a majority of students do not often study music theory in high school (Livingston and Ackman 2003; Jones and Bergee 2008). This fact, coupled with the propensity for the course to be taught in a traditional lecture format by an instructor who may understand the content but not necessarily how to teach it, provides a recipe for potential academic disaster.

A commonly held perception of college teaching in general is that content is more important than technique. In other words, more value is placed on *what* an instructor knows than whether or not the instructor can effectively teach it. Historically, educators at the college level have received very little training in instructional methods and course design, yet teaching often makes up a significant portion of their job descriptions (Weimer 1990).

With little training in teaching techniques, many instructors choose a lecture approach because they perceive this method as the most efficient way to deliver content. Davis (1993) describes “traditional” lecturing as “one-way communication in which the student is a passive participant” (p. 131). Similarly, Bain (2004) states that most professors’ ideas about teaching focus on the role of the teacher rather than

that of the student. In this conception, “teaching is something that instructors do to students, usually by delivering truths about the discipline” (p. 48). Additionally, Vega and Tayler (2005) state that because professors have such limited training in pedagogy, they tend to emulate the traditional instructor-centered “transmission model” of teaching because it was the model in which they themselves were trained (p. 83).

Lack of formal training and a tendency for faculty to emulate the techniques of their own past teachers are pervasive issues in music theory and musicianship pedagogy as well. Zbikowski and Long (1994) state that teaching methodologies are of “less concern” to teachers at the post-secondary level and that music theory instructors tend to “teach as (they) were taught, changing (their) habits only in the face of unique or epochal circumstances” (p. 136). Similarly, in a more recent survey study, Anderman (2011) found that although most instructors considered themselves to be theory or composition content specialists, a majority indicated that they had not received any specialized pedagogy training in the field.

In one of the relatively few books on music theory teaching at the college level, White (2002)¹ echoes the same sentiment. Speaking of faculty preparation for teaching, he states that “most musical academics appear to operate under the assumption that if teachers thoroughly know their substantive areas of musical scholarship and research or creative activity... that they can usually learn to be good teachers (p. 23).” This position is evident in the rest of the book, which deals primarily with aspects of course curriculum and order of presentation. It is also emblematic of the tendency in the literature to focus more on the *what* of music theory teaching and less on the *how*.

Although there has been an increased interest in music theory pedagogy in recent decades, the literature tends to focus on curricular issues and general pedagogical philosophies rather than specific teaching techniques (Berry 2008). Even within the *Journal of Music Theory Pedagogy*, the most noted journal in the field, it is more common to see the literature on general content- or curriculum-related topics such as counterpoint (Mancini 1989; Hanson 1992, 1995), and musical analysis (Zeeuw 1987; Folio 1991; Winold 1993; Bass 2002; Pacun 2003; Harter 2009) than teaching approaches.

Although there are some articles that deal with specific teaching techniques or strategies, such as mapping of voice leading (Royal 2009) or solfège drills (Kazez 1992), it is more common to see the literature on general teaching tools such as solmization systems (Smith 1991; Lorek and Pembroke 2000), music listening (Alegant 2007), or generalized methods, such as Shenkerian (Riggins and Proctor 1989) or neo-Riemannian (Engebretsen and Broman 2007) approaches to musical analysis.

¹ The publication date listed here is for the most recent (2nd) edition of this book. It should be noted, however, that the only difference between this edition and the first (1981) edition is the addition of a small section on technology usage. The same pedagogical ideas are presented in both editions, which reinforces the argument that little has changed in college music theory teaching in over three decades.

Two exceptions to the overall content-over-practice focus in this journal are worth mention, however. Zbikowski and Long (1994) provide a convincing justification for, and specific examples of, the incorporation of cooperative learning methods in music theory. This article draws on the research on cooperative learning done by Johnson and Johnson (1994) during the same time period and represents a good, albeit isolated, example of music theory instructors looking to educational research to inform and transform their practice.

Similarly, Lively (2005) advocates an approach to music theory instruction based on D. A. Kolb's (1981) typology of learning styles and presents examples of lessons and instructional materials designed to capitalize on students' varying styles of learning. Although evidence for the efficacy of matching instructional methods to the learning preferences of students (and even the very existence of distinct learning "styles") has recently been disputed in the literature (e.g., Riener and Willingham 2010), this article at the very least represents an effort toward research-based practice in music theory instruction.

To offer some perspective on the above examples, it should be noted that these represent a relative minority of writings in the field of music theory pedagogy and do not necessarily reflect common practice among music theory instructors. By and large, music theory instructors may be hesitant to implement large-scale changes to their instructional methods because they lack the incentive and skills to do so.

Music theory instructors are challenged with finding a way to deal with diversity in student ability levels within a heavily content-laden course. Those who lack the requisite pedagogical knowledge and skill to do otherwise tend to teach as they were taught, which often means using a traditional lecture approach to transmit information, coupled with homework assignments to practice skills and tests to assess student learning. Although there are a few examples to the contrary, trends and research in college teaching in general have not largely been implemented in music theory instruction.

Theory Survivor utilizes aspects of the "traditional" music theory lecture approach, as the nature of the content requires a certain amount of direct transmission of material. (Students need to know that there are four sharps in the key signature of E major, for example). It also incorporates the traditional elements of homework and tests. Where it differs is that it allows students to complete the transmission–practice–assessment loop within each class period as well. This facet of the technique exemplifies the characteristics of active learning: an approach that has been widely discussed in the literature on college teaching in general.

2.2.2 Active Learning

Although lecture may be the most traditional instructional approach, and in fact still remains one of the most common in college teaching (Lammers and Murphy 2002; Mulran-Kyne 2010), recent research in the field has illuminated a shift to more active learning approaches. The move toward active learning approaches

within the context of a lecture class setting illustrates what Barr and Tagg (1995) describe as a “paradigm shift” in higher education. Instead of a focus on providing instruction, colleges are now focusing on producing learning. Within this new model, the role of the instructor has changed from that of transmitting knowledge to facilitating learning (Vega and Taylor 2005).

Bonwell and Eison (1991) define methods promoting active learning as “instructional activities involving students in doing things and thinking about what they are doing” (p. 1). Although specific techniques may vary, Kane (2004) posits that all “active” and “participatory” learning (1) encourages critical thinking, (2) encourages learners to take responsibility for their learning, (3) engages learners in open-ended activities which emphasize process over product, and (4) places responsibility on the educator to organize appropriate learning activities (p. 277).

Examples of studies examining the efficacy of active learning techniques within the lecture class setting can be found in a variety of subject areas. Huxam (2005) found that the use of discussions and problem-solving exercises within a communications lecture class improved recall and learning. Omatseye (2007) also found that the use of discussions helped to stimulate conceptual thinking and logical reasoning as well as to increase student participation in the learning process.

Gier and Kreiner (2009) investigated the use of content-based questions in PowerPoint-based lectures and found that the use of this more active technique improved students’ quiz and exam scores. Revell and Wainwright (2009) found that highly participatory, active learning strategies increased student attendance in lectures and pointed to applied methods and small group teaching as a means to improve teaching excellence.

Yazedjian and Kolkhorst (2007) found that the implementation of small group activities within the large lecture class increased student engagement in the course content and was more enjoyable than the standard lecture format from the students’ perspective. Similarly, Gulpinar and Yegen (2005) found that incorporating interactive elements such as questioning and problem-solving activities within an expository lecture enhanced student motivation, attention, and problem-solving skills.

In addition to the ones described above, a host of examples of active learning techniques can be found in content areas such as communications (Schwebel and Schwebel 2002), accounting (Specht and Sandlin 1991), mathematics (Inch 2002), business (Wingfield and Black 2005), and biology (McClanahan and McClanahan 2002), just to name a few. It is clear from looking at the literature that active learning approaches are increasingly being utilized in college teaching in a variety of content areas as a means of enhancing student learning.

2.2.3 Cooperative Learning

Under the broad umbrella of the “active learning” approach, there are many different methods used by instructors. Two such related but often confused

methods are cooperative and collaborative learning. The difference between cooperative and collaborative learning lies in the role of the instructor. Collaborative groups create their own direction and resources, whereas cooperative learning groups (of which Theory Survivor is an example) rely on the instructor to organize learning activities and provide necessary resources (Ventamiglia 1995).

In general, all cooperative learning methods involve groups of students working together toward a goal. However, the literature varies on the specific components of the method. An often cited definition of cooperative learning is provided by Johnson and Johnson (1994), who describe five conditions that are essential for effective cooperative learning. These are the following: (1) clearly perceived positive interdependence, (2) considerable positive (face-to-face) interaction, (3) clearly perceived individual accountability and personal responsibility to achieve the group's goals, (4) frequent use of the relevant interpersonal and small-group skills, and (5) frequent and regular group processing of current functioning to improve the group's future effectiveness.

Slavin (1988) also provides a description of cooperative learning that emphasizes the importance of both a group goal and individual accountability. Although differences exist between the various definitions of cooperative learning, they all include the common themes of groups working toward a goal and individual accountability within the context of learning activities that are designed and initiated by the instructor. Theory Survivor exemplifies this definition of cooperative learning, as it emphasizes both group and individual achievement goals. The way in which it differs is that it uses the context of a game to motivate students to achieve these goals.

2.2.4 Games-Based Learning

Unlike many college music theory students, when my students are asked about their theory class, one of the words they inevitably use to describe it is “fun.” This description is often extended to me personally as well, by both students and colleagues, as in, “she’s a really fun teacher” or “she makes theory fun for her students.” Although in life in general, “fun” is perceived as a positive quality, it is not necessarily perceived this way in relation to college teaching. To have “fun” as an instructional goal may imply frivolity and lack of seriousness about learning. Although serious games of the digital variety are being used and studied in college courses such as chemistry (Antunes et al. 2012; Kavak 2012) and medicine (Kanthan and Senger 2011), some college faculty may look down on the use of games in college classes and view them as unnecessary gimmicks. After all, college students are adults and adults should *learn* in class, not *play*, right?

The construct of play itself is difficult to define. It is one of those things that a person knows innately, but cannot necessarily articulate. Play is commonly accepted as a critical form of learning in childhood, largely due to the contributions of Piaget (1951). A child imitates newly learned concepts and rituals through play in order to assimilate them into their existing schemas. As a child encounters

new ideas, activities, or events, he or she uses play to build new mental models; a process Piaget refers to as accommodation. Contrary to popular beliefs that learning through play is restricted to childhood, Shute et al. (2012) posit that because assimilation and accommodation continue throughout life, play and imitation also remain important cognitive tools into adulthood.

Rieber (1996) defines play as having four attributes: (1) It is usually voluntary; (2) it is intrinsically motivating and not dependent on external rewards; (3) it involves some level of active, often physical, engagement; and (4) it is distinct from other behavior by having a make-believe quality. Huizinga (1950) makes an important distinction between playing a game and being “at play.” The former can be imposed or mandated; that is, one can be required to “play a game,” but the latter results from the individual entering the conceptual cognitive or cultural space in which play occurs.

Theory Survivor is an example of an educational, or “serious” game, the very definition of which presents some problems in relation to the literature on games and learning. Becker (2010) discusses some of the problems with the literature on serious games and the development of a theoretical framework for the use of games in education. She states, “The study of games for education, even traditional games designed for use in that context, has no broadly accepted research or literature base, and so existing ones must be extended in new ways” (p. 23).

In addition to drawing from research on play and learning (as discussed above), the field of educational games draws on the literature written about games (largely digital) and game design in general. This presents its own problem, as educational games run contrary to one of the primary defining characteristics of a game. Becker (2010) points to the definitions of a “game” presented by the seminal works of Huizinga (1950) and Caillois (1961) who both state that a game must be voluntary to be considered a game. Similarly, McGonigal (2011) cites “voluntary participation” as a requisite trait of a game (p. 21).

Educational games are not voluntary. That is, because they are used as an instructional strategy, the implication is that students are made to participate. Becker (2010) addresses this central conflict and posits that this is the reason that it is necessary to “devise a definition that fits the context (of games in education), which is that subcategory of serious games that are intended for learning” (p. 24).

Although not intended for serious games, McGonigal’s (2011) discussion of four necessary game traits is useful in this discussion. McGonigal states that all games need to have the following: (1) a goal, (2) rules, (3) a feedback system, and (4) voluntary participation (p. 21). Malone and Lepper (1987) point to goals, both proximal and distal, and performance feedback as necessary components of challenge, which they describe as one of the types of intrinsic motivation that can be present in any learning situation (p. 230). The components of clear goals and clear and consistent feedback are also central to the theory of “flow” presented by Csikszentmihalyi (1990). It is interesting to note that the attributes of flow theory are similar to that of play and that activities that induce flow also have clear goals, coupled with clear and consistent feedback about whether a person is reaching these goals (Shute et al. 2012).

Although it is missing the requisite element of voluntary participation, I can say with confidence from personal observation over the years that Theory Survivor exemplifies all of the characteristics of a good game. Students learn the social skills of group interaction and cooperation through gameplay (an example of Piagetian assimilation and accommodation) and frequently get “caught up” in the game, thus experiencing a state of flow. Although the distal goal of ultimately “winning” the game and the extrinsic reward of a “fabulous prize” act as motivating factors, the more proximal, and seemingly more intrinsic, goals of attaining a high tribe score on a daily challenge and individual improvement from one challenge to the next seem to serve as the largest motivators.

The term “gamification” has recently been applied to the use of games in education and industry. Gamification is defined as the incorporation of game elements into non-game settings and has been discussed as a means of increasing student motivation and engagement in public schools (Lee and Hammer 2011). Similarly, Whitton (2011) points to the capacity of games to increase motivation and engagement in adult learners as well. In a recent article on the topic, Lee and Hammer (2011) discuss gamification as a means of enhancing the cognitive, emotional, and social development of learners. Although Theory Survivor addresses cognitive and social aspects of learning as well, the area in which it stands out from more traditional methods is in the emotional realm.

Games can provoke a wide range of emotions in the player, both negative and positive (McGonigal 2011). Because games require repeated experimentation, they also inevitably involve repeated failure (Gee 2008). Games allow for repeated experimentation and failure within a low-risk environment by keeping feedback cycles rapid and stakes low. In schools, the feedback cycles are long and the stakes for failure high. Students typically have few opportunities to try and fail without risk, which often produces anxiety (Pope 2003). Gamification helps students on an emotional level by helping students persist through the negative emotions of failure, by “reframing failure as a necessary part of learning (Lee and Hammer 2011).”

Having situated Theory Survivor within the contexts of music theory instruction, active learning, and cooperative and games-based methods, I will now provide a more detailed description of the Theory Survivor game itself.

2.3 Playing the Game: Theory Survivor

In the popular and long-running CBS reality show *Survivor*,² contestants are assigned to “tribes” and must work together to attain both group and individual rewards. On each show, the tribes compete in a variety of challenges to win either special prizes or privileges. One such challenge, dubbed an “immunity challenge,”

² Survivor, CBS, May 31, 2000-present.

entitles the winning tribe to immunity from the Tribal Council ceremony shown at the end of each episode. During Tribal Council, tribe members secretly vote to eliminate one of their members. Usually, this is a member that has not been fully participating or pulling his or her weight within the tribe. The object of the game is to be the last person remaining, or “Sole Survivor” and win the prize of one million dollars. Although the ultimate goal is an individual one, the success of the tribe as a whole and the way in which their members interact affects the success of each player.

Participants in *Survivor* engage in four major activities: (1) tribal membership, (2) challenge communication, (3) survivor challenges, and (4) tribal council. Tribal membership is determined at the outset of the game by the producers of the show. Grouping may be random or based on demographic criteria such as age or gender. Tribes are not permitted to self-select their membership, nor is grouping based on proficiency in any particular skill. Challenge communication in *Survivor* is the means by which tribes are informed of the various challenges. Typically, this takes the form of some sort of written message delivered to the tribes. *Survivor* challenges are competitions of various kinds, either group or individual, in which tribes compete to earn rewards. The rewards in *Survivor* are on three basic types: (1) immunity challenges where tribes compete to win immunity from the Tribal Council, (2) reward challenges where tribes compete to win special rewards or privileges such as food, supplies, or activities, and (3) special or “twist” challenges in which a change to the game is presented.

2.3.1 Theory Survivor as Cooperative Learning: Student Teams Achievement Divisions

These four activities mirror the Student Teams Achievement Divisions (STAD) active learning technique created by Slavin (1991). STAD have been used in both public school and college settings and are best suited to teaching “well-defined objectives with single right answers” (p. 73). Students are assigned to four-member heterogeneous groups, with a mixture of higher- and lower-achieving students. The instructor presents a lesson, and students work in teams to master the material. After the teams have worked together, individual quizzes are given to assess students’ understanding. The cycle of activities (lesson, team work, quiz) typically occurs over a period of three to five classes. Theory *Survivor* merges the central components of the *Survivor* television show with the STAD technique to create a unique and motivational active learning experience. The following section describes the components of Theory *Survivor* through the lens of the four-part STAD technique.

2.3.1.1 Grouping: Tribal Membership

The first component of the STAD technique is heterogeneously grouped teams. In STAD, the instructor assigns students to four-member teams. These groups are designed to be heterogeneous in terms of performance level, gender, and ethnicity. In Theory Survivor, I group my students heterogeneously, but primarily by performance level. Although I do try to ensure that each tribe has a mix of male and female members, I do not feel that the demographic factors of gender and ethnicity are particularly relevant grouping criteria in this situation.

Students are given a pretest to determine their degree of prior knowledge in the subject and then assigned to four- to six-member “tribes” based on their test scores. Each tribe consists of one high-scoring member, who is designated as the “leader” and is required to take on the additional responsibilities of picking up the tribe’s stopwatch and answer keys at the beginning of each class as well as taking care of the timing for the challenges. The rest of the tribe consists of members of varying abilities. I utilize a tiered approach in which I place a mix of high-, middle- and lower-scoring students within each tribe. In addition, to further promote fairness at the outset of the game, I add up the scores on the pretest for each tribe and try to ensure that each tribe has a similar per capita total.

It should be noted that although the tribes are on fairly equal footing at the beginning of the game, their performance may be influenced by factors other than effort and ability. One such example is the case of students that drop the course before the game is over. Typically, these are students who lack previous knowledge and experience with the course content and are not adequately prepared for the academic rigor of college. This situation is not uncommon in other disciplines as well, but occurs frequently in music due to the apparent disconnect between high school and college requirements. A student that could simply show up and receive a good grade in high school choir, for instance, may expect the same result from his or her college music courses. Some students find out that this is not the case and opt to drop the course or major entirely, effectively voting themselves off the proverbial island.

In both Theory Survivor and the *Survivor* show, the metaphor of tribal membership is critical to the success of the game (and instructional technique). Robin (2000) discusses the use of the word “tribe” as opposed to “team” and describes it as “welcoming” and “envoking a sense of belonging” (p. 65). On the first day of Theory Survivor, the first task of the newly formed tribes is to create a name and a flag for their tribe. They are immediately asked to unify and identify as a group, rather than individuals, which sets the tone for an atmosphere of cooperation. As the game progresses over several weeks, group cohesion increases as the tribes work together toward the common goal of winning the promised “fabulous prize” at the end.

2.3.1.2 Lesson: Challenge Communication

The second component of the STAD technique is a lesson that the instructor presents to the class as a whole. In a typical Theory Survivor class, I will give a brief mini-lecture to the large group. The lecture is always very concise and consists of a limited amount of essential material, just enough to allow students to practice the new concept. I may allow time for a demonstration or questions from the class as a whole, but this is also very brief in order to enable students to move to the next phase as soon as possible.

When I am satisfied that the students have an initial grasp of the content, I then present the Survivor challenge for the day. This takes the form of a list of exercises from workbook pages and corresponding time limits for each, posted on a PowerPoint slide. The survivor challenge is sometimes preceded by a practice challenge so that the tribes can engage with the content without the fear of losing points for wrong answers.

In this stage of Theory Survivor, the instructor is responsible for initiating the learning activity, which illustrates one of the requisite characteristics of cooperative learning discussed earlier. It also capitalizes on the efficiency of the traditional lecture approach to transmit information to a large group in a short period of time.

The challenge communication component of Theory Survivor also parallels the television show in that both present critical information to be used toward achieving the tribe's goal. In the show, its purpose is to notify the tribes of an impending challenge or change in the game. In Theory Survivor, its purpose is to present new information and set up the learning activity.

2.3.1.3 Team Work: Survivor Challenge

The third component of the STAD technique is team work. Students work with their teammates to master the material presented in the lesson. Teams are awarded points based on the degree to which students can meet or exceed their earlier performances as assessed by individual quizzes administered at the end of each cycle (Slavin 1991). It is in the team's best interest to help individual members improve, as individual success results in a higher score, and ultimately more rewards, for the team as a whole.

In Theory Survivor, tribes are assigned a challenge based on the content of the mini-lecture. This typically consists of exercises from the course workbook to be completed within specified time limits. As the instructor, I assign the exercises, but it is the responsibility of the leader of each tribe to execute the challenge. Each tribe must complete the exercises within the time limits (a stopwatch is used to accomplish this), check their answers against an answer key that I provide, and calculate both individual and team scores. The team score for each challenge is an average of all individual scores expressed as a percentage. This accounts for tribes of different sizes and is a simple way to generate a score for each challenge. The scores are then written on a large scoreboard posted on a bulletin board in the

classroom so that all of the tribes can see each other's progress. A running total of the current scores for each tribe, as well as the relative rankings of all of the tribes, is also posted on the course Web site. In addition, the tribes that are currently in the lead in each of the two sections of the course get a "photo op," as their tribe pictures are posted above the scoreboard on the Web site as well. This is done primarily for "bragging rights" and works well as an additional motivator, in particular when a tribe does particularly well and unexpectedly pulls into a leading position.

The ultimate goal of Theory Survivor is to get the highest tribe score and win the "fabulous prize." Knowing that the tribes are heterogeneous in performance level, it is in the tribes' best interest to help every member achieve the highest score possible in order to improve the tribe's overall average. As a result, it is very common to see a great amount of peer teaching taking place during the challenges.

Early in this year's Theory Survivor season for example, I noticed that one of the tribe leaders was doing a particularly good job of explaining concepts to her tribe and was going out of her way to help struggling members. I made a point of complimenting her on this and, out of curiosity, asked why she was making such an effort. She replied simply, "Well, that's how we're going to win." In fact, her tribe did end up being one of the winners of the game, but more importantly, it was one of the tribes that gained the most educational and social benefits from the experience.

In addition to the motivation felt by higher-achieving students to teach and mentor their peers, there is a certain amount of peer pressure to succeed that is felt by lower-achieving students, which could be perceived as either a motivational or demotivational factor. In the many years I have been using this technique, it has been my experience that these students tend to rise to the challenge and try to improve rather than give up because they feel they are dragging down their tribe's scores. Naturally, the latter does happen when students are overcome by the amount of new information that they are required to assimilate or the pace at which this needs to be done. However, I have observed that in general, a little bit of perceived pressure from their peers can motivate lower-achieving students to put in the extra effort needed to learn the material and improve their scores.

Learning the course content because it helps your tribe's collective success in the game is a slightly different motivation than learning the course content for your own personal success in the course. It would seem that the latter would matter more to students because it is success in the course actually "counts" in terms of receiving a good grade and credits toward a degree. However, and perhaps counterintuitively, it is the motivation of contributing to the success of the group that seems to drive students to perform at their best.

It should be mentioned at this point that a tribe's performance in Theory Survivor does not have any bearing on students' individual grades in the course whatsoever. Theory Survivor is purely an instructional strategy designed to help students learn the content, not an assessment of any kind. The rewards are purely extrinsic and material in nature (the "fabulous prizes" are custom-made T-shirts), which, in my opinion, is crucial to the success of the strategy. When students' grades are not on the line, they can relax and get caught up in the fun of the game.

2.3.1.4 Assessment: Tribal Council

The final component of the STAD technique is an individual quiz to assess each student's comprehension. These scores are compared to students' past averages and points are awarded to each team based on the degree to which each student met or exceeded his or her earlier performances. Theory Survivor also utilizes individual assessment to determine team rewards, but not in the same way as STAD.

At the end of each challenge, or section of a challenge, the tribe leaders distribute answer keys (or sometimes verbally read off answers if that is more efficient) to their tribe so that individual members can check their answers. Each tribe member calculates his or her own score for the challenge. The individual scores are then added together and averaged, resulting in a score expressed as a percentage. Expressing scores as a percentage rather than a raw total allows for differences in tribe size, as not all tribes have exactly the same number of members and not all students are typically present on any given day. Students are not awarded points based on their past performance as in STAD, but are motivated to improve individually because it will ultimately improve their tribe's score in the short term, and chances of winning the game in the long term.

In *Survivor*, the assessment comes in the form of a "tribal council" held at the end of each episode where tribe members vote to eliminate one of their members. In order to decide whom to vote off, tribe members must reflect on and assess the past performance of every individual. Although other strategic factors may come into play, essentially, the tribe will vote off the member whom they collectively determine to be the weakest in order to increase their collective strength and better compete against the other tribe.

In *Survivor*, there is no reward for individual success in the assessment phase. Conversely, individual accountability comes into play in the form of retribution for failure. Being voted off the island and thus out of the game is the ultimate punishment for an individual's failure to contribute to the success of the group.

2.3.2 Theory Survivor as a Game

From a pedagogical standpoint, Theory Survivor aligns well with Slavin's (1991) STAD method. However, it is more than just an example of cooperative learning. Theory Survivor also exemplifies many of the characteristics of a good game. As mentioned previously, McGonigal (2011) describes the four characteristic traits of a game as (1) a goal, (2) rules, (3) a feedback system, and (4) voluntary participation (p. 21). Although the arguably crucial element of voluntary participation is lacking in Theory Survivor, the rest are clearly present.

The long-term goal of Theory Survivor is to be the highest scoring tribe and win the "fabulous prize" at the end of the game. In the short term, the goal of each tribe as a group is to achieve the highest average score on the daily challenges and

the goal of each individual is to obtain their best score to contribute to the tribe's average. As an additional extrinsic reward for this short-term goal, the highest scoring tribe on the daily challenge in each class receives the honor of the yellow stopwatch. Much like the yellow jersey in the Tour de France is awarded to the highest scoring cyclist on a particular leg of the race, the yellow stopwatch (which is literally a yellow-colored stopwatch) is awarded for the highest daily score and used by the tribe during the next day's challenge. There are no additional points awarded in the game in conjunction with this honor; it is purely done for "bragging rights" and acts as an additional motivator, in particular for tribes that are lagging in points but have the unexpected fortune of scoring highly on an individual challenge.

Theory Survivor also shares the game trait of having rules. Players are assigned to specific teams with which they have to complete the game challenges. They know that their scores on each challenge will be totaled and the highest scoring tribe will win. Within the challenges, they have to complete a specific number of workbook exercises within specific time constraints. They are given answer keys with which they have to compare their responses and are told how each challenge is to be scored. All of these rules are set forth at the beginning of the game, and the players need to operate within them.

The feedback system in Theory Survivor is the single element that makes this technique work so well as both a pedagogical method and a game. In the game, players receive feedback in a variety of ways. First, on an individual level, as players complete each timed exercise and check their answers, they receive immediate feedback as to how many correct responses they are able to amass within the time limit. They can then strive for increased speed and accuracy, and thus a better score, on each successive exercise. Because the feedback is so immediate, they have the benefit of being able to learn from their mistakes and apply this new knowledge on the next exercise. Students frequently experience the feeling of "leveling up" (McGonigal 2011) as they see their improvement over the course of a single challenge in a very quantifiable and tangible way.

Second, on a group level, tribes are able to track their progress through the Theory Survivor scoring system. As the daily challenges are completed and scores posted on the scoreboard, players can compare their tribe's progress to that of the other tribes in their class. As mentioned above, receiving the yellow stopwatch is used as a reinforcement and reward for an exemplary performance on a daily challenge and enhances this feedback, the equivalent of receiving special powers in a video game, for example. Feedback on group progress is also provided by the online scoreboard, which is posted on the course Web site and updated daily. Tribe scores appear in a ranked list, so that players can see how their tribe is doing compared to all of the tribes in all sections of the course. As an added reward similar to the yellow stopwatch, the leading tribe in each section has their tribe picture posted in a "photo op" section above the online scoreboard.

The feedback system in Theory Survivor, in particular at the individual level, is what sets this method apart from both traditional lecture and other active learning techniques. In a traditional class setting, students receive information and then

complete homework assignments to practice outside of class. The homework is handed in, graded by the instructor, and returned to the student, who looks at their mistakes and uses the information learned from them to complete similar assignments. This process happens over two to three class periods at a minimum, and its success is dependent upon an expedient grading turn-around time on the part of the instructor and thoughtful reflection on the part of the student. An instructor who does not grade assignments immediately and a student who shoves returned homework in a folder without looking at more than the letter grade can greatly reduce the effectiveness of this feedback model.

Contrary to this approach, Theory Survivor tightens the transmission–assessment–feedback loop. Students receive new information and are allowed to practice it in mere minutes later. After this practice, students complete their own assessment by checking their answers against a key. Because their individual performance affects the performance of their tribe, they are motivated to reflect on and learn from their mistakes in order to avoid making the same ones on future exercises. The addition of time constraints ensures that the tribes stay on task and maximizes the number of exercises that can be completed in a class session. The time limits and immediate feedback also encourage and necessitate fluency with, rather than a mere surface understanding of, the material, which students quickly gain.

Theory Survivor is an instructional technique that blends the best of educational practices. It combines the effectiveness of active and cooperative learning with the efficient elements of lecture, all within the novel and motivational context of a games-based learning approach. Combining these elements allows students to learn and apply a relatively large amount of material in a relatively short period of time while maintaining a high degree of interest and motivation. Although it sounds like the perfect storm of best practices in college teaching, faculty must carefully consider certain pedagogical implications of this technique before jumping on the proverbial island.

2.4 Winning at Learning: Implications for Teaching

I have stated earlier in this chapter that I acknowledge that my class is not normal. I also acknowledge that I, as an instructor, am not normal. I am willing to spend what some would consider an inordinate amount of time inventing, creating materials for, evaluating, and refining new instructional ideas, just for the pure satisfaction and joy of doing so. I make a concerted effort to read educational research and consider myself to be well informed on current trends and techniques both in K-12 and college teaching. I observe my students carefully, evaluate the efficacy of my current teaching methods, and design new instructional strategies and materials in response to any difficulties that arise. In essence, I am a student of teaching. I enjoy it, place great importance on it, and am intrinsically motivated to continually learn about and improve my practice. I frequently experience feelings

of “flow” while doing my job, which is one of the many reasons I choose to remain in my current career.

However, I recognize that this particular orientation may not be shared by many faculty members in general, and particularly not by faculty in my field. First year music theory courses, in particular at large institutions, are frequently taught by graduate teaching assistants under the direct or indirect supervision of a faculty member. If a tenured faculty member does teach an entrance-level theory course, it typically does not rank very high on his or her list of academic priorities. Research consumes more of a faculty member’s time and is typically held in higher regard than teaching in the teaching–research–service paradigm, as publication is crucial for tenure and promotion. Also, as discussed earlier, many faculty members do not have a background in college teaching techniques and thus may tend to revert to the instructional methods they encountered as students.

Research in the field of college teaching is constantly expanding, in particular in the area of educational technology and active learning. Even the most avid traditionalists in higher education may eventually need to come to terms with the fact that today’s students have been educated in using technology in a different way than previous generations and are used to, and more adept at, interactive learning methods. Adopting active learning techniques, either with or without the assistance of instructional technology, is one way that instructors can bridge the gap between tradition and innovation and adapt to the changing needs and preferences of their students.

Theory Survivor is one example of an active learning approach used within the context of a traditional lecture course, but there are other examples as well. The use of personal response systems or “clickers” in lecture courses is one example of a widely adopted instructional strategy used across a variety of disciplines in college teaching and represents an effort toward the achievement of more two-way communication in lecture as well as means of increasing student engagement and achievement (Bojinova and Oigara 2011; Hoekstra and Mollborn 2012). By asking questions during a lecture to which students respond by clicking an answer button, an instructor can receive instant feedback on whether or not students understand a particular concept. This is particularly useful in the case of hesitant students who may not feel comfortable answering a question verbally for fear of being wrong.

Prunsky et al. (2012) describe the use of online lectures to facilitate active learning. In this instructional model, students receive the “transmission” component of lecture to prepare for class and then engage in active learning techniques (including clicker questions) based on the online lecture material during the face-to-face class period. Although it may seem like more time is required, students reported that this method did not increase the amount of total time they devoted to the course.

Another example of strategy that incorporates both active learning and small group cooperative learning within a large lecture class is the technology-enabled active learning (TEAL) initiative at MIT, a technique that is modeled after the Student-Centered Activities for Large Enrollment Undergraduate Programs or SCALE-UP method devised by Robert Beichner at North Carolina State University

(Breslow 2010). In this technique, designed for science, technology, engineering, and mathematics (or STEM) courses, students are assigned to heterogeneous groups of three and sit at specially designed nine-person tables in a large lecture room. The idea behind this highly technology-integrated technique is that students are provided with the necessary resources (via laptops connected to the Internet, physical models, and other resources) to work on real-world problems. In addition, sharing results and collaboration is enhanced by the technology that allows any group's results to be projected on screens positioned around the room for others to see at the push of a button. TEAL merges lecture, problem solving, and laboratory experiments in an effort to integrate concepts into practice and produce a deeper understanding of the material. TEAL and SCALE-UP also allow for students to learn collaboratively within a large class, which is difficult if not impossible using the traditional large lecture course model (Gaffney et al. 2008).

2.4.1 Road Blocks: Active Learning Barriers

It is evident from the examples cited above and from the literature on college teaching in general that there is a developing trend toward the incorporation of active and interactive learning techniques within the context of traditionally lecture-based classes. Although an instructor reading about them may be interested in adopting such innovative or creative strategies, there are certain barriers that must be overcome first.

Music educator Schafer (1986) said, “the first practical step in any educational reform is to take it” (p. 237). In order to be successful at implementing a new strategy, an instructor has to be willing to take the first step and assume all risks associated with it. The first season of *Theory Survivor* was a lot of work to set up, and I was uncertain at the time about whether or not it would be successful. From my current vantage point, I can say that the benefits far outweighed the risks associated with this technique, but the initial decision to let go of my previous methods and try something new was admittedly quite difficult.

Engaging a class in cooperative learning can be a bit of a messy process, as an instructor needs to think differently about his or her role when implementing such techniques and must be prepared to deal with a different type of classroom environment. In cooperative learning, the instructor needs to adjust his or her approach to act a facilitator rather than a teacher, a “paradigm shift” described by Barr and Tagg (1995). In my experience with *Theory Survivor* over the years, I have learned how to effectively stay out of the way and will only interject when I observe difficulty or when students ask for assistance. This shift may be difficult for some, as it requires giving up a lot of control and placing the responsibility for learning in the hands of the students. If an instructor is used to a quiet, orderly, teacher-directed class, then the noisy, student-directed, and sometimes chaotic nature of a well-done cooperative learning activity may be unsettling.

An additional barrier to the adoption of a new instructional strategy is the initial increase in preparation time it entails. Even though they might want to, some instructors may not be able to invest the amount of time necessary to implement large-scale changes to their courses. In my experience with Theory Survivor, however, the initial time investment in class planning and creation of instructional materials paid off in the long term, as I am now able to reuse these materials year after year. In addition, the design of the strategy itself, whereby students complete exercises and immediately check their own answers, saves me time that I would have spent grading homework assignments had I taught this material in a more traditional way.

Although the barriers described above are ones that I had to work through when I initially created Theory Survivor, they need not be prohibitive to other instructors wanting to try this technique. Over the years I have been using Theory Survivor, I have had the opportunity to invent, troubleshoot, and revise many of its aspects. My hope, and intent in writing this chapter, is that others may benefit from my experience and need not “invent the wheel” on their own.

2.4.2 Workaround: Using Survivor to Win at Active Learning

In video game parlance, a “workaround” or “exploit” is a weakness in a game’s design that allows the player to win every time (Salen 2008, p. 268). Although undesirable in a game, a workaround may be useful to instructors who wish to adopt a strategy similar to Theory Survivor without doing all of the legwork themselves. The following section outlines some of the aspects of Theory Survivor that I feel are crucial to its success and may be useful to those who are considering adopting this technique.

The first, and perhaps most important, aspect of Theory Survivor that I believe is crucial to its success is that it is inherently unique and appealing. Using the format of a popular television show provides a familiar context with which students can easily relate (Kaupins 2005). In fact, the *Survivor* game context has been used in other disciplines in college teaching, such as medical education (Howard et al. 2002). Also, the environment of friendly competition that is not related to grades is key to the motivational aspect of the game. Although participation is not voluntary, knowing that they are competing for a “fabulous prize” and that the game is not related to their grade in the course allows students to relax and participate fully without risk.

Second, the material that the Survivor technique is used to teach must be conducive to and necessitate drill-type practice and must be material with single correct answers so that students can check their own work. I use Theory Survivor to teach and review the music fundamentals portion of my course, which lasts about eight weeks. The technique works well for this content as fundamentals of

music theory are best retained if they are learned in small increments through repeated practice (Rogers 2004). It is essential that this introductory material be thoroughly integrated to achieve long-term retention and enable students to apply the principles to new situations.

Although I designed this technique to work with music theory, it has potential application to a variety of disciplines. Music theory is similar to other subjects because it is comprised of a unique “language” of fundamental concepts with which students must become fluent very quickly. Examples of other subjects that share this characteristic include chemistry, physics, anatomy, foreign language, biology, and statistics to name a few. In short, any subject that necessitates the assimilation of a relatively large amount of unfamiliar information in a relatively short time frame is a candidate for this method.

Third, team equity is important. The use of a preassessment allows for heterogeneously grouped tribes and ensures that abilities are distributed equally. From a pedagogical standpoint, having a higher-achieving member in each tribe produces a resident “expert” to whom questions can be directed. This takes pressure off of the instructor and allows the tribes to be relatively self-sufficient. From a game standpoint, the perception of equity, at least at the outset, is crucial to players’ motivation. If teams perceive that they are starting the game on equal terms, then they will work harder to improve their performance and standing. If equity is not established, teams perceive that they do not have an equal chance at winning, and are less motivated to succeed; effectively negating the educational benefit of the activity.

Finally, in order to maximize both the social and motivational factors in the Survivor technique, the contributions of individuals to the team must be recognized and cast in a positive light. Peer pressure can act as a motivational force, but it is important that weaker team members not be made to feel inferior. In my experience, it is more common for tribes to help a struggling member than get upset about his or her low scores. I feel that offering purely extrinsic rewards for accomplishments in the game, as opposed to tying them to course grades, is critical for the success of this technique. When students know that their grade is not going to be negatively affected by the outcome of the game or the performance of their teammates, they feel more comfortable participating and are allowed to experience failure in a low-risk environment. In short, this is what makes the game feel like a true game and not an instructional gimmick.

Theory Survivor works as an instructional method because of its ability to blend the efficiency of a traditional lecture approach with the effectiveness of cooperative learning. It is well suited to teaching content for which (1) drill and practice are necessary and (2) there are single correct answers. It works as a game because of its innate appeal and capitalization on the motivational factors of group cohesion and external rewards. Even though participation is not voluntary, the fact that the game is not tied to grades enables students are able to function as “players” and feel as though they are participating in a true game. As with any new approach, utilizing the Theory Survivor method may initially require an increase in preparation time and the adoption of a different attitude toward teaching, but the

academic and social rewards far outweigh any risks. Losing some of the comfort associated with familiar teaching methods is sometimes necessary to win at producing authentic learning.

2.5 Postlude

As I finish writing this chapter, the season of Theory Survivor has come to an end. The scores have been totaled, the fabulous prizes distributed, and the tribe flags and paper palm tree decorations taken down. When I meet them for our first class post-Survivor, my students' collective mood will be noticeably more subdued and slightly uneasy as they long for the familiarity of their tribes and the excitement of the game. Although in the short term they will be focused on what they have lost, in the long term it is what they have gained from the experience that they will carry with them.

In eight short weeks, these “castaways” have been transformed by their experience on Music Theory Island. Once hesitant, shy, and afraid to make mistakes, they have learned how to interact with their peers, how to deal with and bounce back from failure, and have gained a deeper understanding of and fluency with the fundamental concepts of the discipline. They have been engaged in the game, sometimes to the level of experiencing feelings of flow, and have been motivated to learn and achieve on an individual level to contribute to the collective success of their tribe.

Although they were initially forced into their groups and the game itself, at this point, they do not feel like this was the case. From their perspective, their tribes have become a pseudo family and have provided them with the much needed social and emotional support to survive their first weeks of college. The game, to them, felt like a “real” game and not like learning encased in a more palatable exterior, like chocolate-covered broccoli.

When they reflect on their experience, however, these are not things that they readily can or necessarily will articulate. If you ask my students to describe their experience with Theory Survivor, the three summative words spoken by the collective tribe will be, simply, “It was fun.”

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