

# Completing the Experience: Debriefing in Experiential Educational Games

Scott NICHOLSON

School of Information Studies, Syracuse University  
Syracuse, NY 13244, USA

## ABSTRACT

Good educational game design is about providing an engaging experience for learners. Experiential training games have been used in fields such as medicine, business, outdoor adventures and military operations for decades. Research from these fields demonstrates the importance of including debriefing activities to help the learners consider what was learned and how that learning can be connected to previous learning and experiences in their lives. Most educational games do not include debriefing activities. The purpose of this paper is to explore some of these models of debriefing and to present a variety of methods that educational software creators can use to include debriefing in their experiential educational games.

**Keywords:** Educational games, debriefing, training

## 1. INTRODUCTION

In line with the shift from traditional to progressive education, there has been a shift in what is considered to be good educational game design. Traditional educational games are focused on asking a series of questions in order to gain an in-game reward. These games function more as assessment tools, but do little to inspire or teach students. The experiential educational game model is based on using simulations or other activities that teach through having students *do* something instead of demonstrating knowledge *about* something. For example, a traditional chemistry game may ask students facts about chemical reactions, while an experiential game may put students in the role of a chemical engineer called in to assist with the investigation of an explosion where the player explores chemical reactions through experimentation. These experiential spaces allow for play and risk-taking and encourage learners to continue exploring the topic outside of the game [1]. Models of experiential learning for medical simulations, military games, outdoor adventure experiences, and corporate training all include the debriefing as part of experiential learning activities.

John Dewey, one of the most influential thinkers in educational theory in the twentieth century, argued that education is the combination of experience and reflection [1]. This theory has been embodied in the concepts of experiential games and simulations through techniques known as reviewing or debriefing that encourage learners

to mentally process the experience. As Thaigi, an expert in training, says, “People don’t learn from experience; they learn from *reflecting* on their experience” [2, Debriefing section]. Many experiential educational games do not include a debriefing component; at the end of the experience, the game simply ends. If these games are used in a classroom setting, then the teacher or facilitator can work with the students to help them reflect about the game.

As experiential game-based learning in both formal and informal settings becomes more popular, students are playing these experiential games in non-facilitated spaces. If these experiential games do not contain any debriefing activities, then a significant opportunity to create a meaningful and educational experience is lost. The purpose of this paper is to discuss the importance of debriefing, to present different models for the debriefing process, and then to explore ways for game developers to integrate debriefing activities into experiential games.

## 2. IMPORTANCE OF DEBRIEFING

There are two assumptions behind the importance of debriefing – that the activity affected the player in a way that requires further consideration and that there is a process needed to help the player through that consideration [3]. If one goal of the experiential game is to create a meaningful learning experience, then if that goal succeeds, these assumptions will hold true. Debriefing for training activities should “integrate experiences with concepts and applications that are transferable to settings outside the classroom” [3, p. 10]. These processes “encourage the learner to reflect, describe, analyze, and communicate what they recently experienced” [4, p. 9]. The result of the debriefing process is that learners discover meaningful connections between the activity and their own lives, thus increasing the learning that occurs from an experiential activity [4].

Debriefing has been typically applied to adult learning situations, such as military games, medical training, and business simulations, because the assumption is that the adult learners need to connect their learning to the real world in order for the learning to be effective [5]. As educational games and simulations become easier to implement widely due to broader access to the computing technologies needed to facilitate simulations, the need for

debriefing these types of simulations for all players, regardless of age, becomes important.

The debrief is critical because it helps learners explore what went on, talk about their experiences, develop insights, reduce negative feelings about aspects of the activity and connect the activities to their real-life situations [2]. A simulation or training game that goes poorly can still be a good learning experience with an experienced facilitator taking the time to debrief the activity appropriately. Similarly, even if the experiential educational game is not as successful for a learner as was hoped, debriefing exercises can help the learner still gain something from the experience.

### 3. MODELS OF DEBRIEFING

There are a number of models of debriefing that have been presented and refined over the years. One model presented in [4] starts with Bloom's taxonomy and argues that debriefing that starts too high up on the taxonomy can fail. Instead, this model starts with activities focused on having learners discussing what happened in the event, which is based on the Knowledge and Comprehension level of Bloom's taxonomy. After this, the facilitator encourages learners to explore how the group performed in the event, which comes from the Application and Analysis level. Next, the learners discuss other potential solutions to the challenges during the Synthesis portion of the process. Finally, in the Evaluation and Opinion stage, learners are ready to discuss how well they did with the activity.

A heavily-cited model by Kolb leads learners through several stages from experiencing to learning. The first stage focuses on what the learners felt and experienced during the event. The second stage introduces other points of view by engaging an individual's experiences with the experiences of others. The third stage has the learners relate the concepts in the activity to previously learned concepts in the class and consider how the activity can be expanded. The fourth stage focuses on enabling users to make a connection of the activity to the real world [6]. This then can lead to a growing desire to have more experiences, which starts the cycle of experiential learning anew.

Greenaway further refined this model to make it easier to facilitate to remember and apply. His four-stage active reviewing sequence starts with Experience, where learners reflect and discuss the activities that occurred. The next stage is Express, where the learners consider the emotions that they felt during the process. Examine comes next in this model, where learners are encouraged to mentally detach from the experience to consider, more holistically, what happened and how well everything

went. Finally, the Explore phase has learners thinking about the future and how the activity can connect back into the real world [7].

Thiagi, one of the modern leaders in corporate training, brings together ideas of these models and extends them his popular debriefing model. There are six stages to his debriefing process after a simulation or experiential learning activity. First, the learners explore how they feel after the activity. Many activities can involve stress, conflict, or negative situations, so it is important to allow the learner to express these feelings. Second, the learners explore what they recall as happening as part of the activity. Third, the learners explore what they learned during the activity. Fourth, the learners tie that learning to their own experiences from the real world or other things they have learned before. Fifth, the learners consider what happened and how what they learned might apply in a different context. Sixth, the learners plan out their next steps [2].

All of these models point to key activities that need to take place after an experiential activity, which are "description, analogy/analysis, and application" [5, p. 117]. These models typically are used in situations with a facilitator who leads learners through the process. Due to the high cost of bringing in an expert facilitator, there is a growing interest in self-facilitation. The literature review in [5] reports various attempts at self-assessment with mixed results, although a common pattern of success centers on the use of self-assessment tools. Therefore, this concept of expert-created tools that help a learner assess their own performance through reflection is an important one in developing debriefing tools facilitated by the educational game.

### 4. APPLYING DEBRIEFING MODELS

In the typical classroom, it is up to the teacher to debrief the use of an educational game, simulation or activity. If presented appropriately, this debriefing helps the students deconstruct the activity and then connect it into their mental models. Without this debriefing time, the effectiveness of the activity may be greatly diminished, as some learners will see the activity as a stand-alone event and not properly connect it to other aspects of the class.

Most digital educational games and simulations do not include a debriefing as part of the game. Some of them will include knowledge-based assessments, such as quizzes, to test learning, but these are not the same as a debriefing activity. Debriefing activities do not have a "right" answer, and are instead used to help learners explore and express their feelings about an experience. Without the debriefing, when these games and simulations are used in place of a lesson or used in a stand-alone setting at home, over the Internet, or in a

computer lab, the learners are only getting the activity and not the guidance to help them connect that activity into their existing mental models.

### **Changing the Stage**

In talking about debriefing of medical simulations, [8] presented the importance of having the debriefing in a different physical place from the activity. The reason for doing this is so that “the focus can move from a state of action to a state of reflection” [8, p. 2]. When considering this from a game perspective, it means that the debriefing process needs to be in a different game mode or in-game space. The underlying concept is that the learner needs to mentally step back from the space where the simulation has taken place in order to reflect upon the experience and connect it to his or her life.

One challenge is to present these activities in a way that is separate from the game, so that the learner can mentally step out of the situation and engage with the debriefing, but still presenting them in a way that is engaging so that the learner does not just quit the game. One method of doing this is to change the reality that the learning is engaged with within the game. For example, if the player is exploring concepts of spreading bacteria and disease through a fast-food restaurant setting, the debriefing could take place in the setting of a manager’s office. If the activity was out in the field collecting archeological relics, the debriefing could be with a journalist who is now reporting on the story. Another method is to break the fourth wall of the game with an “instructor” character in the game who introduces the activity and appears throughout the game to lead debriefing activities.

Many of these activities require the learner to write or create content. It is important that learners are aware how their reflections will be used. While it is recommended that the instructor review what learners create, it is not recommended that these debriefing activities be used for student assessment. If the learner is going to be assessed based upon the content of his or her debriefing, he or she will be much less likely to be honest about difficulties and points of failure. A different instrument should be used for assessment of the content gained from the experiential game. In addition, some of the debriefing activities have the responses by one learner shared with others; if using these features, an instructor should review the entered responses, clean them up so they will serve as good examples, and remove any personally identifiable information.

Once the new stage has been set for the debriefing activities, designers of experiential educational games can select from different debriefing ideas as a starting point upon which to build a cohesive set of activities. No matter which debriefing methods are selected, the key underlying concepts are having the learner describe what happened,

asking them to analyze their performance, and encouraging them to talk about how this experience could be applied to the real world.

### **Expressing Feelings and Describing Activities**

In any experiential activity that could be emotionally charged for the learner, it is important to allow him or her to be able to express those feelings. If emotions are strong, then the learner will have a hard time working through other aspects of the debriefing process.

One way to help the learner express his or her emotions is with an emotion timeline. This timeline can consist of the significant milestones in the activity, and a set of icons representing different emotions. The learner can then drag icons to different parts of the timeline and annotate what aspects of the activity created those feelings. This debriefing exercise will help the learner see how his or her feelings changed over the course of the activity.

A traditional method of reflecting is to have the learner record both feelings and activities through a journal or diary. This journal could be integrated into the game, or could be a component that is printed before the game begins and used alongside the game. Providing no context within to write can lead to brilliant insights or meandering thoughts; it will be more effective as a debriefing to provide journaling guidance. A *log* is a journal where the learner records findings, perhaps in a scientific or discovery simulation, and his or her own reflections and insights. At the end of the experience, the learner can look back at the log to reflect upon highlights. In a similar vein, the *critical incident* journal is used for the learner to reflect in-depth about key points during the experience. A *prompt-based* journal has questions that appear at set times for the learner to answer, while a *double-entry* journal has the learners recording reflections during the experience, and then are presented with those reflections at a later time and asked to reflect a second time [9]. Another way of implementing the double-entry journal is to use a webcam to have the learner record his or her feelings and reactions, and then play that video back later for additional commentary.

One method of inspiring reflection is through creating screen captures that represent critical moments in the activity [10]. A more sophisticated method is to take frames (or even video clips) from the actual game with the learner’s character in it, showing his or her successes and failures. The learner can then either be shown these one at a time or in small groups and then is asked to select one and reflect upon what was going on and how he or she was feeling at that moment.

### **Exploring What was Learned**

One technique in debriefing is a partnered reflection, where pairs of learners work through the debriefing

experience with each other [9]. In a single-player experiential game, some of this can be done with a simulated partner. The learner reviews the performance of one or more “partners” and assesses that performance and compares that performance to his or her own. This will force the learner to think more about what makes for a good performance and consider how different people might approach the same task.

Another method for self-reflection and assessment is to ask the learner to rate his or her learning on a series of specific outcomes or questions [9]. The rating could be used with a simple 1-4 scale, where 1 is “I feel that I didn’t learn anything” and a 4 is “I feel that I learned a lot.” After answers of 1 or 4, a follow-up question can be asked to probe further. The other advantage of this method is that instructors can look at the results of these questions to learn about how the learners perceive the effectiveness of the activity.

The popularity of badges and achievements can be useful in the debriefing process. Rather than receiving achievements for aspects of the activity that the designer felt was important, the learners can be allowed to create their own achievements to highlight things that they think they did particularly well [12]. These could be presented in the form of newspaper headlines or “X of the Year” awards. This encourages learners to consider what they learned and what was most impressive or important to them. Achievements created by others can be shared with the learner as well.

### **Relating to other experiences or prior learning**

If the game is made up of a series of activities, each which builds upon the past, then one strategy is to take a break from the activity between sections and ask the learner to reflect upon what they he or she learned and how his or her success was built upon what they have previously learned. This can also work within the aforementioned journal structure, where the learner reflects upon the past entries and then continues the journal.

To have the learner reflect upon how this activity relates to prior life and educational experiences, any of the earlier methods for having them document what he or she learned can be used as a starting point for another debriefing activity. For each important situation documented earlier by the learner, a follow-up question can be asked to have learners reflect upon other things they learned or experienced in the past that helped them deal with that situation in the activity.

### **Consider how to apply learning to other contexts**

One opportunity to explore how to apply learning elsewhere comes after asking the user about previous situations. A follow-up exercise is to then ask learners to

think about other situations in life where what they learned may be valuable or past situations that the learner was in where the knowledge gained from the game would have been useful. A different approach is to ask the learner about what types of other people would find these topics valuable. Rather than just list other people, the learner can be encouraged to write a fake e-mail to either a real or fictional person convincing him or her that this learning activity would be valuable.

Another method of having learners think about how lessons learned can apply elsewhere is to put them in the role of a game designer. Learners are asked to think about a game idea that would take the lessons taught in the activity they just completed and allow someone to learn how to apply those lessons into a new environment. By providing the learner with a variety of icons to drag into a game design document, the learner’s creativity can be jostled in directions different than a text-only document would provide.

A simpler, but less engaging, way to get users to think about other contexts for the learning is to ask the learner to select five situations from a long list of pre-determined situations where the learning would be useful. The learner’s goal is to select the five most commonly selected situations by other students where this learning would be useful. As they select situations, they learn how many other learners selected that situation. This will provide them with a wide variety of things to consider outside of what they might come up with on their own. [11]

### **Planning next steps**

One way to help learners think about what next steps to take is through picture analogies. The learner can be presented with a set of inspirational images and is asked to choose which one represents how he or she will take what was learned here and continue with it. After selecting an image, he or she will then record why that image was meaningful. It can also be a nice touch for the learner to see reasons from other learners who selected the same image to learn other reasons. This provides a connection to other learners who have done the activity at another time.

Another activity for thinking about the future is to have each learner write a fan letter to himself or herself a year in the future. This letter should talk about the experience, what was learned, and how the learner applied what was learned to his or her life. Instead of a letter, this could be a video that the learner records to a future self. This letter can then be e-mailed to the learner a year later [9].

### **Simulating a group**

One of the powerful aspects of debriefing is that it allows each participant to take what he or she internalized from

the activity, share it with others, and learn from others. In several of the activities listed here, some of the influence of other participants, either real or simulated, is integrated into the activity. While challenging, it can be quite valuable to bring in other viewpoints and to let the learner know that his or her thoughts will be shared with others. Many of the techniques presented here can be tied into some type of forum or chat space in order to encourage learners to engage with each other.

## 5. CONCLUSIONS

By including more debriefing activities in an experiential game, the learning experience can be more effective. These debriefing elements in games can also assist teachers wanting to use these games as at-home supplements to classroom lessons by ensuring that the students go through the critical debriefing process. As online education becomes more popular at all levels, this type of self-led debriefing will grow in importance. While the instructors and designers can greatly benefit from seeing the results of the debriefing, it is important to ensure that learners know how their debriefing will be used.

Any debriefing should focus on at least three elements – what was done in the activity, how well the activity worked for the learner, and how the learning could be applied. It is important that there be a shift in the game space between the experience and the debriefing activity so that the learner can mentally shift from doing to reflecting. Providing some way for learners to engage with each other in a synchronous or asynchronous way will lead to a richer learning experience. The result of a successful debriefing is that both the learner and also the instructors gain much more out of the original exercise.

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