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RockEves Design Brief

About Rocksmith:

The proposed project design for RockEves' features are based off of the current Rocksmith software. Rocksmith is created by Ubisoft. It is a video game software that teaches players how to play songs on the guitar. There are three different modes in Rocksmith. The first mode is a lessons mode, which contains 80 different lessons that are dedicated to teaching players basic guitar chords and techniques. The second mode is a mini-games mode (also known as guitarcade). The games in this mode are targeted to help improve players' guitar techniques, speed, and precision. The third mode is a session mode where players have the option of selecting four different artificial intelligence (AI) bands to play along with. Depending on the speed at which the player plays the songs, the AI band will adjust to the player's pace. Two key components are required to interact with the system. Separately a player must have an electric guitar and a "Hercules" adapter to connect the guitar to one of the following platforms that supports the Rocksmith software: Xbox360, playstation 3, computer.

Motivation:

While Rocksmith is a great software for teaching players how to play songs that are already in the system on the guitar, it does not teach players how to read guitar music tablatures (also known as tabs) and standard music notation so that players can go beyond the system to pick up a guitar music tab sheet or sheet music anywhere and play an unfamiliar song. The addition of the RockEves' new feature is an attempt to teach players (1) how to read guitar tab music and standard music notation and (2) how to create their own songs through exploration.

Rationale:

To progress as a guitarist goes beyond just memorizing where your fingers go while playing a song. It is important to learn to recognize where the notes are on the guitar. Thus there are benefits a player can gain from understanding how to read tabs and sheet music so that he/she can know where to put their fingers and what note to play on the fret board of the guitar.

Being aware of where the notes are on the guitar will help the guitarist to notice the notes that are used for various songs that he/she plays. As a result, it will paint a clearer image of what the player is playing and how the different notes and concepts work together. For example, the player's understanding of the various chords, rifts, and patterns will begin to have

more depth. This will allow players to work with new songs more easily. It will also help with new ideas and concepts and give an ability to be able to analyze a music piece as well as write a musical sound.

In order to communicate with other musicians your ideas, you need to know some form of music notation. Not knowing how to read/write music can put you in a disadvantage position if you need to work on a song whether by yourself or with another person. Communicating efficiently would not be possible. Thus, certain concepts may be too difficult for you to understand without understanding some form of music reading.

An advantage of knowing how to read Tabs allows players to know where to put their fingers when playing the guitar. Players need to prepare their fingering in advance for complex pieces and knowing how to read Tabs is a good system that will provide users the write context combined with standard music notation.

RockEves:

The design of the features in RockEves are targeted to ages 8 years and older due to the need for conceptual understanding where it is stated by Jean Pieaget that "the third stage of cognitive development: the concrete operational stage," is a stage during which children begin applying logic and reason to concrete events (Piaget, J. 1972). The game system is meant for use in the home as an entertainment and learning tool.

RockEves leverages upon the current software technology in Rocksmith to add two new features to the system. The two new features are:

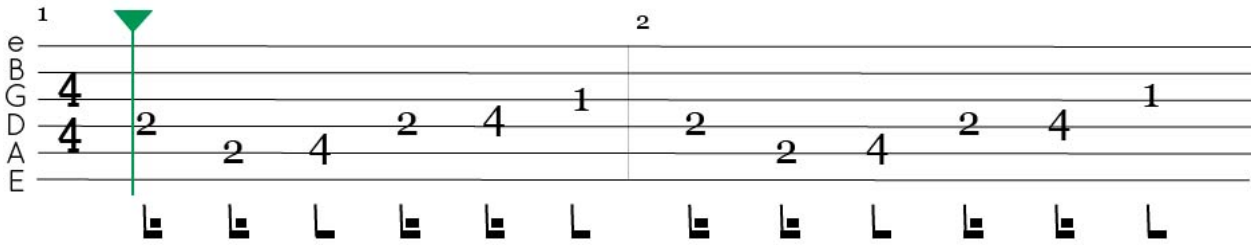
Feature 1.

Tablature and standard notation music lesson mode (see Figure 1)

Feature 2.

Collaborative multiplayer song writing mode (see Figures 2 and 3)

Figure 1. (Song: Three Little Birds)



Description of Figure 1. The green bar indicates where a player should be along the track during the lesson session. The letters on the far left indicates the notes of the string on the guitar. The numbers that the green bar goes through represent the frets on the guitar. On the bottom are representations of music notations that represent the rhythm and beat of each measure.

In RockEves the Tab and standard music notation mode is largely based on the concept and principle of "Gamification," the process of using game mechanics and game thinking to engage users and to solve problems. "Most games have win states, and even those that don't end in victory usually have clear ways of demarcating success through points or other quantifiable

outcomes. In addition, games have rules that structure the play, and that guarantee the fairness by being applied transparently and equitably to all players." (The Education Arcade, MIT, 2009) RockEves will consist of three different levels. The levels will be Beginner, Intermediate, and Advance.

Before starting the first lesson an interstitial video clip will play. This video will give a thorough explanation of what the different elements on the Tabs and standard notation mean. All players must start off at the Beginner's level. In this level simple notes and beat will be introduced. As the players' progress into Intermediate and Advance levels, more complex notes, beats, and guitar techniques will be introduced. Leveraging off of the current Rocksmith software, the RockEves will **scaffold** players through their lesson sessions (Wood et al. 1976). RockEves will respond to player's miss strokes to suggest where to place their figures.

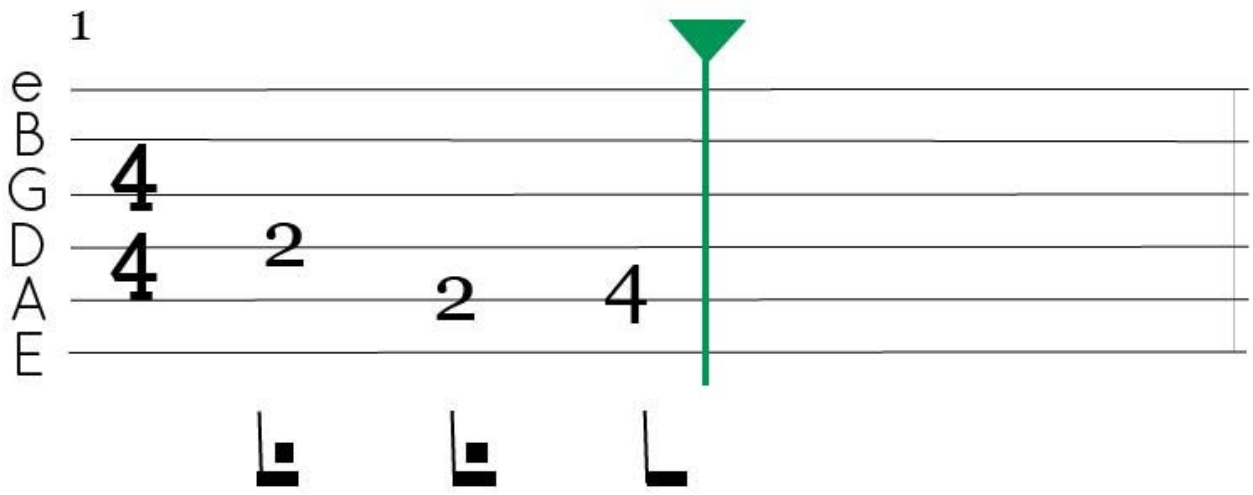
During a lesson session, players are allowed up to three mistakes on a lesson track. On the fourth mistake the lesson track will start from the beginning again. Every tenth try on a given level, the system will take an average of the total score. The score is based on how far along a player gets through with a given song track. If the player got through to the end of a track before the player exceeds his/her allotted mistake of three, then after the third run though of the lesson the player will receive an average score and will be allowed to go to the next level. Players can only advance to the next level if they score higher than a seventy percent. Shields will be given to players based on their achieved scores. Players with scores of 70 - 79 will get a

bronze shield. Players with scores of 80 - 89 will get a silver shield. Players with scores of 90 - 100 will get a gold shield. Players can also add their friends and compare their scores.

For example the chart below shows Sue, Bob, John scores. All three are starting out at the Beginner's level.

Player:	Sue	Bob	John
Level:	Beginner	Beginner	Beginner
Times Tried:	10	10	3
Average Score:	45	85	96
Shied:	Nice Try	Silver Shield	Gold Shield

Figure 2. (Music/Song Writing Interface)

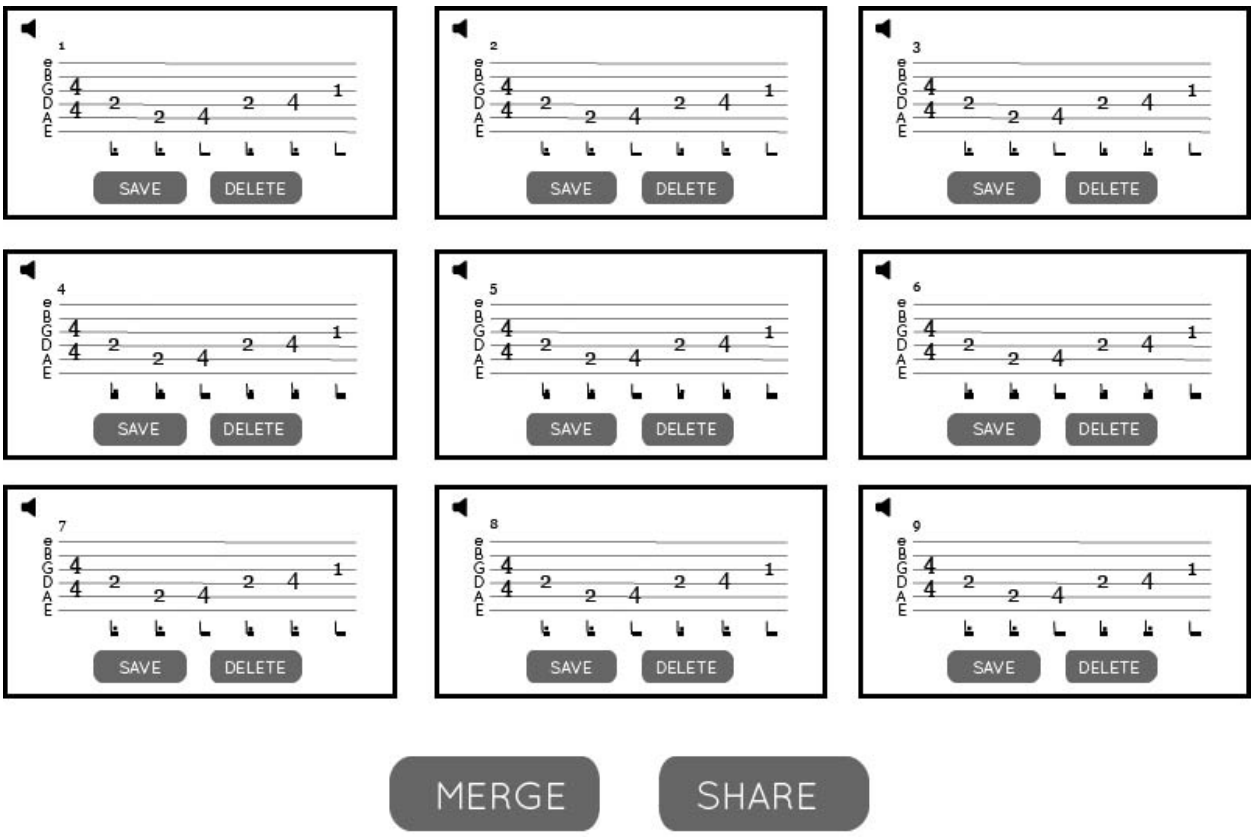


Description of Figure 2. The green bar in this interface indicates where a player is along the track. As a player plays, his/ her strokes are recorded and

simulated on the screen. Inside this mode, players will need to click the record button to begin recording. Once the player is done recording he/ she will need to click on the stop button to stop the recording.

After a player is done recording a track. The track is broken down to different measures and each measure is put into different frames. (See Figure 3 for frames.)

Figure 3. (Recordings on Fames)



Description of Figure 3. Each frame is organized into the order in which the player played. Players can click on each frame to listen to the playback of the song. Players can choose to save or delete any of the frames or rearrange the

order of the frames. After saving the frames, players can choose to merge the frames into one big track and share between players. Alternatively, players can just save the individual frames and without merging the frames can share with other players too.

The second feature, the Collaborative multiplayer song writing mode, is designed to teach players to create their own songs through exploration and enforce the concept of "learning through play." "Digital technologies, if properly designed and supported, can extend the kindergarten approach, so that learners of all ages can continue to learn in the kindergarten style – and in the process, continue to develop as creative thinkers" (Resnick, 2007). In this mode, much of the activity is based on improvisation. As the player plays, the notes and beats are recorded in the interface. Seeing how the notes that are being played and how they fit against the chords will allow players to notice the relationships that exist between a given note and a chord and the effect that it has on the sound while the player creates his/her piece of art.

Like the Kindergarten approach to learning, in this Collaborative multiplayer song writing mode, the players are going through the cycle of "imagine," "create," "play." "share," and "reflect."

Where in "imagine," players have many different paths and styles that they can go about in creating their music piece. They can start at any note, fret, chord, etc. In "create," players are able to think creatively and play around with the different strokes of the guitar to see how the different recorded

simulation looks like on system interface. In "play," players are experimenting with the different arrangements of their recorded fames. They can also make tweaks and adjustments to their fames. Being able to tweak and make adjustments, players are gaining experience and learning without realizing it. In "share," as part of the creative process players can share their music pieces with their friends and their friends can make adjustments to the music piece as well. This social process is experienced in two ways. (1) While two or more players are in the room and (2) via online. In "reflect," as part of the multiplayer collaboration and frame arranging process, players are constantly reflecting on the music piece they are creating.

Other Applied Concepts for RockEves:

For feature 1, "The Zone of Proximal Development in Vygotsky's analysis of learning and instruction," was applied. The system guides the player from beginner's level all the way to advance level. This is through the idea that players cannot complete tasks unaided, but can complete them with guidance.

Design Constraints:

Due to the limitations of the Rocksmith software, for RockEves in feature 2, the same sound can be made with different strings and the system has to guess the real note. Therefore, the system need to allow the player to correct the notation when they are in the frames mode. Being able to recognize the

error takes more skill than a beginner level player has. So to unlock feature 2, the player would need to have gone through feature 1.

Also, it may be hard for the system to detect the exact timing when a note is playing. So the system will need to have a set standard speed and then the player can adjust the speed when he/she listens to the different frames during editing.

Future Direction:

One thing that would be interesting to look into in the future for RockEves is adding the ability to have the system simulate and play the sounds from an uploaded Tab/music notation sheet. This would add more flexibility to the system.

References

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3. Piaget, J. (1972). *The psychology of the child. New York: Basic Books.*

4. Fischer, G. (2004). Social Creativity: Turning Barriers into Opportunities for Collaboration Design.

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