

USING A SOCIAL NETWORK GAME AS A TEACHING TOOL FOR VISUAL  
MERCHANDISING

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## ABSTRACT

### USING A SOCIAL NETWORK GAME AS A TEACHING TOOL FOR VISUAL MERCHANDISING

by Erica Palentyn

The purpose of this study was to apply a Social Network Game (SNG) for teaching visual merchandising to college students. The present study utilized the EGameFlow model to measure students' perceived enjoyment of using the SNG, *Fashion World*, in a visual merchandising class. In addition, this study examined which dimensions of EGameFlow were significant indicators of student satisfaction. Findings from this study suggest that the use of a SNG can be an effective tool in teaching visual merchandising. A majority of positive trends in constructs of EGameFlow suggested students enjoyed the use of this SNG as a learning tool. In addition, challenge and immersion were significant indicators of student satisfaction through the game. Discussion and implications for using SNGs as a teaching tool were provided based on the results of this study.

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## 1 Introduction

A new generation is forming, according to Selwyn (2007) which is categorized as “wiki kids” (p. 1) and has grown up around technologies such as simulation games, instant messenger applications, and social networking sites (SNSs). SNSs and Web 2.0 are gaining importance in the spread of technology for the current generation. They are currently used by more than 1 billion people across the world (Cheung, Chiu, and Lee, 2011) and most users are between the ages of 20 and 30 (Arnold and Paulus, 2010; Chang and Chin, 2011; Cheung, Chiu, and Lee, 2011; Hung and Yuen, 2010). An average of 98% of users ages 18–24 log on to Facebook every month (Mershon, 2011). SNSs focus primarily on communication by which users can connect and share thoughts with other users (Cheung, Chiu, and Lee, 2011; Hung and Yuen, 2010; Selwyn, 2007; Smith and Sanchez, 2011) and gain a “community” sense (Arnold and Paulus, 2010). These sites offer social network games (SNGs) as a means of enjoyment. Chang and Chin (2011) define social network games as simple games that users can access in their own time to promote communication between users. For example, SNGs such as *Farmville* and *Fashion World* on Facebook provide incentives such as gaining points to achieve higher levels as the player acquires more neighbors thus promoting communication throughout the game. According to Lightspeed research group, 53% of the current Facebook users have played a social game at some point since joining the SNS (Caoili, 2010). In addition, 20 million apps are downloaded daily on the site (Mershon, 2011).

Teachers, instructors, and professors face a ubiquitous challenge in motivating this new generation of students to be actively engaged in the learning process. Enjoyment plays a key role in a student’s ability to learn. It can be a predominant factor into improving a student’s knowledge overall about a particular topic (Fu, Su, and Yu, 2009). As a result, games are

becoming more prevalent in the classroom (Ger, Burgos, Martinez-Ortiz, Sierra and Manjon, 2008; Smith and Sanchez, 2011) and can be utilized to provide enjoyment of a particular topic to enhance the learning experience. According to Kiili (2004) online games can be useful in education by providing high student engagement. This provides students with the same kind of learning they are used to with traditional teaching and takes that a step further by connecting with them on a deeper level. In addition results from Huang (2011) indicated that students gained confidence in their learning after using a game-based learning environment. SNGs should thus be examined as a means to enhance the overall educational environment. The purpose of this study was to apply *Fashion World*, a SNG on Facebook, for teaching visual merchandising to college students. Visual Merchandising (VM) is the presentation of a store or display in order to attract consumers and encourage them to buy a particular product (Diamond and Diamond, 2007). In traditional classroom teaching, instructors are challenged to provide students with hands-on VM experience that is crucial to their future careers. Supplies for creating displays and maintaining display areas can be very costly and sometimes seem unrealistic to students because many associate a quality window display with high cost. There is a need for creative ways in which students can learn to set up a store environment.

## 2 Review of Literature

### 2.1 Use of SNGs in education

SNGs have many characteristics that can be applied to educational use. Through their use, SNGs encourage first time game users to try the games and socialize with their peers throughout the process (Smith and Sanchez, 2011). While providing game-specific rules and structures, SNGs are asynchronous (meaning players can access them at any time) and engaging in nature (Shin and Shin, 2011). Higher student engagement provides students with a deeper connection to their learning. As most SNGs require players to assist one another throughout the process by becoming “friends” or “neighbors” (e.g., sending gifts or maintaining the game environment itself for their peers), inter-reliant learning is achieved when users depend on one another for success in the game through communication (Smith and Sanchez, 2011). SNGs also can provide problem solving skills (Kiili, 2005). For example, *Farmville* can require statistical math skills to calculate increased revenue. Students can plant crops and return later to see progress in the game. This gives students a sense of running a farming business and provides knowledge building in academic math (Smith and Sanchez, 2011). In addition, SNGs facilitate action learning because many of the game elements depend on how the user interacts with them and revolve directly around their actions (Wagner and Ip, 2009). Through facing problems due to their actions, SNGs can give learners opportunities to absorb more information on their own and “learn to learn.”

However, it can be challenging to integrate SNGs into education because of the associated risks, such as security due to sharing of personal information (Halverson, 2011; Selwyn, 2007; Ybarra, Mitchell, Finkelhor and Wolak, 2007). According to Shin and Shin (2011), one of the biggest threats of SNGs in general is security. Viruses and even hackers can access personal data, depending on the SNG itself, and can affect players of these games. Other

problems could include time management, language issues, use of the technology, and skepticism about the knowledge actually offered through the use of the SNS (Hung and Yuen, 2010). Students may also abuse the SNS by using it out of context in relation to the project (Paulus, 2007). For instance, students could spend more time browsing through the SNS and using it for leisure rather than spending time completing the task assigned. Therefore, the instructor has the responsibility to put more time into the project when SNSs are involved. It is important to have a predetermined structure (e.g., strong rubric, introduction to project) set in place (Hung and Yuen, 2010). It was suggested that instructors need to constantly oversee the use of the SNS by having discussions and soliciting student feedback (Arnold and Paulus, 2010).

## *2.2 Theoretical Framework*

### *2.2.1 EGameflow*

Digital game-based learning is the combination of learning and entertainment through “digital learning games.” This form of learning has already been implemented in various real world working environments including consulting firms, service and marketing, and training in the military (Prensky, 2001). Experiential learning, “the process whereby knowledge is created through the transformation of experience” (Kolb, 1984, p. 38), directly supports digital game-based learning in which users are able to gain experience through simulated game play. Through digital game-based learning, learners engage in reflection and observation of concrete experiences and synthesize them into abstract concepts, which then form the basis for active experimentation (Kolb, Boyatzis, and Mainemelis, 2001). Previous research has focused on how the game should be designed rather than paying attention to how a learner feels when playing the game (Sweetser and Wyeth, 2005). In order for digital game-based learning to take place, it is

imperative to consider the optimal state of user experience, “flow,” for the learner, as this will enhance overall learning (Kiili, 2005).

Flow is defined as being completely immersed in an activity and blocking out all other outside factors (Csikszentmihalyi, 1990). While flow can be applied to many different activities such as games, music, dancing, etc., its focus lies on overall enjoyment (Csikszentmihalyi, 1990). Flow is composed of eight dimensions that include an achievable task, task concentration, clear goals of the task, feedback, control over a task, an in-depth engrossment with limited frustrations, a reduced “concern for self” but increased “sense of self,” and a changed sense of time. When these dimensions are combined, people experience the state of flow. Based on flow theory (Csikszentmihalyi, 1990), GameFlow focuses specifically on the enjoyment of a game (Sweetser and Wyeth, 2005). This theory suggests that players must have a sense of enjoyment in order to want to play a game and therefore return to that particular game. Fu, Su, and Yu (2009) further applied this GameFlow to develop EGameFlow in order to measure users’ enjoyment of e-learning games. Eight dimensions of EGameFlow are similar to the dimensions of flow and GameFlow in that the general concepts of each remain the same. The dimensions of EGameFlow include concentration, goal clarity, feedback, challenge, autonomy, immersion, social interaction, and knowledge improvement.

Concentration is the idea that players should be provided with a central focus while maintaining minimal stress (Fu, Su, and Yu, 2009). Learning games should not only encourage a player to become fully engrossed, but also to remain attentive throughout the gaming period. To achieve concentration, it is imperative that the correct game is chosen so that the user is not distracted because of difficulty or frustration (Sweetser and Wyeth, 2005). In SNGs, concentration is reached through the game interface itself. The game interface provides colorful

and attention grabbing elements to the user through the use of movement and interaction and the tasks the user must complete in the game. By providing a stimulating interface and setting, SNGs can increase players' concentration because they feel as though they are part of the setting itself.

Goal clarity consists of having clear tasks set in place from the start of the project (Fu, Su, and Yu, 2009). There should be a list of goals set in place early in the gaming period and players should be clear on what these goals are, as well as how they can be accomplished. Goals also should be expanded throughout to maintain the players' involvement (Sweetser and Wyeth, 2005). When using a SNG in the classroom, players should be clear on what the end goal of the game is. Project guidelines should then be clear as to which level a student must reach within the game to satisfy the requirements set in place by the instructor.

Feedback is examined by giving the user an idea of the amount of knowledge that must be acquired to be successful in the game (Fu, Su, and Yu, 2009). Feedback should be provided throughout the entire process of game play. Players always should know where they stand during the course of the game. This can be achieved through scores, level statuses, etc. (Sweetser and Wyeth, 2005). The feedback given should always be provided in a clear way to the player and at the right time throughout the gaming process. Furthermore, the player should be aware of what he or she needs to achieve and how to complete the task (Bachen and Raphael, 2011). Most SNGs promote feedback through the use of a status bar to show progress in the game. This status bar can then let the users know how many points they need to advance to the next level.

Challenge refers to the appropriate amount of difficulty based on skill level (Fu, Su, and Yu, 2009). Challenges should be given appropriately to keep up with the players and ensure they do not get bored. Too many/too difficult challenges can cause frustration and loss of interest (Bachen and Raphael, 2011; Sweetser and Wyeth, 2005). It is also crucial that players are given

enough difficulty in the game and that this difficulty increases as the players' skills increase (Bachen and Raphael, 2011). Sweetser and Wyeth (2005) state that increased levels in gameplay are an essential component of challenge in order to achieve GameFlow. In SNGs, as the game level increases, it becomes gradually harder to progress to higher levels. This provides players with increased challenge as their skills improve.

To be enjoyable, it is essential that players have autonomy over the game and their decisions within the game. Autonomy can be achieved by making sure all aspects of the game (e.g., interface design, character) are easily controlled by the player (Sweetser and Wyeth, 2005). In addition, the player should be able to control decisions within the game such as which strategy to use (Bachen and Raphael, 2011). In games, autonomy also applies to how a player controls functions in the game. For example, many SNGs offer a control panel with which users can edit their interface and gaming environment.

Immersion is defined as becoming completely absorbed in the game itself (Fu, Su, and Yu, 2009). Immersion is the overall state that is optimal for the player to reach during game play (Bachen and Raphael, 2011). Surroundings should be tuned out and the player should be fully engrossed in the game. This captivation in the game leads to increased player engagement, which in turn leads to emotional attachment to the game (Sweetser and Wyeth, 2005). Emotional reactions have been mentioned as a key to player experience and enjoyment (Lazzaro, 2004). SNGs promote immersion by giving players a simulated environment in which real-world time and surroundings become secondary to gameplay. The game environment within the SNG allows its users to "get lost" within the game and its creation, causing a loss of real time.

Social interaction entails giving players the ability to interact with one another throughout the gaming process (Fu, Su, and Yu, 2009). There are multiple aspects of social interaction in

games such as communities and competition. Communities and a sense of competition can be established to strengthen the players' social interaction (Sweetser and Wyeth, 2005). For example, communities within SNGs are achieved through the use of the neighbor function, giving players the ability to reach out to their Facebook friends in order to gain points and assist one another within the game. Competition between Facebook friends can be established to create relationships between players and friendly rivalries. Once a player sees that a friend is progressing in the game, he/she may try to compete at that level.

Knowledge improvement ensures that students are learning from the game (Fu, Su, and Yu, 2009). The knowledge improvement EGameFlow was adapted from Sweetser and Wyeth's (2005) GameFlow construct of player skills. In this construct, players should expand their knowledge from the game without having to seek outside help. This can be achieved by the tutorials that are typically included in the beginning stages so the players can gain clear understanding of how the game works and ensure that he/she is given adequate skills to progress through the game.

Overall, EGameFlow has been used in past research as a successful measure of enjoyment in e-learning games (Fu, Su, and Yu, 2009). This paves the way for future academic research to utilize this measure as a way to evaluate the effectiveness of games as a learning tool. Therefore, the present study utilized the EGameFlow model to measure students' perceived enjoyment of the social network game *Fashion World* in a visual merchandising class. In addition, this study examined which dimensions of EGameFlow were significant indicators of student satisfaction.

### 3 Methodology

#### 3.1 Social Network Game: *Fashion World*

*Fashion World*, a social network game through Facebook, was the tool utilized for this research because the game offers various elements related to visual merchandising (Table 1). *Fashion World* allows players to create and manage their own virtual fashion store. Players begin the game with a minimal amount of store space and virtual money to purchase inventory and merchandise the store. As players stock shelves with a wide variety of virtual merchandise, non-player characters browse the store and purchase merchandise. Through the sale of merchandise, players generate revenue, which can be used to expand their store space, improve store interiors, and purchase more fixtures. Players start at a level one and progress throughout the game. After reaching a level ten, the levels become increasingly harder to achieve. A well accomplished store layout can be reached at level 20 within the game. Once a level twenty is reached, the player has good control over the game and can achieve a store layout that is both functional and visually appealing. Communication is an important aspect of *Fashion World*. Players are able to communicate to one another by “requesting neighbors.” They can then help one another by becoming an employee, and sending gifts (Figure 1).

#### 3.2 Student Project with *Fashion World*

College students in two visual merchandising classes were assigned a final project that applied what they had learned throughout the semester about visual merchandising techniques to create their own stores in *Fashion World*. The final project was to be completed over the course of four weeks. The sample size for this study consisted of 54 female undergraduate students with

half (50%) at the senior level. All participants had played a Facebook game before the class and a vast majority (83%) reported they use a social networking site every day.

The project guidelines were developed to include a *scenario* (situations), *goals* (specific objective outcomes), *rules* (explicit guidelines), and *resources* (a channel for problem-solving collaboration between students). Students were placed into a simulated “real world” scenario involving a role-playing activity as a retail apparel storeowner, which provided a vicarious learning experience. After developing an overall store concept, students created a store based on the strategies of product offerings, target market, price, location, and competition. In order to fulfill the goals of the project, students needed to achieve a functional and profitable store setting that was consistent with the store concept and strategies along with being aesthetically appealing. The rules for the project included reaching level twenty within the game, which entailed expanding their store both horizontally and vertically. In expanding horizontally, students are given more room on each floor of their store, and by expanding vertically they are able to achieve multiple floors in the store overall. In order to reach level twenty, students must order new merchandise, keep their store stocked with inventory, and provide fitting rooms for customers to try on virtual merchandise. In order to mimic a real world store setting, each student’s store was also required to have two fitting rooms, four tables, four racks, one new cash register, five pieces of furniture, and one additional store fixture. A Facebook page was developed as a resource where students could interact, provide support, and offer constructive feedback to one another.

Students reported the average amount of hours spent on the project was 30–39 hours (35%). After the completion of the game, students were asked to write a paper and present a 10-minute in-class presentation. For the presentation, the students were asked to justify their

decisions regarding their selection of store merchandise, fixtures, layout, and store atmosphere. The students also were instructed to relate their experience with the game to the potential challenges they may face in their future careers. Following the presentations, a postgame discussion allowed students to provide their peers with constructive feedback and afforded the students a chance to talk about the applications of visual merchandising in their virtual stores. Discussions focused on the analytical thinking, execution, and strategies employed in visual merchandising that was demonstrated by participating in the game experience. Throughout the entire game, but especially during the postgame discussion, students were encouraged to reflect on their simulated experience in relation to its effectiveness as a learning tool.

### *3.3 Survey Measures*

EGameFlow scale (Fu, Su, and Yu, 2009) was used in order to measure students' perceived enjoyment with *Fashion World* as their learning tool. Satisfaction addresses a student's positive emotional response to a completed task (Keller, 2000). Satisfaction was measured by three items adopted from Huang (2011) and Wagner (2008). Overall, the main purpose of these items was to evaluate how the students felt about the project in the class and whether it should be continued for the next semester's class.

To evaluate validity of the multi-item constructs, principal component factor analysis was conducted on the following variables: concentration, goal clarity, feedback, challenge, autonomy, immersion, social interaction, knowledge improvement, and satisfaction (Table 2). Item loadings above .55 with a difference of at least .20 were considered as evidence of construct validity (Nunnally, 1967). Internal reliability was assessed using Cronbach's *alpha*. Cronbach's *alpha* coefficient exceeding .70 (Peterson, Balasubramaniam and Bronnenberg, 1994) indicates the acceptable level of reliability. All items satisfied these evaluative criteria except for feedback.

Cronbach's *alpha* coefficient of Feedback was below the acceptable level of .70; therefore, it was removed from further analysis. This may have resulted from confusion of students as to what each statement regarding feedback entailed. For example, *Fashion World* specifically does not give students obvious feedback; instead, it was shown through the use of the status bar and popularity rating within the game. Students may not have understood exactly how they were receiving feedback solely based upon the game interface.

#### **4 Results**

An ANOVA and Bonferroni multiple comparisons of means were performed to describe statistically significant differences among constructs of EGameFlow (Table 3). Goal clarity was found to have the highest mean score however, was not significantly different from social interaction, knowledge improvement, and autonomy. The mean scores of goal clarity, social interaction, knowledge improvement and autonomy were significantly higher than the mean scores of concentration, challenge, and immersion. Descriptive statistics were used to depict the results of each construct quantitatively. The value of 4 on a seven point Likert scale was used to describe students' neutral feelings toward the measurement items. Mean values of (>4) represented a positive trend. Four of the seven constructs of EGameFlow utilized showed a positive trend overall (>4). This shows that the majority of EGameFlow constructs were rated positively among students.

Goal clarity was found to have the highest positive rating (M=5.03). Students were clear on what they needed to accomplish in order to complete the project by a set list of guidelines and requirements provided through the rubric. Social interaction was also positively rated (M= 4.99) among students. Many students liked utilizing the neighbor function in order to compete and progress in the game. For example, one student commented, "*I also liked that you had neighbors,*

*so you can see what your other competitors might be doing, so that you can make your store the best that it can be.*” Social interaction was also evident through the use of the Facebook page created for students. Students were required to write four times on the wall as part of the project requirements; however, many students commented more than necessary to fulfill the requirement. For example, students’ comments on the Facebook page included *“Tip: If you need to fill empty racks or tables... When you visit someone’s store, if they are making clothes you can click on it and take some for yourself. It will show up in your gifts and then you can sell it on your floor.”* Students felt knowledge improvement was achieved through the use of *Fashion World* (M=4.70). Positive feedback was made in regards to knowledge improvement. For example, students reported, *“From this project I have definitely learned a lot about both the fashion and visual merchandising industry, and the patience, perseverance, and timeliness required to excel in projects”* and *“Fashion World has given me a new understanding to the world of visual merchandising”*. Students felt they were in control of the game overall (M=4.58). Students enjoyed that *Fashion World* offered many different elements to create a store environment. For instance, a student commented, *“the different decorating options available in the game really made it possible to explore and learn more about visual merchandising.”*

The constructs of concentration, challenge, and immersion were rated negatively among students. The negative rating of challenge (M=3.90) was confirmed through students’ comments about an imbalance of workload. Many students felt as though the required level 20 was too difficult to reach in the time given, as a student commented, *“Attaining a level 20 isn’t very realistic for those who have other obligations.”* Another said, *“All I would suggest for the improvement of the project would be a less required number for the levels.”* Some students, however, felt the difficulty level not high enough. For instance, one student reported, *“To*

*improve this project, I would suggest having higher requirement levels.*” Another commented, *“If even a little bit of effort was put into this game (not last minute), it is not difficult to reach a level 20”*. Immersion (M=3.11) and concentration (M=3.90) were rated negatively, showing that students did not feel as though they were evident through the use of *Fashion World*. However, the highest standard deviation from statements regarding the construct of immersion (SD=1.53) demonstrates that students had mixed feelings toward their overall experience with becoming immersed in the game.

Overall, students were moderately satisfied with using *Fashion World* for the VM project (M=4.13, SD=1.50). Their comments showed that many students did find the game fun and enjoyable. The comments such as *“Fashion World is a very fun and interesting game,” “I did enjoy playing the game, and it was nice to do something out of the ordinary for our final project,”* and *“Fashion World was a fun interactive way to get ourselves involved with visual merchandising”*, indicated that students appreciated the innovativeness of this teaching method. Using *Fashion World* gave them a way to be creative in visual merchandising with a hands-on approach. Students liked the creativity they were given. For example, one student commented, *“Overall, though, playing Fashion World was a new and interesting way to learn about a subject in school, and I enjoyed the creative aspect it brought”*.

In order to understand how dimensions of EGameFlow impact student satisfaction, a regression analysis was conducted. With a sample size of 54 and 7 potential variables, it was inevitable that multicollinearity would be a problem. In addition, the correlation matrices show that there were significant correlations among EGameFlow dimensions, suggesting that these variables are interdependent (Table 4). Stepwise regression was utilized to avoid the ambiguities of multicollinearity by removing highly insignificant variables and predict students’ overall

satisfaction. A significant 2-factor model explained 71% of the variance in student satisfaction. The coefficients for the included variables in the best-fit-model show that immersion and challenge were significant predictors of student satisfaction of using *Fashion World* as a learning tool (Table 5). The results show that immersion and challenge were significant predictors of student satisfaction of using *Fashion World* as a learning tool.

## here5 **Discussion and Implications**

With technology constantly evolving, it is important for academics to follow suit in order to keep up with a new generation of students (Arnold and Paulus, 2010; Huang, 2011; Hung and Yuen, 2010; Selwyn, 2007). Jiwa, Lavelle, and Rose (2005) state that educators must better prepare students for the real world and what they may face in their future careers. The use of an SNG can fill this gap by providing a simulated version of the real world to students. Thus, this study was an attempt to evaluate the effectiveness of using a SNG, *Fashion World*, as a learning tool in the visual merchandising classroom. Findings from this study, suggest that the use of a SNG can be an effective tool in teaching visual merchandising. A majority of positive trends in constructs of EGameFlow suggested students enjoyed a change in traditional methods of teaching that the use of an SNG offered them. These findings offered new insight into the educational use of SNGs.

Both goal clarity and social interaction were rated highest among students. Students were given a clear rubric in the beginning of the project, which in turn gave them a clear understanding of the accomplishments needed for their success in the project. This resulted in a strong sense of goal clarity. Social interaction was shown to be an advantage of using *Fashion World* through Facebook for this assignment. Students were connected through means of the game as well as the SNS itself. This lends support to the previous findings that ‘a sense of

community' is encouraged through SNSs in the classroom (Hung and Yuen, 2010; Arnold and Paulus, 2010). Maintaining a level of connectedness gave students the ability to stay current with their peers' progress and compare themselves, as well as give aid to those who may be struggling. Moreover, through reflection, the users think about their learning after leaving the gaming experience. This encourages continuous thought about the assignment or task (Smith and Sanchez, 2011). Furthermore, it also provided real world experience in that students communicated with one another similar to a team position they may experience in their future careers.

Knowledge improvement and autonomy were also rated high among students. Most students felt that the game was a good change from traditional teaching and gave them the ability to express their creativity. Students felt as though the game better prepared them for their future careers, because they were given the ability to experience situations similar to what they may experience in the real world. *Fashion World* also was shown to be an effective SNG to use in the classroom because students felt they were in control of the game itself (autonomy). The game gave students the ability to create any store they wanted, with their only limit being the guidelines given by the instructor.

Keller (2004) emphasized the importance of satisfaction in learner experience, thus making it an essential part of enjoyment. This study found that challenge and immersion were significant indicators of student satisfaction through the game. Novak, Hoffman, and Yung (2000) stated that attention can be lost due to the challenge of the project being too high, which in turn can decrease immersion. It was evident from students' comments that the challenge of the game resulted in frustration for some, which in turn took away from their immersion within the store environment. Students will not reach the state of flow if challenge is not adequately balanced

with student skills (Kiili, 2005; Novak, Hoffman, and Yung, 2000). Therefore, when implementing a game specifically a SNG in this context, within the classroom, it is essential to have a balance of challenge among the game and player skills. In order for this balance to occur an instructor must be aware of the game elements and provide the correct amount of challenge. This balance will lead to an increase in immersion for the student, thus providing him or her more satisfaction with learning through the use of a game.

Previous research has yet to examine the potential use of a SNG in the visual merchandising classroom. This research has paved the way for future studies to examine SNGs in different fields and evaluate them based on EGameFlow. In conclusion, SNGs can be an innovative teaching tool in the classroom. Since the current job force has such an emphasis on technology, education must focus on making students more innovative (Ng, 2009). SNGs can give instructors the ability to afford students a hands-on approach. This tactic prepares students for the real world by giving them the experience that is integral in future career-related areas.

## APPENDIX A:

### Student Assignment

#### Final Project

#### AMD 356 Fashion World : Creating a Virtual Store

Your assignment is to create your own store using the *Facebook* application “Fashion World.” “Fashion World” is a *Facebook* application where you can create your own clothing store where you, the owner, are in charge of ordering stock, stocking merchandise, designing the layout, and running the store. The project will consist of creating your own store and writing a paper based on the store you create.

**To get started please either create a new Facebook account or use your existing account and search for the application Fashion World.** A Facebook group will be made for students so that they can interact with each other. **The store name for each student’s store must be their last name.**

#### **Content/Requirements of the Store in Fashion World (60pts).**

**Facebook Group (2 pts.)** Each student is required to write two comments on the Fashion World group wall pertaining to Fashion World.

**Students are also required to comment on two other student’s comments throughout the project. (2 pts.)**

Some examples could include;  
What did you learn about Fashion World?  
Any tips or hints.  
Overall experience

(6 pts.) (You must **expand store twice horizontally and twice vertically** (cannot expand store until certain levels or amount of neighbors) and achieve a **Level 20**. **The followings are required elements of your store and must add/change in accordance to the store concept and the theme.**

**Under each category of items to purchase for store level to achieve each item is shown.**

- At least **two** fitting rooms (6 pts.)
- The floor and/or wall (6 pts.)
- **Four** racks for hanging merchandise (6 pts.)
- **Four** tables (6 pts.)
- **One** additional type of fixture ex. Display case/hanging shelf (4 pts.)

- New cash register (6 pts.)
- Door and windows must be added for aesthetic appeal (2pts.)
- **Three** additional pieces of furniture/ decorations (e.g., bench/ stool must be in store, wall hangings, flowers to achieve an overall aesthetic appeal) (3pts.)
- Must create a custom outfit to go along with store concept and in the store the day of the presentation (must be shown in screen shot image (2 pts.)
- **Employee** representing store: must be dressed accordingly to store chosen (2 pts.)
- **Additional Employee** also dressed accordingly (shown in screen shot image) (1pt.)

( 6 pts.)**Store must be functional** ex. No “butt brush” and store flows well (refer to why we buy and website presentations). An overall theme must be achieved in store that goes along with the concept the student has chosen. **Think about door placement etc.**

The instructor will check your store in class on the day of presentations. Each store will be graded in class. At time of grading student must have store closed with every rack filled with merchandise.

### **Tips/Hints**

- Close store (left corner of screen close/open option) to get racks filled with merchandise.
- Don’t spend all money given to you right away because in order to order merchandise you must have money.
- Don’t wait too long before coming back to the game after ordering merchandise (pay attention to when clothes will be ready)
- Become neighbors with other classmates on retail therapy and make them your employees (Click the add neighbor button in your store.)
- Take advantage of Facebook group created for you and your classmates to compare ideas and problems you might run in to.

### **Paper requirements (40 pts).**

Students will also be required to write a paper based on why they chose the concept they did and what they did to achieve this concept. In 5-7pages, please explain your reason for your concept and point out your reasoning for your layout and fixture choices to relate to this concept. Include some research on the store you chose. Please double space the paper and **include 3 references on your research.**

### **Content/Requirements**

#### **References (2pts.)**

#### **Introduction (6 pts.)**

- What concept did you chose?
- What is your product?
- What is your target market and price?
- Where is your store located? (Chose a location)
- Reasons your location affects your target market, price, and product.
- Who are your competitor store/stores? Provide background on competitors and why you chose them.

### **Body (8pts.)**

In paper students must take a picture (screenshot/capture an image) (7 pts.) of their Fashion World store and explain where each required item is located and why it was chosen. Continual pictures must be taken to show progress of store (**4 pictures**) and how each image of store was improved. **These pictures must be in color and at least half a page in size. 3 additional screenshots must be made to show store owner and additional employee dressed accordingly as well as the custom outfit you have created.**

- Explain why each addition to the initial store was chosen and how your store relates to good visual merchandising.
- How is your store functional to its customers? Ex. How does store flow? Is all merchandise accessible?
- **One paragraph** must refer back to “Why We Buy” explaining how you have applied the content you’ve learned from the book to the store in which you have created.
- **Another paragraph** must explain how you think the game *Fashion World* helps better understand and expand your knowledge of visual merchandising.

### **Conclusion (8 pts.)**

- What have you learned from this project as a whole and how can this help you in your future career?
  - What is Fashion World still lacking and how would you improve the program?
  - What would you suggest to improve this project?
- Each of the above must be addressed individually.**

### **Presentation (5 pts.)**

A small presentation (**8-10 minutes**) will be given by each student by showing some pictures of store and explaining why they set it up and included what they did.

### **Letter Grades**

#### **To achieve an A**

Store must be neat and orderly. It must follow all required items with three expansions while still maintaining a theme and concept chosen. The store must be functional and include elements not required to achieve an overall “shoppable” store. Student commented on the Facebook wall with constructive criticism and has a paper that also includes all of the required elements. Screenshot pictures were included.

### **To achieve a B**

Store must be clean and orderly. All required items are present but theme is not well defined. Store is functional but limited items are present to create wow factor. Student commented on Facebook wall with constructive criticism. Paper includes required elements but theme is not described as well. Screenshot pictures were included.

### **To achieve a C**

Store must be clean and orderly. Most required items are present but it is not clear what theme or concept the student has chosen. There is not enough of a wow factor. Student commented on Facebook wall but comments don't pertain well enough. Some required elements are not present or not clear within the paper. Screenshot pictures were included.

### **To achieve a D or below**

Student did not fulfill all of the requirements. Five or more items are missing within the store, and store is not functional or visually pleasing. It is not clear what theme or store student has chosen. Paper is disorganized and missed requirements. Screenshot pictures were missing.

### **To screenshot/capture an image**

#### **PC**

1. Press the Print Screen key on your keyboard. It may be labeled [PrtScn].
2. Open an image editing program, such as Microsoft Paint.
3. Go to the Edit menu and choose Paste.
4. If prompted to enlarge the image, choose Yes.
5. Optional: Use your image editor's [crop tool](#) to crop out unnecessary portions of the screen shot.
6. Go to the File Menu and choose Save As.
7. Navigate to the folder where you want to save the image.
8. Type a file name for the image.

#### **MAC**

1. To capture the entire desktop, press **Command-Shift-3**. The screen shot will be automatically saved as a **PNG** file on your desktop.
2. To copy the entire desktop, press **Command-Control-Shift-3**. The screen shot will be placed on your clipboard for you to paste into another program.
3. Open an image editing program, such as Microsoft Paint.

4. Go to the Edit menu and choose Paste.
5. If prompted to enlarge the image, choose Yes.
6. Optional: Use your image editor's [crop tool](#) to crop out unnecessary portions of the screen shot.
7. Go to the File Menu and choose Save As.
8. Navigate to the folder where you want to save the image.
9. Type a file name for the image.

## APPENDIX B:

### Survey

#### Part I: Your experience with Fashion World

We are interested in finding out the extent to which you agree or disagree that each of the following statements. After each statement, there is a set of possible responses ranging from 1-7

<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>
<b>Strongly Disagree</b>	<b>Disagree</b>	<b>Slightly Disagree</b>	<b>Uncertain or Neutral</b>	<b>Slightly Agree</b>	<b>Agree</b>	<b>Strongly Agree</b>

	1	2	3	4	5	6	7
1. Fashion World grabs my attention.							
2. Fashion World provides content that stimulated my attention.							
3. Most of the Fashion World activities are related to the learning task.							
4. Generally speaking, I can remain concentrated in Fashion World.							
5. I am not distracted from tasks that the player should concentrate on.							
6. I am no burdened with tasks that seem unrelated.							
7. Workload in Fashion World is adequate.							
8. Overall Fashion World goals were presented in the beginning of the game.							
9. Overall Fashion World goals were presented clearly.							
10. The progress bar was presented in the beginning of each level							

	Strongly Disagree			Neutral		Strongly Agree	
	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>
11. The progress bar was presented clearly.							
12. I understand the learning goals through Fashion World.							
13. I receive feedback on my progress in Fashion world.							
14. I receive information on my success (or failure) on the progress bar immediately.							
15. I receive information on my status, such as score or level.							
16. I enjoy Fashion World without feeling bored or anxious.							
17. The challenge is adequate, neither too difficult nor too easy.							
18. Fashion World provides "online support" that helps me overcome challenges.							
19. My skill gradually improves through the course of overcoming the challenges.							
20. I am encouraged by the improvement of my skills.							
21. The difficulty of challenges increase as my skills <u>improve</u> .							
22. I feel a sense of control of the menu (such as build, expand, decorate).							

	Strongly Disagree			Neutral		Strongly Agree	
	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>
23. I feel a sense of control over actions of roles or objects.							
24. I feel a sense of control over interactions between roles or objects.							
25. Fashion World does not allow players to make mistakes to a degree that they cannot progress in the game.							
26. Fashion World supports my recovery from the mistakes.							
27. I feel that I can use strategies freely.							
28. I feel a sense of control and impact over Fashion World.							
29. I know the next step in Fashion World.							
30. I forget about the time passing while playing Fashion World.							
31. I become unaware of my surroundings while playing Fashion World.							
32. I temporarily forget worries about everyday life while playing the game.							
33. I experience an altered sense of time.							
34. I can become involved in Fashion World.							
35. I feel emotionally involved in the game.							

	Strongly Disagree			Neutral		Strongly Agree	
	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>
36. I feel cooperative toward other classmates.							
37. I strongly collaborate with other classmates.							
38. The cooperation in Fashion World is helpful to the learning.							
39. Fashion World supports social interaction between players.							
40. Fashion World supports communities within the game.							
41. Fashion World supports communities outside the game.							
42. Fashion World increases my Visual Merchandising knowledge.							
43. I catch the basic ideas of the Visual Merchandising knowledge taught.							
44. I try to apply the Visual Merchandising knowledge in Fashion World.							
45. Fashion World motivates the player to integrate the Visual Merchandising knowledge taught.							
46. I want to know more about the Visual Merchandising knowledge taught.							
47. I enjoyed using Fashion World in this course.							

	Strongly Disagree			Neutral		Strongly Agree	
	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>
48. It was a good idea to use Fashion World in this course.							
49. The Fashion World project was engaging.							
50. It felt good to successfully complete the project.							
51. The Fashion World Assignment has given me an opportunity to practice business ideas.							
52. The Fashion World project helped me learn from experiences and feedback from my classmates, customers, and other collaborators.							
53. The assignment should be repeated next year.							

	Very High Mental Effort			Neutral			Very low Mental Effort
	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>
54. How much mental effort did you invest to learn the content from Fashion World?							
	Very Difficult			Neutral			Very Easy
	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>
55. How difficult was it for you to learn the content from the game?							
	Highly Demanding			Neutral			Not Demandin g at all
	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>
56. The Fashion World project was							
	Very High			Neutral			Very Low
	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>
57. My learning value of the Fashion World project was							

**Part II: Information about yourself**

58. How many hours did you spend to finish the Fashion World Assignment?

- 5-9 Hours
- 10-19 hours
- 20-29 hours
- 30-39 hours
- More than 40 hours

59. What is your class standing?

- Freshman
- Sophomore
- Junior
- Senior

60. What is your gender?

- Female
- Male

61. Have you played any Facebook game before this class?

- Yes
- No

62. How often do you use a social networking site? (e.g., Facebook, MySpace, LinkedIn?)

- Every Day
- Several Times a Week
- Several Times a Month
- Several times a year

## REFERENCES

- Arnold, N. and Paulus, T. (2010) 'Using a social networking site for experiential learning: Appropriate, lurking, modeling and community building', *Internet and Higher Education*, Vol. 13, pp. 188-196
- Bachen, C. M. and Raphael, C. (2011) 'Flow theory and game-based learning', In Ma, M., Oikonomou, A. and Jain, L. (Eds.), *Serious Games and Edutainment applications*, Springer-Verlag London Limited, New York, pp.62-82.
- Caoli, E. *Study: 53% of Facebook's users have played social games, 19% addicted. Available at: [http://www.gamasutra.com/view/news/121158/Study\\_53\\_Of\\_Facebooks\\_Users\\_Have\\_Played\\_Social\\_Games\\_19\\_Addicted.php](http://www.gamasutra.com/view/news/121158/Study_53_Of_Facebooks_Users_Have_Played_Social_Games_19_Addicted.php)* (Accessed 10 April 2012).
- Chang, C.C. and Chin, Y.C. (2011) 'Predicting the usage intention of social network games: an intrinsic-extrinsic motivation theory perspective'. *Proceedings of the Annual conference on innovations in business and management*, London, England, pp. 1-18.
- Cheung, C. M. K., Chiu, P. Y. and Lee, M. K. O. (2011) 'Online social networks: Why do students use Facebook?', *Computers in Human Behavior*, Vol. 27, pp.1337-1343.
- Csikszentmihalyi, M. (1990) *Flow: The psychology of optimal experience*, Harper & Row Publishers Inc, New York.
- Diamond, J. and Diamond, E. (2007) *Contemporary visual merchandising & environmental design*, 4th ed., Pearson, Prentice Hall, New Jersey.
- Dorn, D.S. (1989) 'Simulation games: one more tool on the pedagogical shelf', *Teaching Sociology*, Vol. 17, pp.1-18.
- Fu, F. L., Su, R. C. and Yu, S. C. (2009) 'Egameflow: A scale to measure learners' enjoyment of e-learning games', *Computers in Education*, Vol.52, pp.101-112.

- Ger, M. P., Burgos, D., Martinez-Ortiz, I., Sierra, J. L. and Fernandez-Manjon, B. (2008) 'Educational game design for online education', *Computers in Human Behavior*, Vol.24, pp.2530-2540.
- Halverson, E. R. (2011) 'Do social networking technologies have a place in formal learning environments', *On the Horizon*, Vol. 19 No. 1, pp.62-67.
- Huang, W. H. (2011) 'Evaluating learners motivational and cognitive processing in an online game-based learning environment', *Computers in Human Behavior*, Vol.27, pp.694-704.
- Hung, H. T. and Yuen, S. C. Y. (2010) 'Educational use of social networking technology in higher education', *Teaching in Higher Education*, Vol. 15 No. 6, 703-714.
- Jiwa, S., Lavelle, D. and Rose, A. (2005) 'Virtual outlets- business gaming for fashion retail operations', *International Journal of Information and Operations Management Education*, Vol. 1 No. 1, pp.58-73.
- Keller, J. (2000), 'How to integrate learner motivation planning into lesson planning: The arcs model approach', *Paper presented at Paper presented at vii semanario*, Santiago, Cuba.
- Keller, J. M. and Suzuki, K. (2004) 'Learner motivation and e-learning design: A mutually validated process', *Journal of Educational Media*, Vol. 29 No.3, pp.229-239.
- Kiili, K. (2005) 'Digital game-based learning: Towards an experiential gaming model.', *Internet and Higher Education*, Vol.8, pp.13-24.
- Kolb, D. A. (1984) *Experiential learning*, Prentice Hall, New Jersey.
- Kolb, D.A., Boyatzis, R.E. and Mainemelis, C. (2001) 'Experiential learning theory: Previous research and new directions, In Sternberg, R.J. and Zhang, L.F. (Eds.) *Perspectives on thinking, learning, and cognitive style*, Lawrence Erlbaum, New Jersey pp.227-248.
- Lazzaro, N. (2004). 'Why we play games: Four keys to emotion without story', *XEO Design*.

- Mershon, P. (2011). 26 promising social media stats for small businesses. *Social Media Examiner*, Available at:  
<http://www.socialmediaexaminer.com/26-promising-social-media-stats-for-small-businesses/> (Accessed 20 May 2012).
- Ng, P.T. (2009) 'Innovation in education: some observations and questions', *International Journal of Innovation in Education*, Vol. 1 No.1, pp.8-11.
- Novak, T. P., Hoffman, D. L. and Yung, Y. F. (2000) 'Measuring the customer experience in online environments: A structural modeling approach', *Marketing Science*, Vol. 19 No.1, pp.22-42.
- Nunnally, J. C. (1967) *Psychometric theory*, McGraw-Hill, New York.
- Paulus, T.M. (2007) 'CMC models for learning tasks at a distance', *Journal of Computer Mediated Communication*, Vol.12, pp.1322-1345.
- Peterson, R. A., Balasubramanian, S. and Bronnenberg, B. J. (1997) 'Exploring the implications of the Internet for consumer marketing', *Journal of the Academy of Marketing Science*, Vol. 25, pp.329-48.
- Prensky, M. (2001) 'The digital game-based learning revolution'. In *Digital Game-Based Learning* McGraw-Hill, Ohio, pp. 1-19.
- Selwyn, N. (2007) 'Web 2.0 applications as alternative environments for informal learning- a critical review', pp.2-10.
- Shin, D. H. and Shin, Y. J. (2011) 'Why do people play social network games', *Computers in Human Behavior*, Vol. 27, pp.852-861.

- Smith, L. W. and Doren, D. C. V. (2004) 'The reality-based learning method: A simple method for keeping teaching activities relevant and effective', *Journal of Marketing Education*, Vol. 26 No.1, pp.66-74.
- Smith, P. and Sanchez, A. (2011) 'Farming education: A case for social games in learning', *Virtual and Mixed Reality*, pp.73-79.
- Sweetser, P. and Wyeth, P. (2005) 'Gameflow: A model for evaluating player enjoyment in games', *ACM Computers in Entertainment*, Vol. 3 No. 2, pp.1-24.
- Wagner, C. (2008) 'Learning experience with virtual worlds', *Journal of Information Systems Education*, Vol. 19 No. 3, pp.263-266.
- Wagner, C. and Ip,R.F., (2009) 'Action learning with second life- a pilot study', *Journal of Information Systems Education*, Vol. 20 No. 2, pp.249-258.
- Ybarra M., Mitchell K., Finkelhor D. and Wolak J. (2007) 'Internet prevention messages - Targeting the right online behaviours' *Archives of Pediatrics & Adolescent Medicine*, Vol. 161 No. 2, pp.138-145.

Table 1. Coordinating Visual Merchandising Elements With Game

Visual Merchandising Components	Game Components that Apply
Color	Game allows for students to choose floor and wall colors/materials that best suit individual store.
Theme	Must choose a theme in accordance with target market, price point, concept, product, and location.
Mannequins	Students can utilize mannequins within the game to create focal points within store.
Displays and Settings	Students can create displays within their store using fixtures, mannequins, etc.
Line and Composition	Students must apply what they learn from lecture about elements of visual and apply them to their store to create an overall visually appealing layout.
Store Layout	Students chose the layout of their store in accordance with materials learned about consumer behavior.
Interiors	The interior of the store must reflect their overall design concept.
Fixtures	Fixture choice is left up to the students to fit in with theme while maintaining functionality.

Table 2. Validity and Reliability of Variables

Factor Items	Mean	SD	Factor Loading	Cronbach's Alpha
<i>Concentration</i>				.90
Fashion World grabs my attention.	4.02	1.60	.82	
Fashion World provides content that stimulated my attention.	3.91	1.62	.86	
Most of the Fashion World activities are related to the learning task.	3.96	1.52	.81	
Generally speaking, I can remain concentrated in Fashion World.	3.89	1.91	.77	
I am not distracted from tasks that the player should concentrate on.	4.23	1.73	.78	
I am not burdened with tasks that seem unrelated.	3.43	1.60	.78	
Workload in Fashion World is adequate.	3.87	1.76	.70	
<i>Goal Clarity</i>				.89
Overall Fashion World goals were presented in the beginning of the game.	5.20	1.66	.95	
Overall Fashion World goals were presented clearly.	5.17	1.59	.95	
I understand the learning goals through Fashion World.	4.72	1.52	.83	
<i>Challenge</i>				.87
I enjoy Fashion World without feeling bored or anxious.	2.81	1.70	.80	
The challenge is adequate, neither too difficult nor too easy.	4.02	1.68	.81	
Fashion World provides "online support" that helps me overcome challenges.	3.64	1.53	.65	
My skill gradually improves through the course of overcoming the challenges.	4.63	1.63	.77	
I am encouraged by the improvement of my skills.	4.32	1.80	.89	
The difficulty of challenges increase as my skills improve.	3.98	1.85	.71	

Table 2. Validity and Reliability of Variables Cont.

Factor Items	Mean	SD	Factor Loading	Cronbach's Alpha
<i>Autonomy</i>				.88
I feel a sense of control of the menu (such as build, expand, decorate)	5.15	1.38	.76	
I feel a sense of control over actions of roles or objects.	4.58	1.46	.85	
I feel a sense of control over interactions between roles or objects.	4.23	1.54	.81	
I feel that I can use strategies freely.	4.51	1.51	.76	
I feel a sense of control and impact over Fashion World.	4.28	1.46	.85	
I know the next step in Fashion World.	4.70	1.60	.72	
<i>Immersion</i>				.90
I forget about the time passing while playing Fashion World.	3.40	2.25	.85	
I become unaware of my surroundings while playing Fashion World.	3.06	2.01	.84	
I temporarily forget worries about everyday life while playing the game.	2.72	1.91	.90	
I experience an altered sense of time.	3.15	1.79	.86	
I can become involved in Fashion World.	4.06	1.70	.76	
I feel emotionally involved in the game.	2.30	1.55	.65	
<i>Social Interaction</i>				.77
I feel cooperative toward other classmates.	5.50	1.08	.79	
I strongly collaborate with other classmates.	5.13	1.18	.82	
The cooperation in Fashion World is helpful to the learning.	4.69	1.55	.73	
Fashion World supports social interaction between players.	4.65	1.54	.78	

Table 2. Validity and Reliability of Variables Cont.

Factor Items	Mean	SD	Factor Loading	Cronbach's Alpha
<i>Knowledge Improvement</i>				.84
Fashion World increases my Visual Merchandising knowledge.	3.89	1.88	.83	
I catch the basic ideas of the Visual Merchandising knowledge taught.	4.69	1.45	.87	
I try to apply the Visual Merchandising knowledge in Fashion World.	5.57	1.24	.82	
Fashion World motivates the player to integrate the Visual Merchandising knowledge taught.	4.33	1.71	.80	
I want to know more about the Visual Merchandising knowledge taught.	5.00	1.43	.60	
<i>Satisfaction</i>				.80
It felt good to successfully complete the project.	4.89	1.73	.75	
The assignment should be repeated next year.	3.69	2.00	.92	
My learning value of the Fashion World project was	3.83	1.52	.87	
<i>Deleted Items</i>				
The progress bar was presented in the beginning of each level.				
The progress bar was presented clearly.				
Fashion World does not allow players to make mistakes to a degree that they cannot progress in the game.				
Fashion World supports my recovery from the mistakes.				
Fashion World supports communities within the game.				
Fashion World supports communities outside the game.				
I receive feedback on my progress in Fashion world.				
I receive information on my success (or failure) on the progress bar immediately.				
I receive information on my status, such as score or level.				

Table 3. An ANOVA and Bonferroni Multiple Comparisons of Means

Construct	Mean	Std. Deviation	F	Std. Error	Bonferroni*
Goal clarity	5.03	1.45	29.19	.21	A**
Social interaction	4.99	1.04		.15	A
Knowledge improvement	4.70	1.21		.18	A
Autonomy	4.58	1.18		.16	A
Concentration	3.90	1.32		.19	B
Challenge	3.90	1.31		.19	B
Immersion	3.11	1.53		.22	C

\*Based on Bonferroni adjustment ( $p < .05$ )

\*\*Constructs with the same letter are not significantly different from one another

Table 4. Correlations Among Research Constructs.

	Concentration	Goal Clarity	Challenge	Autonomy	Immersion	Social Interaction	Knowledge Improvement	Satisfaction
Concentration	1.00							
Goal Clarity	.699**	1.00						
Challenge	.799**	.656**	1.00					
Autonomy	.728**	.669**	.656**	1.00				
Immersion	.523**	.453**	.495**	.399**	1.00			
Social Interaction	.429**	.419**	.499**	.466**	.310*	1.00		
Knowledge Improvement	.702**	.615**	.734**	.569**	.465**	.357**	1.00	
Satisfaction	.717**	.542**	.813**	.652**	.571**	.299*	.708**	1.00

\* p<.05.

\*\* p<.01.

Table 5. Results from Stepwise Regression

Satisfaction	R Square	F	$\beta$	t	Sig
	.712	58.21			
Challenge			.729	8.10	.000*
Immersion			.196	2.17	.035**

\*p<.001

\*\*p<.05

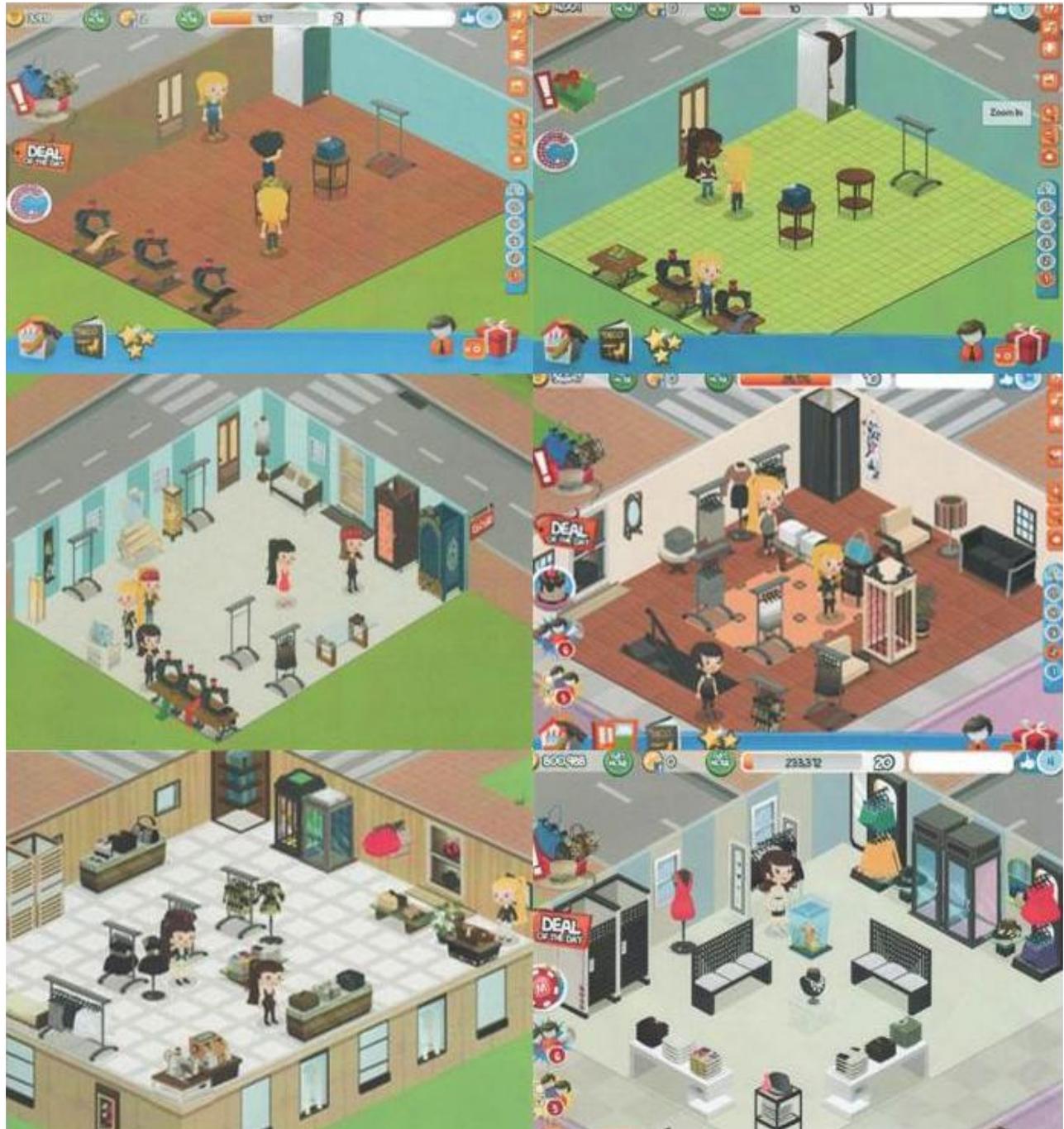


Figure 1. Progression of Student Project