

Role of interactive storytelling in designing gamification tool for career selection

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Abstract

Career selection and making decision for future careers for pursuing relevant higher education is one of the important turning points in the life of every high school student. Historically because of different influencing factors students pursue different careers irrespective of their choices and individual capabilities. In recent years more trends are observed to pursue careers based on individual personality and different tests available for that. This research work focuses on the importance of gamification in the analysis and evaluation of individual's personality. While analysing that and designing the gamification solid backbone of engaging and effective storytelling is very important. Interactive storytelling and gamification can help high school students for better career decision for their future life.

Keywords: gamification, personality traits, career selection, storytelling

1. Introduction

After completing high school education, one of the crucial decisions every student must make is about selection of the career they want to pursue for higher education. There are multiple factors that influence their career making decision. It is very important to make right career choice which should be based on skills and capabilities for greater satisfaction and professional success. As part of research survey one of the important factors which is impacting in career selection is person's own inclination and interest. Students perform well and follow their confidence of effectiveness as they are pursuing the career in which they are interested and passionate [Paradedda et al 2017]. Each student is unique with unique personality traits which can be classified based on Big 5 model theories.

This research work describes how to identify personality using Big5 model theory and further how it can be linked to the career choices like engineering, medicine, design or others. Two of the important things where research is focussed in this work are gamification and interactive storytelling. Integrating

game mechanics using gamification and creating virtual imagination using storytelling can help to motivate and engage player.

2. Literature Review

Lima et al [2018] presented a novel game design approach based on player's personality traits. The designed game is based on artificial neural network and as the player plays the game, the gamified system based on Big5 personality model predict the personality of the player and according to that prediction experience of the game player differ while playing the game. Generally video games are designed based on the different interactive narrations and engaging strategies in view of large variety of game players. Many games are also designed for completing certain tasks or following certain theme-based stories. However, personality-based gamification design itself is a unique idea for rich gamification experience for the player. This paper is useful in identifying important of gamification in finding out the individual players personality traits and how Big5 model can be implemented for the same. Lounsbury et al [2005] also investigated relation between big five personalities namely openness, agreeableness, conscientiousness, extraversion and neuroticism. It is concluded that there is a direct relation between individual student's personality traits and career decidedness abilities.

Finding out the personality traits was always remaining a challenging task for researchers and psychologist. Earlier a questionnaire was used to find out individual's personality. In this questionnaire different questions were asked and based on different choices of answers, personality traits are assessed. With the revolution in technologies, computer science is now a crucial part to find out personality traits. The traditional questionnaire is now converted into online tests format and results are calculated and personality is evaluated with set programs based on various methods and models like Big5. These methods are having one important limitation which the format of these test as exam style questions. Hence effectivity of such tests is a matter of extensive research from psychological perspectives. Prys et al [2019] designed a framework for personality assessment of the player which is based on the interactive storytelling. This research work highlighted importance of psychological theory, computer science and effectiveness of the results using the combination of these two. Giakalaras [2016] connected importance of storytelling in the gamification. Games can be design in two ways. First type is playing the game in the free roaming way without any purpose while other way is playing the game in the more meaningful way with the purpose and part of story based on which the game is designed. Players will be involved in the story and such gamification designs are more effective for achieving certain goals like finding out the personality traits. With excellent imagination and engaging storyline gamification can be more appealing and interesting.

Storytelling also game changer in personality assessment using computer science and new developments are happening is the more personalised experience to the user. Storytelling through gamifications is a novel way of finding out the personality traits and it is having certain advantages. Storytelling increases engagement of the player with the game compare to task completion. It is like digital entertainment or drama which is happening on the screen and the player feels part of it. Further the story can be designed in such a way that each player can get separate experience based on the individual's personality. Upcoming technologies like artificial intelligence, machine learning, augmented and virtual reality can play a critical role in this experience and player can become the part of such stories. It is just like fun rides in the amusement parks with 4D and 5 D experience but where

user will be replaced by player and will be interacting these experiences. This interaction will be recorded at the backend and accordingly computer systems will program the individual ride which is unique based on the player's personality. Generally, in such amusement parks after completing the ride user gets photos of different experience and in such games the players will get personality report at the end of the game. This personality report will be in detail and the current research work proposed to develop such unique experience for the players and find out their personality and then further map it with their career choices. This work can be very important especially for the high school students at their turning point of academic life for the success of future profession.

3. Gamification

Game is driven by the interactive story in the form of dialogue and options like a comic book. where player has to read through dialogue and select the options. In the game, player is at driving sit along with power to select the option. Based on user choice story will turn accordingly. Choice made by user works as a trigger to change the story flow. Player can be offered medals based on choices they make. Player gets chance to earn the bonus points based upon performing tasks also level up as they continue with the story. Bringing advance technologies AI / VR and deep learning in gamification and interacting with the user for effective conversation can open tremendous opportunities for telling more convincing and effective. Types of elements used in gamification are:

Narrative element:

1. Point of view – Step into the shoes of someone else which creates relevance to think like someone else would think. This also involves choosing different things for character and it gives control too. Evaluating those decisions as good or bad decisions is also important.
2. Intrigue – In this the player is hooked and hold with some of the story kind to bring them along so that they want to continue the journey and really understand the way that the story will conclude.

Progressive element

1. Progress bar to check how player is doing and where the player is in the game.
2. Something that rewards along the way. This helps reinforce player's behaviour.
3. Introduces element of accountability. Making player accountable for their actions in front of peers.

4. Interactive Storytelling

In ancient times storytelling used to attract the kids when there was less digitalization. Kids used to listen many stories holistic, scary, funny, thought provoking, epics from elders. Human absorbs stories more readily than facts figures because with their wide imagination and think abilities they immediately get involved and become part of the story as if it's happening in front of their eyes, in their life or they are the part of the story. Human also try to corelate stories and characters with their real life and thus further involved and connect with the story. They pay more attention to the stories corelate it, find it interesting and most important is that they don't forget it. That is how some ancient stories are told and travelled from generations to other generations.

Stories like Panchatantra, Ramayana, Mahabharat have been shared historically in Indian culture as a means education, entertainment, inculcating morale values and preserving the culture. Such stories can be found out in every culture throughout the world. These stories build confidence and self-esteem among the people and it also taught them to become more kind and helpful to others. It also gives ideas of the rich culture people inherited. Many of these stories can be imaginary or real life also but most of the times the original source of these stories also not known or some stories are not even written also but still it is told by one generation to the next generation and that is how it travels. While listening to these stories humans used to start creating the picture of character involved in stories. which remain alive in their minds. Humans deeply get involved, start visualizing pictures of said character or scene through their eyes used in the storytelling. Also, they understand the stories differently, interpret it as per their life and reflect on these stories based on their thoughts. They also make different opinions about the characters from the story. Storytelling is also an art and integral part of cinema and theatre. There are many examples of TV serials and movies which resembles characteristics of effective storytelling. Storytelling is so effective that there is no language barrier and just by seeing what is happening on the screen also people get connected with it.

Interactive stories are stories which people don't just watch but engage with it. Interactive and narrative stories are resembling branching where the story moves in different directions based on the concept. Fundamental of the interactive story is the role of the player who can perform different activities and make choices which may affect the delivery pattern or the entire story drastically [Miller and Pennycuff, 2008]. Use of digital technology, make the story more engaging by adding multimedia. It helps to create multiple experiences and as a player/user the power of choice is a motivating strategy. Using the digital technology one can build more flexible and customized nonlinear stories which makes the user king in story world by the means of having many choices which is going down in different paths through these variety of choices. By means of movie, drama, advertisement writer tries to connect story with real life experience such stories are linear stories where user only watch what been presented in front of them. On the other hand, nonlinear stories give user more experience by making more interaction. These are the stories which can forward from start to the finish, and also they give flexibility to the player to make a choice of going at any part of the story and select different tracks to follow and paths as per their wills and wishes [Rasmusson and Bourne, 2017].

Interactivity impacts on storytelling, creates an experience for the individual by connecting to the application. The interactivity is very important in creating digital storytelling experience for the players with interaction with the purpose to motivate and engage the player. As the story create a context, the interactive element lets the player to control their paths and follow their own storytelling tracks [Molnar, 2018]. Following are the ways for building interactive story:

- Build user information into story itself
- Having user drive narrative experience
- Organize the story around user behaviour and needs

As part of this research project a new fantasy story is built. Players using magical power help school to secure shire from evil along with their friends. Player has to deal with many complex situations

where he/she get chance to show his/her skills and ability. Player can also showcase how he/she can deal with situation as part of gameplay.

5. Story Writing

As part of this research project a fantasy story is written to demonstrate [Rogers, 2019]:

1. Decision point: when the character of a storytelling is forced for taking a decision for making different choices. Usually one choice continues the story on the other hand the other choice ends the game or life of it.
2. Bottleneck points: These are unique points in the storytelling and are the points where all players will lead to the same places in the story irrespective of the paths and branches, they follow and different choices they make. At these points all the paths meet and cross each other.
3. Basics of screenwriting: Interactive narratives always have different twists and it is written in such a way to give dynamic feeling to the player like a roller coaster and hence may have different turns in the storytelling and surprises for the player at different places. However, the player still must follow path of basic format in the storyline. Game stories and screenplays usually have analogous form and formats.
4. Making Choices: It is recommended to include different natural choices for the players to make choices of the characters they want to play with as they take the storyline in different paths of the choices.
5. Fair results: The results should be fair and clearly mentioned in the interactive narratives. The players should be fairly communicated all the effects different actions and the results and causes.

Factors covered as part of stories are:

1. The story has written keeping motivation and user engagement at the same time not hijacking the mind. Creating awareness about clear goals, start and the story scene are not repetitive and boring.
2. Compelling challenges provided in between of the story are not so simple, not so complex and not so boring.
3. Smaller rewards based on user choice.
4. Satisfying end to the story accomplishing and satisfaction of completing goals.
5. Story filled with mystery and anticipation.
6. Interaction of user with different characters, player not left alone. Creating environment like working together, chances of making friends or collaboration.
7. Demonstrate decision making, freedom of choice.

Whole story written for this research work is divided in 6 parts, which take the user through the journey starting from magical school helping school to secure shire from evil using magical power along with his/her friend till end. Player must deal with many complex situations where they get chance to show their skills and ability. Player can showcase how they can deal with situation as part of gameplay. Each

chapter is focused on identifying the player's personality based on the dialogue and choice made by the player as part of their adventures of magical land game play which drive the story flow.

Following are the details chapters built for this research work:

Chapter 1 - Visit to Diagon Alley – In this chapter user get engaged in conversation with his/her friend include gossips and share summer memory.

Chapter 2 - The Evil Break-in – In this chapter player make new friends, face the scary evil attack which test anxiety, stress of user and how he/she deals with situation and help the friend.

Chapter 3 - The Aftermath and Redemption – In this chapter player has many decision-making points which make different turns in the story.

Chapter 4 - The Quiz – In this chapter player is thrown with challenge and chance to earn bonus reward points.

Chapter 5 – Make a plan – In this chapter player get chance to show skills and capability which make him /her different from others.

Chapter 6 - Save the sacred from the evil – This is the last chapter on completion of which player gets satisfaction of accomplishing tasks and explore opportunity to make long relation with friends.

6. Effective way to find personality using Gamification and Interactive storytelling

The focus of this research paper is on career decidedness of the high school students and gamification can be used to help them in making a good decision. Interactive story telling along with gamification is effective tool to help high school students in their career decision making process. While deciding career options, historically storytelling is used by generations in the form of oral communications like 'my friend's son did this course ... now he is working with'. Parents or mentors tell such stories to the high school students which guide, motivate and help them for making the decision for their future careers. However, these examples are real life use case kind of stories where different career choices are correlated to the real-life examples. The main issues about such guidance is that it's not based on individual's skills and capabilities. Even though such experiences can motivate and set good examples however each personality is different and hence giving others example may not be relevant for making individual career choices other than just use it as point of reference or for clarifying certain doubts.

In the current research, a novel game is designed using opensource technologies available. Many different game elements are used and implemented in the design of the game. In view of the high school students' choices, popular characters like Harry Potter, Avengers are used in the storytelling. After the game design, it is now deployed to the high school students for the testing and analysis. The game is designed in two parts. In the first part traditional test based on Big5 model is converted into the question answer mode and 50 questions are asked to the students [Goldberg, 1992]. In the second part, the same test is designed in the gamified mode where students need to play a game and make different choices while following one story and character. In this designed gamified system, students who are the players will not feel at any point of time that they are giving the test and the entire experience of playing the game is designed as a fun making and engaging. After finishing the game

based on both non gamified and gamified experience and by using Big5 model, personality of the player is displayed. These personalities are assessed in percentage and displayed as high, moderate and low. The results are displayed accordingly and in the last stage the personality of the player is mapped with the different career choices like engineer, doctor and designer and general comment is made about probable career choice of the player where they can be professionally successful in future based on their personality traits. This research work is currently in the pilot testing mode and non-gamified and gamified system is ready and used for testing.

Figure 1, 2 and 3 shows the system implementation, designed game and some User Interface screens of the gamified system for this project.

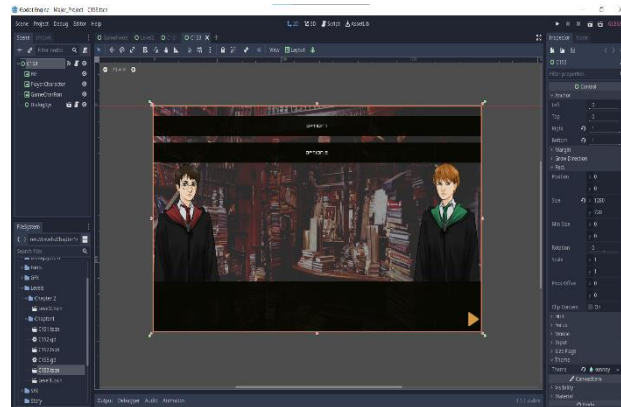


Figure 1 System Implementation

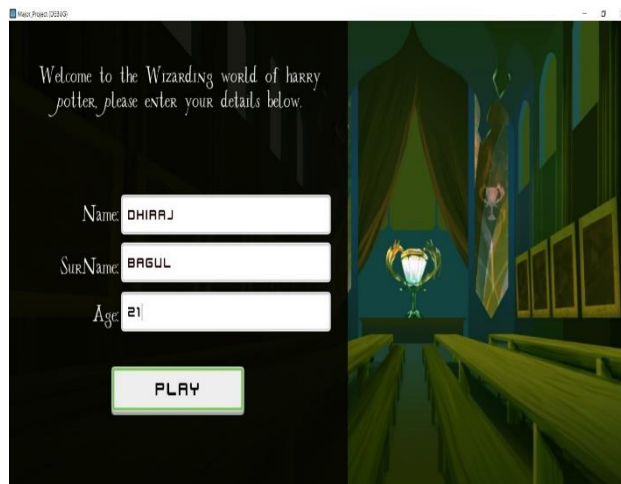


Figure 2 UI screen of the Game

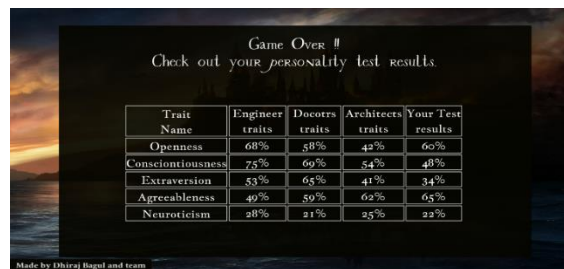


Figure 3 Game end screen with results

7. Conclusion and future work

This paper discussed in detail correlation of gamification and storytelling and importance of it for engaging the player effectively and further application of it in finding player's personality which can be mapped with the individual career paths. Further research is required in mapping the personality traits and career paths. Different careers require different types of personality traits while working professionally. This work is an attempt to highlight need of this type of research work and how effectively mapping personality with the career choices will help high school students to make better decisions for their future careers.

It is predicted that in near future traditional question and answer formats of the personality tests will be outdated and students will love to give such types of tests in the form of gamification. In fact, with further advancements of technologies, these gamification experiences will be designed in the form of virtual and augmented reality. These virtual games through effective story telling can give real life experience to the players of different career options and what are the challenges and opportunities of that career paths by further mapping it with the personality. More research and technology advances are required in such type of work and storytelling is important component for the effective design of such gamified systems.

There are many technological challenges experienced and analysed in the current research work. The available solutions for creating such experiences and effective for analysis are expensive and open source data availability is limited. Further there is a clear gap between direct mapping of careers and personality traits where further research is required.

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