Redesigning Game Characters: Addressing Cultural Diversity and Stimulating Social Cohesion Among University Students

Verona Leendertz  
TELIT-SA North-West University  
Hendrick van Eck Boulevard  
Vanderbijlpark, Gauteng  
Verona.Leendertz@nwu.ac.za

Jacobus Mathinus De Villiers  
TELIT-SA North-West University  
Hendrick van Eck Boulevard  
Vanderbijlpark, Gauteng  
Koos.devilliers@nwu.ac.za

ABSTRACT

This paper reports on the reconceptualising and redesigning of a serious game characters to: (i) address the cultural diverse group of students and North-West University (NWU) and, (ii) stimulate social cohesion among university students playing the game. In 2015 a group of researchers, game developers and statistics lecturers started with the development of the serious game (Thabang's Statventure) for fundamental statistics for first year students at NWU Vaal Campus. Since 2015 a prototype of Episode I of the game was developed, and the following evaluations were executed: (i) test of the prototype with first year students; (ii) eye tracking and an electroencephalogram (EEG) to enhance the mechanics of the game; and (iii) a heuristic evaluation of the game characters. However, in 2017 NWU underwent restructuring which forced the game developers to relook at the characters before the alterations of Episode I of Thabang’s Statventure. In order to address the recommendations and to evaluate whether the game characters adhere to the cultural diverse student cohort, a focus group interview, as part of second iteration of the design research, were conducted with lecturers in statistics and lecturers teaching intercultural communication. The participants were selected to ensure that the game developers create characters which are representative of the diverse racial population and ethnicity of the students at NWU. This paper discusses the findings from the evaluation of the second iteration of the design cycle (focus group interview), and the Agile Software Development Cycle. The findings (design principles) established the adaptation of the existing characters, the development of more characters, and the exclusion of one character, to address the cultural diversity of students as well as to stimulate social cohesion among students at NWU.

Author Keywords

Cultural diversity, social cohesion, adaptation of game characters, Iteration of design cycle, Agile Software Development Cycle, focus group interview, design principles

BACKGROUND

In 2015 a group of researchers, game developers and statistic lecturers started with the development of serious games for fundamental statistics for first year students on the Vanderbijlpark campus of the North-West University. The aim of these games were to address the: (i) attitudes of students towards statistics; (ii) diverse subject discipline of students enrolled for the module; (iii) insufficient time students have to master the statistical procedures in the module; (iv) shortage of information and context specific applications of the concepts; (v) scarcity of technology utilised in the module; and (vi) realisation of the value of the use of serious games for teaching and learning.

“The amalgamation of NWU was a strong symbolic act of reconciliation and nation building – and a highly effective one. The transition to the unified NWU has been acclaimed as one of the most successful and stable mergers of higher education institutes in South Africa. Since the merger in 2010, the NWU has produced a healthy financial surplus, improved student pass rates, increased research output, and risen in the corporate governance rankings for South African universities (North-West University, 2019)”. From 2010 to 2017, the three NWU campuses (North-West University, 2014) were administered centrally, but functioned independently with unique management structures, faculties, and programmes. On 4 March 2017 a new NWU Statute was put into effect adopting the principle of a unified institution, which meant the restructuring of management, administration, faculties, as well as the aligning of academic programmes. Several new policies had to be developed and some of the policies had to be amended to fit within the vision and mission of the unified institution. NWU advocated for a transformed curriculum which had to be intellectually credible, socially responsive as well as relevant so that graduates have the knowledge, skills, values and attitudes to cope with the challenges of 21st-century society (Balfour, 2018).
With the initial development of the serious game in 2015, the eye tracking analysis in 2016, and the adaptation from the heuristic evaluation in early 2017, only the uniqueness (racial demographics, geographical orientation, and student composition) of the Vaal Campus were taken into consideration. Some amendments were made to the characters during the heuristic evaluation. Table 1 illustrates adaptation of the characters during the heuristic evaluation: Thabang “happy” (male caucasian student who is fluent in Sesotho, and Zulu), Innocence (female student and is always well dressed in designer clothes), Zee (short and chubby male student who always have earphones), and Thapelo (male monkey always up to mischief), Jakes (macho rugby player and lazy), Tiffany (fashionable student), and Lerato (sells merchandise on campus).

<table>
<thead>
<tr>
<th>Thabang</th>
<th>Innocence</th>
<th>Zee</th>
</tr>
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<tbody>
<tr>
<td>Jakes</td>
<td>Lerato</td>
<td>Tiffany</td>
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</table>

Table 1. Character adapted from the heuristic evaluation

However, the unified model (three campuses, one university) was not taken into consideration during the heuristic evaluation. Therefore, to cater for the diverse culturally unique student population across the three campuses, an evaluation of the game characters was conducted to: (i) amend the existing characters and/or, (ii) add new characters so that we create an awareness of the fact that students as well as staff should be sensitive to cultural diversity and make all role players aware of what strategies they can implement to enhance social cohesion among NWU students.

**CULTURAL DIVERSITY AND SOCIAL COHESION**

**Cultural diversity**

With any project, and particularly the design and development of context based serious games it is important to be sensitive to the context and the unique culture of the environment. “Culture takes diverse forms across time and space. This diversity is embodied in the uniqueness and plurality of the identities of the groups and societies making up humankind. As a source of exchange, innovation and creativity, cultural diversity is as necessary for humankind as biodiversity is for nature. In this sense, it is the common heritage of humanity and should be recognised and affirmed for the benefit of present and future generations (UNESCO, 2002)”. Cultural diversity creates opportunities for learning and insight regarding ways of doing and even being. Thus the idea that various approaches to do things exist is established through a knowledge of cultural diversity (UNESCO, 2013). South Africa and the student population at NWU embodies diverse racial and cultural identities. The 2019 student enrolment data for race distribution indicates: African students (68%), White students (26.2%), Coloured (4.6%), Indian/Asian (1%) and unknown (0.2%). Even though the African students per sei are 68% of the students’ population they come from diverse cultures and speak multiple languages. The UNESCO (2002) policy further articulates, that through education an awareness of the positive value of cultural diversity can be enhanced, and in turn improve the curriculum design as well as higher education. Individuals are not born interculturally competent, therefore life experiences and education is necessary to equip students with the knowledge of intercultural diversity, so that it can improve their intercultural competencies. Thus formal and informal learning opportunities, like Thabang’s Statventure, are necessary interventions to equip a diverse student populace with the knowledge and competencies to function in a complex and heterogeneous world (UNESCO, 2013). With the character development for Thabang’s Statventure, the designers and curriculum developers wanted to acknowledge and affirm the racial and cultural diversity of the student population to not only embrace cultural diversity, but to create an awareness of the importance of intercultural competency within their own context. This
opens up opportunities within the NWU student community to embrace new forms of dialogue that creates awareness of various viewpoints, creates relationships between individuals from various cultures and societies, and ultimately promotes mutual understanding (UNESCO, 2013). During the heuristic evaluation the user interface were tested with seven first year statistics students and some modifications were made to the character name, character design, clothing, colour and art style, but no in depth analysis were made to the characters’ attributes and backgrounds, and how they are presented in the game to create an awareness of their difference in terms of their socio-economic backgrounds and culture. Culture awareness initiatives is clearly related to the goal of achieving greater unity among increasingly diverse groups (Hempel, 1999).

Social cohesion
Beauvais and Jenson (2002) advocates social cohesion as a principle of either a cause or effect. Fonseca, Lukosch, & Brazier, 2019, p. 246) analysed various definitions of social cohesion which led to the construction of the following definition: “The ongoing process of developing well-being, sense of belonging, and voluntary social participation of the members of society, while developing communities that tolerate and promote a multiplicity of values and cultures, and granting at the same time equal rights and opportunities in society.” When these factors are considered in the development process (globalisation and new technologies, diversity and community) of the story line and embedded in the characteristics of game characters of the serious game than the outcomes will be economic performance and well-being, participation rate and legitimacy of democracy. Games can strengthen social cohesion within a community by creating the opportunity for players, in this context the NWU student community, to reflect on diversity, to ultimately combat prejudice, and to create mutual respect and understanding (UNESCO, 2013). Social cohesion embraces a sense of belonging either within your workplace or your community (Council of Europe, 2001). Furthermore, the dialogues that form between diverse individuals (game characters) and groups can further contribute to fostering social cohesion because being made aware of diversity within the workplace or community creates space for intercultural dialogue (UNESCO, 2013). Thabang’s Statventure can thus be used to simulate this enabling environment, by articulating the norms and values of a diverse NWU student populace. This will not only facilitate social cohesion, but create an environment in which all students can participate and perform as individuals as part of a group. For students, NWU is their community, and it is the responsibility of all role players within the community to ensure that students experience a sense of belonging—this necessitate attention to actors, and in this instance the game characters to stimulate that sense of belonging in a safe space. Therefore, the game designers realised that in order for students to identify and engage with the characters, the actions (engagement and storyline) within the game should include thoughtfully designed actions.

BACKGROUND OF DESIGN AND DEVELOPMENT OF THABANG’S STATVENTURE
Research design and methodology
The serious game conceptualisation, design and development were grounded in design research. Design research articulates the iterative development of solutions (e.g., educational artefacts, processes, programmes or policies) pertaining to practical and complex educational problems (McKenney & Reeves, 2012). Educational design research: (i) is rooted in the functionalist paradigm as it is pragmatic in nature, (ii) it is concerned to generate usable knowledge, and solutions to practical problems, (iii) it is interventionist since it is commenced to make a change in a particular educational context, (iv) is iterative as it advances through several cycles of design, development, testing, and revision, and (v) it is collaborative as multiple role players (researchers, software developers, subject matter experts) within the educational context have to use their expertise in the development of the artefact. Figure 1 illustrates the design cycles for Thabang’s Statventure.
During the previous iterations no reference were made to addressing the racial and cultural diversity of students as the project at that stage were developed with NWU VC students in mind, and not the NWU overall student population.

DISCUSSION OF THE EVALUATION: CHARACTER ADAPTATIONS

The discussion will include the following key aspects: (i) evaluation of character design, (ii) character attributes, (iii) character engagements, (iv) storyline, and (v) engagement of characters to stimulate social cohesion.

Evaluation of the character design

The participants felt strongly about the fact that the current character designs especially the monkey were not designed to be culturally sensitive.
People identify monkey if naughty and irritation, no monkeys, as it is offensive.

They recommended that Thapelo (the monkey) should be excluded as a game character:

Exclude him, we do not want to offend students.

The owl (Lerato) will become Prof Wise, and Lerato will be replaced with a squirrel:

Owls represent wisdom and as we have no lecturer, he can become the Professor. Lerato can be a squirrel that gathers things and sells produce.

The characters should be representative of the diverse group of students on campus:

Make the characters like our students.

There should be characters’ representative of the lecturers and supplemental support which students identify with the context:

Where is the lecturers, they are part of NWU.

From the above comments the researchers realised that the characters should be adapted to be more conscious of the cultural diversity at NWU and include all the role players which students engage with on a daily basis.

Characteristics and backstory

The participants advocated for the characters to display the characteristics which they encounter on the campuses. For the participants it was important that the diverse socio-economic backgrounds (societal diversity) should be embedded in the characteristics:

Not all students have cars, travel by taxi. Some students struggle to get to campus. Let characters be diverse in this regard as well.

The participants felt that the geographical area where students come from are representative of the diversity in terms of culture and that the characters should also come from diverse geographical areas to reflect the demographics of NWU:

Some of my students come from Venda, others from Orange Farm, and even some commute daily from Soweto.

Character engagement

When students engage with their fellow students there are many factors which play a role (demographic, economic, societal etc.), however, the social networks which they establish will have a significant influence on whether they will develop the graduate attributes and fundamentally finding employment after university (Hannan, 1999). The participants felt that character engagement is central and part of how characters develop:

When students engage with others they learn how things work and they learn from each other.

Storyline

As illustrated in Figure 1, the serious game include a total of five episodes. The participants felt that for each episode one of the game characters should become the main character for that specific episode. They felt that students should become familiar with the norms and values of their fellow students, how they interact, what their cultures are, how to tolerate each other so that NWU can create a social cohesive environment for their cohort of students (Fonseca et al., 2019, p. 247). The story will commence with Thabang in the student centre where students interact daily. This is substantiated by Kearns and Forrest (2000) who advocate “the long-standing belief that a cohesive society contains a high degree of social interaction within communities and families.” The beginning of the story (Episode 1) should set the stage for the remaining episodes. As the story unfolds the characters will simultaneously develop.

Design principles and adaptations of the game characters

Table 2 summarises the findings from the focus group interview as the following key aspects: (I) character design, (ii) characteristics and backstory, (iii) storyline, and (iv) character engagement.

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<tr>
<th>Character design</th>
<th>Characteristics and backstory</th>
<th>Storyline</th>
<th>Character engagement</th>
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<tbody>
<tr>
<td>Protagonist or Support</td>
<td>Changed from being just ordinary first year statistics student to a more humanised character showing certain psychographic characteristics. He comes from a different province, he came with a taxi, and is not accustomed to his new context.</td>
<td>He becomes more dependent on other characters in order to increase his character development and depth. Originally, Thabang was designed as a flat character with no depth and by developing his backstory enables an oversight of the social cultural issues first-year students face coming from disadvantaged communities. Through his interaction with the diverse students and NWU</td>
<td>Engage with all the other characters, but not with the lecturers (Prof Wise)</td>
</tr>
<tr>
<td><strong>Protagonist or Support</strong></td>
<td><strong>Innocence (goose)</strong></td>
<td><strong>Zee (goose)</strong></td>
<td><strong>Jakes (oryx)</strong></td>
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<td><strong>Services</strong></td>
<td>Changed from being the brilliant and confident first year statistics student to being quiet and introverted. She comes from a more affluent school and got a car when she passed her final year of high school. She drives a Volkswagen Polo.</td>
<td>An excellent student that performs well. She changes from being a protagonist (selective character) to being Thabang’s peer that he frequently interacts with. The idea is that through her engagement with Thabang she becomes a representation of the idea of collaborative learning, social facilitation—through this enhancing cultural awareness and stimulating social cohesion.</td>
<td>He is a second year resident student who performs well in his first year at NWU. Due to his high marks and extroverted nature he becomes a supplemental instructor and mentor for first year statistics students. In his free time he plays sport and participate in cultural activities. Through supporting diverse students in his role in a support capacity, Jakes learns to become more tolerant to people from other cultures and socio-economic backgrounds.</td>
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</tbody>
</table>
Table 2. Design principles and adaptation of the game characters

CONCLUSIONS
During this evaluation it became clear that throughout the design and development process numerous role players from different units and faculties (representing subject specialist, game developers, creative story writers, designers, and researchers) should be part of every decision, design, development, and evaluation which take place. The findings from the evaluations will contribute significantly towards enhancing the quality of the game and towards ensuring that students engage with other characters. The gameplay will unfold with contextual scenarios where the characteristics of the game characters and gameplay are representative of the real life experiences of the students. The subject content—the student have to understand and master, but fundamentally the researchers want students to feel inclusive of the culture at NWU and ensure that students experience a sense of belonging. The culture awareness initiatives embedded in the storyline and game characteristics will stimulate greater unity among NWU students. With each character taking centre stage in an episode will create an awareness among students that they are valued irrespectively of their socio-economic standing or their cultural heritage. During this focus group interview the character design, characteristics and backstory, storyline, and character engagement of seven of the game characters were either redesigned or reconceptualised with a strong focus to create the awareness among NWU students pertaining to cultural diversity as well as to stimulate social cohesion.
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