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Designing game-inspired narratives for learning

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Abstract: Digital simulations and scenario-based learning programmes are widely accepted as an effective educational approach where experiential learning is key. However, there is an acknowledged need to improve the narrative design of these educational interventions to make them both engaging for the learner and aligned with learning goals. This study turns for guidance to the expertise of narrative designers for games, where storytelling for interactive narrative has a long history of testing, iterating and perfecting. A collection of proven techniques described by game narrative practitioners will inform creative writing efforts to craft prototypes to test the transferability of those techniques to interactive narratives in a healthcare education context.

Keywords: game design; learning design; creative writing; choice design

1. Introduction

Learning designers use simulations and scenarios to create immersive contexts that reflect the day-to-day realities that are meaningful for learners. In those scenarios, learners face decisions in situations and/or with people in the simulated environment. They experience the consequences of their decisions as immediate feedback. This creates a more meaningful and experiential learning environment that contrasts with the type of right/wrong answer messages in more traditional training materials.

A requirement for this approach to learning design is the creation of a professionally designed narrative, with strong characters, a well-paced storyline, interesting choices and relevant consequences. However, few learning design professionals have a background in creative writing. They often struggle to write narratives that both immerse the learner in a well-crafted story and offer coherent and meaningful choices and consequences that align with the desired learning outcomes.

On the other hand, game writing has advanced significantly faster in the crafting of engaging interactive narratives. Story-based games present their players with appealing dialogues and

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at the same time provide choices that align player goals with the narrative design.

The research project presented in this paper stems from an ongoing doctoral project that seeks to identify opportunities to improve the interactive scenario writing practice of learning designers with the narrative design techniques developed in games. The design of the study is supported by significant professional experience in digital learning design, with a focus on scenario-based learning and story-based educational games.

This paper describes and reflects on the initial phase of the research project and presents the methods to extract practitioner knowledge about game narrative design techniques from secondary sources. Opportunities and challenges for the development of testing prototypes that apply these techniques to a learning design context are discussed.

2. Background

The role of simulations and scenarios to immerse learners in situations that reflect day-to-day reality has been studied for several decades (J. Biggs, 1996; Kolb & Kolb, 2009; Schank, Fano, Bell, & Jona, 1994). However, it has only recently gained traction in design for work-based learning. High profile practitioners in that industry propose learning design models that shift focus from “knowing about a desired change in behaviour” to “actively changing behaviour”. They champion interactive scenarios as a proven method for successful learning results (Aldrich, 2020; Clark & Mayer, 2012; Moore, 2017). The branching nature of scenario-based learning, with a focus on narrative and decision-making often leads to them being described as serious games in the learning design industry.

Several researchers look at games with a narrative framework as a very productive setting for educational games (Dickey, 2006; Luo, Cai, Zhou, Lees, & Yin, 2015; Shelton & Scoresby, 2011). Within this game genre the adventure game, both in its modern graphical form or its text-based origin (interactive fiction games) is often preferred. This preference is motivated by their high-level narrative framework for problem-solving, specific narrative techniques such as plot hooks that compel the player to find answers, and the emotional proximity between the player and their role (Dickey, 2006).

Looking at the wider context, interactive digital narratives are seen as an opportunity to serve both as entertainment and education. Researchers are particularly interested in how the power of control in a narrative is experienced psychologically by individuals (Green & Jenkins, 2014). While many authors focus on the player role in their definition of interactive narrative, other researchers point out the important role of the narrative or ‘system’ itself. They describe interactivity in storytelling as a cyclic process between agents: each agent (the user and the system) alternately listens, reflects and speaks (Crawford, 2008). This inclusion of the system as an active agent, brings the work of the designer/writer of the interactive narrative into focus.

Since the early days of interactive fiction games (IF), game designers have been perfecting devices and techniques to craft compelling and engaging narratives. They build interesting

worlds and characters, write engaging dialogues and player choices and at the same time scaffold the narrative for problem-solving and player insights (Dickey, 2006; Fernández-vara, 2010). However, there are more arguments that make this specific game genre fit with crucial elements for this study. In his seminal work, “Twisty Little Passages”, Montfort (2005) likens IF to the literary genre of the riddle. He explains that IF builds a new world to be unravelled and understood by the reader/player in order to gain new insights and it is built to be solved. An IF game provides a “new perspective on something familiar” (p.60), which aligns with learning design initiatives wanting to achieve a change in how the player views and understands a situation. Narrative design techniques are inherent to the text-based IF genre: the writing must compel to engage the reader/player (Montfort, 2005).

While the IF genre has never really died out and has an active community, the past decade has seen a real “IF renaissance” with smaller independent game studios (“indie”) exploring the possibilities of interactive narrative based on the written word, often with minimal but high intensity graphics (Alexander, 2013). This renewal of the text-based game is aided by our familiarity with reading on tablets and phones as a leisurely activity, which can thus be associated with games (Alexander, 2012). Incidentally, this trend aligns with recent publications within the learning design industry, which advocate for active learning interventions focused on story and choice design with simple graphics (Aldrich, 2020).

While this study ultimately looks at a wider perspective for the improvement of interactive narratives for learning, prototyping applies the findings to healthcare conversations. This choice is motivated by practice experience in the creation of scenario-based healthcare training. More specifically, the prototypes will focus on compassion training, part of training in non-technical skills (NTS), widely seen as essential in the improvement of patient safety and health outcomes (Bauchat, Seropian, & Jeffries, 2016; Riess, 2017). Research in the past two decades looks at narrative approaches to achieve a deep understanding of the patient experience and the facets of clinician-patient relationships (Batt-Rawden, Chisolm, Anton, & Flickinger, 2013). A healthcare provider’s competence in recognising narrative allows a deeper understanding of each patient experience, resulting in more patient-centered care (Barber & Moreno-Leguizamon, 2017). Interactive narratives, in the form of simulations and serious games, have often been discussed as an educational approach to develop empathy and/or empathetic behaviours in patient-healthcare provider situations (Batt-Rawden et al., 2013; Bearman, Palermo, Allen, & Williams, 2015). This aligns with educational approaches that use interactions with virtual patients for healthcare training. In this area, many studies highlight the need for further research into the creation of the interactive narratives that provide learners with the “sense of complexity and unpredictability” that in healthcare replicate experiences with real patients (Peddle, Bearman, & Nestel, 2016).

In conclusion, an application of techniques applied in-game narrative would lead to a higher quality narrative structure that supports the interactive decision-making and dialogues in scenario-based learning and simulations for healthcare and learning design in general. It would support the narrative to approach the behaviour of real people in real situations, and therefore enhance their believability and increase immersion by elevating their intricacy and

unpredictability.

3. Methods

Within practice-led research, the approach of the current study aligns with creative writing research, including self-reflexivity, creativity and experimentation as well as scholarship (Kroll, 2009; Skains, 2018). More specifically, it seeks to explore the processes and craft of creative writers in the field of game narrative to inform and lead a professional writing project in the digital learning space. This methodology is iterative and messy by nature, as research and creative writing will alternate, shaped and informed by practice and led by the needs of the project (Kroll, 2009). Additional to the writing project itself, a record of the project iterations of the project and thinking processes involved are part of the research output. The totality of these findings becomes knowledge for wider use in the creative writing field (Harper, 2009).

The creative writing endeavour of this study fits within the wider context of interaction design (IxD) research, which studies the relationship between the artefact, the user and the context or environment (Fallman, 2008). The interactive narratives within this research project compare an interaction design approach that is proven for a specific context - game design - and studies its impact in another context: learning design. Additionally, there is a difference in user. Arguably one could say that a user of an e-learning intervention can be a gamer in another part of their life, but they will approach the artefact with a different mindset and often within a different environment (home vs work). This study finds a place in what Fallman describes as “loops” within his triangle of design practice, design exploration and design studies (Fallman, 2008).

Discussions around the outputs of research through design for IxD call for solutions to address the wide relevance of findings, with the dissemination of both tacit knowledge of experienced practitioners and knowledge acquired through research for the design industry, design researchers and design teachers. (Höök et al., 2015). Within this discussion, active sharing of findings within the learning design and game design community through blogs and presentations at industry events sits alongside academic output throughout the study.

In the initial phase of research, the focus lies on critically gathering best practice narrative design techniques from game writing practitioners to inform the creative writing iterations.

3.1 Practitioner knowledge sharing as data

Game narrative design expertise has been described as a “double secret art”. The knowledge of it is often restricted to the empirical knowledge of the practitioner, or guarded as intellectual property within successful game companies (Roth, Knoller, Koenitz, & Dubbelman, 2018). While some researchers also work on commercial games, and conversely, game designers enter into academic programs, most game designers will never author academic papers (Isbister, Flanagan, & Hash, 2010). This disconnect of knowledge sharing channels between academia and practice is also noted in other practitioner disciplines,

such as technical communication, medicine, education and socio-linguistics (Hannah & Lam, 2016). In parallel to these practitioner communities however, game designers are quite prolific in sharing their experiences with fellow practitioners in other ways, thus providing a wide variety of data for the study.

In this initial phase, the study examines blog posts on professional websites of individual designers, game studios and industry sites such as gamasutra.com, and transcripts of talks at industry events about games and interactive narrative. Blogs provide practitioners with a platform for unhindered conversations with colleagues and reflection on their own practice. They are a space where a shared practitioner language is developed (Hannah & Lam, 2016; Schwartz & Schon, 1987). Other sources for future study may be so-called post-mortem reports of games, and critical and authorial comments on narratives that incorporate choices, such as game reviews (Mawhorter, Mateas, Wardrip-Fruin, & Jhala, 2014).

The sheer volume of the materials available online requires strict selection criteria. For the current research, the focus is on texts where the author provides the reader (or listener in the case of industry talks) with practical content that can be applied to personal work immediately: structures, phrases, diagrams, patterns, word choices etc. Words and phrases that highlight texts as relevant for deeper analysis are e.g. “how to...”, “writing...”, “crafting...”, “steps for...” and “tools to...”.

Unfortunately, titles of blog posts and event talks tend to be “catchy” to attract an audience, which makes search actions for this particular content a complex exercise. These types of texts typically also do not have an abstract. However, the background of the practitioner experience that supports this study can take advantage of inside knowledge to commence the search journey. Known names of industry thought leaders on game narrative provide a starting point to select useful texts, from which a snowballing approach uncovers further data through their mention of other authors, praises of well-designed games and related texts.

This is also linked to the selection criteria for retained authors: texts need to be written/expressed by practitioners, possibly in different roles (researchers, critics, players). The authors need to actively write for games, more specifically for interactive fiction games or other story-based games. They need to refer to themselves first and foremost as game writers or narrative designers.

3.2 Prototyping as a research method

In game design, prototypes are often described as thinking tools in what is called a “wicked problem space”. Attempts at producing solutions can change the understanding of the problem and varying the design of a game and studying these iterations is part of game design. Game designers experiment during their design processes: they add and delete components, change the way the game interacts with players, modify mechanics etc. (Lankoski & Björk, 2015).

The interactive fiction prototypes developed for this study can be defined as “research prototypes”: the design experimentation process is used as a research method, where the iteration of prototypes is planned starting from the initial research question (Eladhari & Ollila, 2012).

The research questions guide the design process of the prototypes, their development, the testing, the types of data gathered and how to treat those data. In their turn, the prototypes may lead to iteration of the research question, a process well established in IxD research (Fallman, 2008). The goal of the prototyping process is to discover narrative design techniques that can be used for other scenario-based learning pieces that are engaging, challenging and aim to achieve specific learning outcomes.

4. The case of choice design

The case of choice design in games has a multitude of facets. It is not only discussed as part of the craft in creative writing, but also linked to fields of psychology, decision-making theory, player engagement and character development (Mawhorter et al., 2014; Sheldon, 2004). Additionally, a learning designer has the educational goal to consider. Most, if not all of their choices presented to the learner in the course of an interactive narrative need to align with the learning goals (Dickey, 2006; Shelton & Scoresby, 2011).

Mawhorter et al. (2014) are working towards a “theoretical framework choice poetics”, which analyses several of the aspects mentioned above, and includes craft advice from practitioners. Their definition of choice structure framed the more focused design of the prototype created in this study. The authors define a choice structure as follows: “A choice structure consists of the *framing*, *options*, and *outcomes* associated with a choice.” The “framing” can be described as the context, the situation in which a choice is placed. The “options” are the actual choices the learner can select, and the “outcomes” are the consequence(s) of selecting either of those choices (Mawhorter et al., 2014).

The next sections discuss two examples of how practitioner techniques can inform the prototyping exercises. They both illustrate the varied influences which shape the research, as they are informed by academic writing, a blog post or an industry talk.

4.1 Framing and the use of subtext: an iterative make-over

One of the first texts examined for this study is a talk from AdventureX18 by acclaimed interactive writer Jon Ingold, titled “Sparkling dialogue: a masterclass”. Jon Ingold from game studio Inklestudios has co-created and written award-winning narrative games such as *80 Days* and *Heaven’s Vault*. He has been active in the interactive fiction community for over 20 years and has created many experimental works exploring the genre and its creative writing aspects. The talk mentioned above uses a crucial scene in the movie “Blade Runner” to demonstrate how it can be turned into an interactive scene. While the talk focuses on many elements of choice structure, for this prototype we focused on the principle of “subtext”.

In typical framing text for a scenario, learning designers often err on the side of caution and shower the learner with information. They provide a full framing of the decision presented. While they try to engage with the learner by “creating a story”, learning designers often provide too many details and alienate instead of engaging the learner. While this research takes its cue for the ‘typical framing’ from many examples of colleagues-practitioners, it is important to note that even learning industry thought leaders have acclaimed examples of scenario-based learning that overwhelm learners with details in framing.

The prototype presents a so-called mini-scenario (Moore, 2017), which mostly consists of framing and one set of options. The choice of topic was influenced by practitioner experience in the area of Health and Safety training, and more specifically in hospital settings. A familiar learning challenge in that area was chosen: a slip hazard. The nurse in the prototype story arrives late for work, and will notice a spill in the corridor – will she clean it up or rush on? The paragraphs below are the first version.

“Laura has worked as a nurse at Starburst hospital for five years. She is on the early shift today, but she is running late. There was so much traffic on the Southern motorway today and her little boy, Jamie, who is 4, decided to protest against the clothes she laid out for him! Definitely no time for a coffee before her shift starts. She speeds to the ward.”

Improvement for this piece of creative writing is now sought in the techniques described by the source. In the aforementioned 2018 talk, Jon Ingold tells his listeners to look at subtext. He challenges them to look at “What is actually happening here?” (00:19:39) and reminds them that “This is an opening step.” (00:19:39). What is the learning designer trying to do? They try to build rapport with their learner in their workplace context. This paragraph says: “Laura is a nurse, just like you, learner and she’s late because of traffic and domestic stuff.”

If we, under Jon Ingold’s guidance look at what is irrelevant to achieve this goal, we can ask the following questions about the current content: Does it matter how long Laura has worked at the hospital? Or where exactly she was stuck in traffic? Does the learner need to be burdened with an additional name, that of her little boy? Not really. It just adds unnecessary reading effort. Based on those questions, let’s rewrite as follows.

“Laura, a nurse at Starburst hospital, is late for her early morning shift. Her little boy refused to get dressed and she was stuck in traffic.
Definitely no time for a coffee before her shift starts. She speeds to the ward.”

As a first iteration, it can be noted that it is already much shorter, but it still does not engage the learner. Jon Ingold tells us that that is a good step to be at:

“now that we have a subtext structure, now that we actually know why we’re here and what we’re doing and who we are, we actually can add value and make things sparkle. We can rewrite the crappy lines and make them a little bit better.” (00:43:55)

In line with the title of the talk, we now turn it into dialogue. It provides a change from running text and gives the opportunity to include a glimpse at Laura’s emotions.

“There goes my morning coffee,” Laura sighs as she rushes to the ward, late for her shift.

“Ugh! Auckland traffic, and a non-cooperative 4-year old. What a morning.”.

Laura is now ushered in as a living person, by making her lateness a personal effusion and using a strong dialogue-like expression that makes her talk to the reader. Reflection about those changes shows that by using the subtext structure, we have written less to write more. The introduction is a lot shorter, and quicker to read for the learner, but it is more engaging at the same time. Also, by making some elements more generic, the paragraph connects with more people. Taking away the details about traffic and the child situation but leaving them in as a reason for the protagonist’s lateness, allows more readers to feel connected. The learners may have traffic trouble elsewhere in the city, not on the Southern motorway. They may have a small child in their family, but they are not the Mum, the child may be a little girl, not a boy etc. The child they relate to may have been a fussy eater or a bad sleeper, so the description “non-cooperative” makes that connection with personal experience but does not provide extra details that may not resonate.

From this writing exercise, three questions emerge that learning designers can use to think when they write framing text to introduce a decision: “What is the subtext of this scene?”; “Which details can be generalised so we connect to more learners?”; “Can we draw the learner in by using a bit of dialogue?”.

4.2 Writing options: descriptive or action-based

This second example works with one aspect of the ‘options’ in the choice structure presented by Mawhorter et al. (2014). This part of the choice structure is discussed widely by narrative designers as choices are an inherent part of interactive narratives and games in general. A blog post by narrative designer Bruno Dias on the Choice of Games website, a platform for text-based games, provides advice on writing “good choices” (Dias, 2018). The text stays high level about most aspects of choice design but provides some specific examples for some. Dias touches on the following themes for options: the number of choices provided to the learner/player; the text of the choice: a description or a literal action; the length of the text; balancing choices while considering the hierarchy and relationships of characters; consistency.

The prototype in this discussion provides a testing space for the text of the choice as described by Dias. Choices can feel completely different to a learner/player depending on how they are written, even if the text has the same meaning. Similar to the technique applied in the previous section, the way of writing a choice can affect learner engagement.

Let’s look at this simple example of the difference between writing an option as a description of what a player could say to a non-player character (NPC) and writing the choices as the actual speeches.

In this set of three options, the actions presented to the learner are described:

- You tell him he is lying.
- You tell him he is right.
- You say nothing.

Then, the same options are rewritten, but provide the player with actual speeches.

- “You are a liar!”
- “You are right.”
- “...”.

Bruno Dias warns the game writer that with the action-based options “What you implied (...)” will linger. They help to make up the player’s image of the character they are playing, of “what they’re capable of” (Dias, 2018). Reflecting on what this means for a learner engaged in a scenario-based learning module, it occurs that direct speeches may alien them. In their work life, with for example clients or colleagues, they may never use such direct speech, it may not fit their personality type. The descriptive version gives room for imagination and allows the learner to envisage a speech that conveys the same meaning but fits their personality and style of conversing.

For a learning design situation, the choice between these two writing styles for options is often linked to the alignment with learning outcomes. As an example, in a scenario-based learning module that is designed to train e.g. call centre employees to handle emotional callers, the literal speeches may be preferable. The module may try to convey the tested and proven use of phrases that can help in such situations, such as “I hear what you are saying...”, versus giving the learner a mere description of the speech such as “You acknowledge their story.” When learning to use specific phrases in specific situations is one of the learning goals, the learning designer may not want the learner to imagine their own version.

Again, as with the technique discussed in the previous section, we can deduct several questions for the learning designer to ask themselves: what do you want the learner to do or say in a real situation? Is the viewpoint character the learner, or are they a NPC that the learner makes choices for? How do you want the learner to feel about the viewpoint character if it is a NPC?

Dias (2018) concludes his advice by mentioning the need for consistency: he advises never to mix both styles when writing choices. However, several game examples do combine them with a successful result. In the Titanic interactive story by acclaimed narrative designer Meghan Jayanth, the choices occasionally combine both types, specifically when there is a combination of dialogue options and actions. The player may for example have the choice between two speeches and one action (e.g. walk away). These comparisons of advice by one narrative designer and actual practice in existing games designer by another expert practitioner promise to provide interesting iterations in the prototyping phase of the full study.

5. Conclusion

Narrative techniques used by experienced game designers can help learning designers to reflect on their writing and to improve the engagement of their audience when they create simulations or scenario-based learning. Those techniques can be gathered from practitioner-oriented sources created by game designer such as blogs and talks at industry events.

Next steps in the present study include the development of testing prototypes of interactive stories for compassion training in a patient-healthcare provider relationship setting.

Compassion training is a perceived need in healthcare studies and practice, and calls for a better narrative approach to digital training approaches (Kleinsmith, Rivera-Gutierrez, Finney, Cendan, & Lok, 2015). Moreover, the ability of games to elicit empathy and related emotions such as compassion has been the object of different studies (Farber & Schrier, 2018; Isbister, 2016). In this space, it will also be valuable to explore the understanding of compassion as an internal motivation (Perez-Bret, Altisent, & Rocafort, 2016) and how this can be leveraged by the concept of intrinsic motivation in game design (Mallon & Webb, 2006).

Reflections on the creative process to compose the actual stories will be journaled to inform insights in how practitioners can apply the narrative techniques to interactive stories with a training or learning purpose. Ultimately this study can give rise to a set of guidelines or heuristics for creative writing that can be used by learning designers. Additionally, a framework of the effectiveness of particular techniques for specific goals may be derived, which may have applications in both learning design and game design narratives.

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