

Teaching Interactive Digital Narrative Through Found Photography

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Abstract One challenge teaching the creation of interactive digital narratives to humanities students is engaging with programming/scripting. For students without any familiarity of code, even simple(r) tools (game engines) like Twine and Unity can present major challenges. Fortunately, it has been suggested that found objects can enhance the classroom experience of learning in unfamiliar ways: found objects allow students to anchor their new experiences to the everyday. This paper recounts the experience of creating a class – called ‘Introduction to Digital Storytelling’ – with the aim of giving students freedom to create interactive digital narratives through game engines while grounding their experience in the theory and practice of ‘found photography’. We present the background and findings gathered after the course’s first year. We believe found objects and Found Photography in particular, have the potential to ease some of the challenges of STEM skill acquisition, enabling students’ digital creative practices.

Keywords: Interactive Digital Narrative, Found Photography, Unity, Twine, Pedagogy

1 Introduction

A recurring challenge noted by academics teaching STEM or STEM adjacent subjects is the difficulty of teaching programming to students without any prior experience [1], [2]. This is exactly the kind of difficulty an educator must expect when aiming to teach Interactive Digital Narrative design to those completing degrees within the humanities [3].

A range of solutions to this problem have been suggested but one that interested the authors of this paper, and the creators of our university’s first ‘digital storytelling’ class, is the implementation of found object art and particularly ‘found photography’ understood in this article as a “celebration of the mundane” that is at once a “an ultimate denial of authorship” but also an “act of inclusion” [4]. Found photographs allow artists, scholars and – in this case – students, to make strange the familiar and put to work otherwise neglected objects. Putting the inspiration found from others’ experimental teaching strategies into practice, the authors designed a curriculum that required students to build digital narratives (using Unity, Twine or similar game crea-

tion tools) based around found photographs. Guiding by example, the authors also built their own game in the Unity game engine utilizing found photographs sourced from a “charity shop” (thrift-store), otherwise destined to be thrown away as landfill waste. On balance, student reactions were very positive, listing only a few concerns that can be covered in the future of the course. The authors of this paper suggest that using found objects is an easily practicable way of making the challenging task of teaching and learning complex interactive digital narrative tools like Twine and Unity much more approachable as they allow students (and staff) a chance to work with something familiar in a new way, limiting the emotional toll of engaging with new skills while adding depth to the otherwise mundane.

2 The Difficulties of Teaching IDN to Humanities Students

A challenge identified with teaching STEM subjects in schools is the persistent belief in students and educators that one can be (or not be) ‘good at math’ [1, p. 226]. While Ulises Eligio’s in-depth study of the *Emotions in Mathematical Thinking* suggests many and varied possible reasons for this binary thinking (not limited to the social implications of math-clubs, the anxiety of learning about infinity and more) the established links between Math skills and success in connected STEM subjects means that many students approach topics like programming with trepidation. Research has uncovered connections between student confidence in STEM subjects like Physics and the parents’ attitudes to similar subjects in the home [5]. These complex emotional/psychological connections are just as present and complex in the teaching and learning of computer science [2]. Salguero et al have found connections to ‘many areas of their lives’ including personal obligations, lack of sense of belonging, in-class confusion, and lack of confidence [3, p. 319].

Given the current state of teaching STEM related subjects, teaching game development or even engaging with elements of interactive digital storytelling in its broadest forms, is likely to cause heightened levels of stress among students when it begins to resemble computer programming and mathematics. Kenton Howard Taylor and Rachel Donley’s account of using Ink (scripting language) to teach interaction design notes this problem specifically: they write, ‘Ink is relatively easy to learn, but this point in the scaffolding assignment sequence is also where students usually start to struggle since it requires them to write code’ [3, p. 70]. Recent publications suggest an awareness of the more general stress that can be caused when attempting to teach interactive digital storytelling through the use of game engines: for instance, Brendan Keogh and Benjamin Nicoll’s monograph on the Unity game engine notes that one great strength of the engine is its ease of use suggesting the difficulties of the alternative (programming an engine from scratch) [6]. Similarly, Thompson has suggested that a strength of the Twine platform is its accessibility given its text-based nature [7]. Beyond using game engines Nick Montfort’s book on teaching creative programming to humanities students also notes the difficulties and challenges therein; that it can be

‘difficult to understand the bigger picture, hard to discern how to usefully work with data and how to gain comfort with programming, while dealing with the more advanced topics that are covered in introductory programming courses. That is, it can be hard to see the forest for the binary trees’ [8, p. 12]. While these difficulties are partly due to students lacking familiarity, another difficulty is more challenging to overcome. Salguero’s study of the drop-out and failure rates of programming heavy introductory courses [2] and Bennedsen & Caspersen’s repeated studies on similar material [9] suggests that programming is simply a highly challenging skill to acquire¹.

Reading between the lines of these studies it’s possible to put a picture together of the current state of play: for a complex variety of reasons that we are only beginning to unravel, students find STEM subjects challenging to engage with. Computer Science is one of these subjects, and it is the programming element of these courses that can be particularly challenging. For humanities students, engaging with emerging creative practice and interactive digital storytelling teaching, these problems are significant.

Of course, I am not the first researcher to have thought of this or considered some possible recourse. A tremendous inspiration on this course’s construction was the paper by Danielle Wayne Dravenstadt whose writing on choice-based teaching with found objects provided a clear structure around which to build our teaching strategy [10]. Dravenstadt found that ‘exploration of found materials prompts students to consider the use of artmaking materials with more care and curiosity’ [10, p. 10]. Although our class was not of a similar genre to Dravenstadt’s art classroom for younger learners, we felt there would still be tremendous potential for crossover. Similarly, ideas from art therapy suggested that ‘using found objects can create a space for integrating and meaning making in the face of rupture’ [11].

A challenge persisted as we were already stretching the limits of our knowledge by aiming to deliver an interactive digital narrative class to students from radically different backgrounds. Opening the class up to a range of found objects seemed to be opening too many possible doors. As such, we looked to Karen Cross’ ideas about found *photography* or ‘appropriations of the snapshot’. Although not simply an extension of readymade and found object art, there were enough similarities, we felt, to feel that we were acting in good faith by assuming that found photographs would have similar effects to those noted in found object studies. Beyond this, however, Cross notes that when we use found photographs we ‘involve a range of scenarios of meaning-making, which are underpinned and developed according to a particular dynamic of object-relating that is both personal, cultural and often entangled within institutional challenges’ [4]. Found photography then seemed like an excellent possible way to enable students to bring something into an IDN classroom that could push them to consider materials with care and curiosity, providing a space for meaning-making but

¹ Although Bennedsen and Caspersen note that a 28% failure rate in computer science courses is ‘not alarmingly high’, it’s difficult to translate this to different standards of higher education throughout the world. An almost 1/3 failure rate in UK HE would definitely raise some eyebrows.

also to entangle this practice into institutional challenges. I will return to this later in the paper to explicitly convey the unique advantage of found photography as it relates to IDN teaching, but for now, it is enough to say that the possibilities outlined by Howard and Donley noted above, getting students telling stories through another medium before resorting to coding, helped us to bridge disciplinary gaps.

3 Leading by Example: Teaching IDN through Found Photography

Taking the lead from some of the excellent work noted above on using found objects and found photography in classes teaching IDN, we put this idea into practice through the design of our curriculum this year. Our 67 students were all from humanities and none declared any significant prior knowledge of programming. They participated in eleven taught weeks with the first six weeks taking place in more traditional classroom settings, the latter 6 in a computer workshop. In the first week students were introduced to selected works we felt were characteristic of fundamental narratology and narrative design with an emphasis on work that was primarily visual art, such as photobooks. In week two, the students were informed they had three intervening weeks to begin searching for and gathering photographs in much the same manner as suggested by Bat Or: the objects were to function as “fragmented and affect-loaded memories that need to be recognised and rejoined” [11]. Students were not only to touch, to explore and play with the photographs, but to allow themselves to give these objects entirely new meanings. These could be pictures they had previously taken themselves, or pictures they found (online or offline) as in an example we shared with them (which we will discuss shortly). They were told this collection would guide the project work to come. The aim was for students to begin reflecting on otherwise discarded media and begin to consider the stories these photographs might tell. In week 3 students were given some readings on photography basics such as composition and the basics of how cameras work, but it was stressed that the collection of pictures they gathered would be remediated by the end of the project – as such, the photographs would not be judged based on typical thoughts of aesthetic values, but – rather – viewed as part of a more holistic transformative project.

Weeks 4 and 5 were dedicated to workshoping the photograph collections students presented thus far (informed as well by the canon of post-structuralist scholarship and emerging works on new materialism in photography). When collections seemed too intentionally curated or to be telling an obvious story, they were instructed to turn their minds to the mundane (drawing on Stone and Or’s work). To give just one example of this workshoping progress, a student had curated – or perhaps created – a collection of near commercial quality photographs of themselves and friends at a music festival. It was clear their intention was to showcase their well-developed sense of taste. However, this didn’t work well within the parameters of the course – few stories could emerge organically from the photographs without clashing with the one that already existed. Reacting to this feedback they collected a series of almost unre-

lated photographs from stock images and began to construct a narrative to be realized interactively.

From week 6 the course shifted towards work on Interactive Narrative Design. Long, workshop style classes in front of computers familiar in computer science departments. Students were given guided, step-by-step instructions on how to use software packages (first two sessions on Twine, then two sessions on Unity) before a final class that was dedicated to troubleshooting and going over submission (this final class proved to be invaluable for reasons we'll discuss below).

3.1 Leading by Example

To make sure students knew exactly what was expected of them, it was decided that the best way forward was to make our own interactive digital narrative game that students could use as a guide and inspiration. Using our joint experience of having worked with professional found photography and the Unity game engine,² we put together a short game that combines elements of hidden-object/escape-the-room games with found photography. Planning for the game began in December of 2022 and the game was released to students in March 2023.

The game took inspiration from the found photos it sought to remediate: a series of pictures that had been abandoned and sold as scrap in a thrift store in Glasgow. The pictures show a relatively elderly couple on a trip to the USA in what appears to be the 1970's or early 1980's. The couple, presumably now deceased, were completely unknown to the owner of the shop where the photographs were purchased. As such, we had absolutely no knowledge of the story behind the pictures. The pictures were purchased as negatives, meticulously cleaned, digitized using a flatbed scanner at a high DPI.

One striking image [fig. 1] from the collection was a hotel room in which a woman stands alone, looking directly at the photographer (presumably, the man that often appears within the photos). This image served as the inspiration for the main game world we would create. An initial draft version of the game was composed using Twine before using Blender and the Unity 2021.3 Long Term Support build, to devise our game. A digital version of the hotel room from the photograph became the main space for interaction, allowing players to track down a series of objects and the attached memories to escape the hotel room [fig. 2]. The game begins with a slideshow of these photos playing rapidly across the screen and a voiceover in an old man's voice, cryptically hinting at the nature of time, memories and truth. After that, players are thrown into the hotel, and must collect objects within, whereupon they are shown another photograph and a voiceover plays, adding layers to the story we're choosing to tell, through voiceovers.

² References to our own credentials intentionally omitted for anonymity.



Fig. 1. The picture from the collection as it appears within the game, floating back and forth, illuminated from behind.



Fig. 2. The hotel room, reimagine in the Unity Game engine making extensive use of lighting and filters to make simple shapes look interesting.

This simple game mechanic – find an object, hear an audio log – is something that has worked well for games like *Dear Esther* and other ‘walking simulators’; however,

we felt it was important to provide students with something slightly more engaging experience, true to the spirit of IDN. What’s more, drawing on recent criticism of games like *Gone Home* who use the linear logic of collecting audio logs and progressing towards a point of simple truth, it was important to not be so connected to a singular narrative [12]. As such, while students could collect the objects and hear our imagined version of the lives that the people within had lived, we also made the point at which the students could leave the room optional. Importantly, none of the narrative elements connected to these endings were designed to feel any more ‘good’ or ‘bad’ than the others [13], in spite of the additional ergodic effort required to collect some over others. Instead, we were aiming to provide all players with a satisfying if somewhat obtuse experience of just one interpretation of the photographs.

On balance, the game worked to our objectives as it helped to give students a clear example of what’s possible for IDN using a game engine like Unity but also achievable within a short timeframe. What’s more, because of the use of the photographs, there was always a central anchor point around which the narrative was built. This also meant that we could collaborate on a project while having very different skillsets.

The work between us was always an act of remediating found photographs into a new and engaging digital narrative – as such, the benefits theorized by Dravenstadt were apparent to us as well as our students. The found objects became as much about our lived experience as they were about the “true” story they may possibly have been connected to. A further strength of the game was that because we had created it ourselves from scratch, there were no questions we couldn’t answer about it. If students wanted to know how to achieve x effect from the game, we could tell them. By comparison, using examples created by other people, the best we can do is guess.

3.2 Student Work and Implications

Standout submissions allow us to see the impact that found photographs had on their ability to work. A personal favorite of mine, though not one that received a particularly high grade, used pictures from the student’s own phone to tell a branching science fiction story. Images of completely mundane places (the student’s dorm room [fig. 3], their bathroom mirror) and things (and empty pizza box, an inexpensive tripod [fig. 4]) were recontextualized in a comical and engaging way. Using photoshop, they doctored a photo taken to resell the tripod on a marketplace website, into an adventure with multiverse exploration [fig. 4].

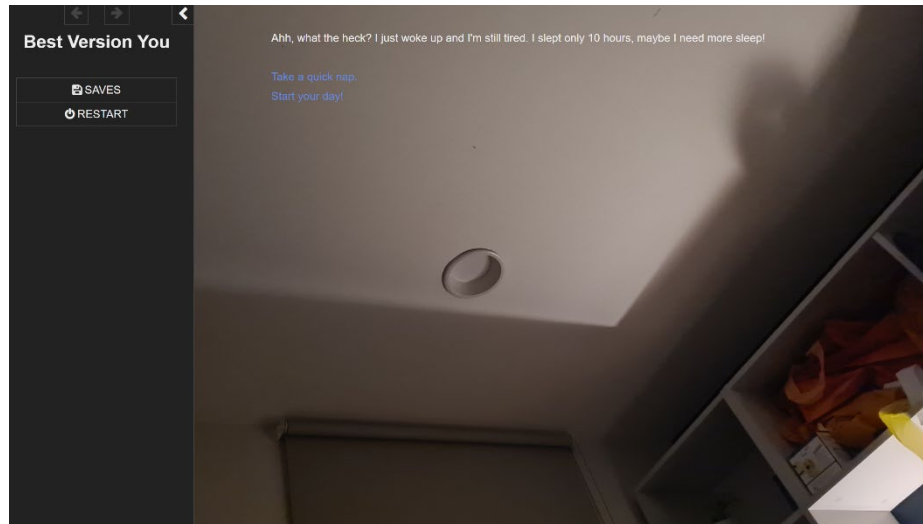


Fig. 3. A picture taken to test the student's new phone becomes the setting of a science fiction story.



Fig. 4. A picture taken to help sell an old tripod becomes an adventure into another world.

While this student, and the other students involved had no prior knowledge or experience of programming, they found their tasks of telling an engaging story using pre-existing assets to be straightforward and manageable. In a large part this was due to their connection to the materials they were using. Twine's reliance on either HTML, CSS and Javascript, or else its own proprietary scripting language no longer

seemed daunting when the tasks at hand were clear in the students' minds. They were confidently able to imagine what they wanted to see because the images were familiar to them and they already had examples they could draw from that we understood intimately.

Contrary to the idea that Twine could be a "limited system" that "might not be representative of the possibility space" [14], using found photographs opened up myriad new horizons for constructing IDN. Students were not lead or limited by their knowledge of tools, or the abilities of their instructors to open their minds to the potential of tools, but rather by the extent of their own imaginations to reconceptualize the photographs they found. Put another way, allowing themselves to be lead by found photographs, the students did the intellectual 'heavy lifting' in their imaginations. Their creations instead became a question of linking together visual elements in engaging ways, rather than first having to learn a tool and only then beginning to create.

3.3 Post-assessment questionnaire

The success of the teaching was considered in several ways. Firstly, we took into consideration the class pass rate. Out of 67 students, there was a failure rate of just 4.4% and a non-completion rate of 10% with an average grade of 61% for completing students (though it should be noted that one submission was awarded a grade of 0% due to insurmountable technical difficulties with that submission and this unavoidably skewed our average). While it is somewhat circumstantial, this is a healthy rate of completion for a class at this level in the UK and indicates a strong overall impression if superficially.

To gather more detailed data on the success of the course we also asked the students to complete a short 40-question multiple choice questionnaire at the course's completion. Students were asked a simple series of questions including but not limited to: 'were staff on this module good at explaining things', 'have staff made the subject interesting', 'has this module been intellectually stimulating' and 'has this module challenged me to achieve my best work'? Questions were asked using a simple Likert scale and answers skewed positively to the left (positively) in our favour, with the exception of a question on organization and management which was more neutral. Space was given for students at the end of the questionnaire to allow students to comment openly about the module. Here, we were hoping that the found photography elements of the course would be mentioned but, sadly, no students made direct references to it.

Amplifying the quantitative data gathered at the end of the course, we also conducted interviews with several willing students in a casual and unstructured fashion as well. Some student feedback for the class was extremely positive with students noting 'this one class has changed my life' and that 'this has completely changed the way I think about education' (these students will have to remain anonymous given the nature of the consent they provided). Unfortunately, no student specifically mentioned found

photography in their interviews either, and when asked about it, they didn't directly mention the qualities suggested by Stone and Or.

That the students didn't mention found photography wasn't unexpected. On the contrary, this was largely the point of including the found photographs within the course. The photographs gave students something familiar around which they could develop interactive digital narratives as in the example above. The purpose of the photographs was that they were to go unnoticed; to be points for inspiration that elevated the students, not important things in themselves. Returning to where we began with our understanding of found photographs as the 'mundane', the fact that students were unaware of their role in creation, rather, seems perfectly logical.

3.4 Pain points and room for improvement

As mentioned, in future iterations of the course, it will be important for students to specifically answer questions about the importance of found photography in encountering STEM adjacent work like IDN. The current end of year survey did not prompt students specifically to speak on the topic. While we are wary of the influence asking this question might have on the students to colour their recollections, this is a necessary step considering that we received no specific feedback mentioning found photography so far.

Something that arose in delivering this kind of freeform interactive digital narrative focused teaching was that submitting a wide array of different types of work, while liberating for the students, can place a strain on current generation university infrastructure. At our university, staff submissions are handled using the popular 'Canvas' learning management system. This LMS is geared towards either word documents or fully standalone work, like a folder containing a Windows ".exe" application and its required files. Work students submitted via Twine was not as robust as either of these options and difficulties arose when student work was to be assessed by external staff without the necessary familiarity with Twine. Given the underlying HTML, CSS, Javascript guts of a Twine project and the current state of the Twine browser, sharing student projects often resulted in problems such as images not displaying correctly, sounds not working, etc.

While something that helped tremendously was building in a week for students just to submit their work, it is something that teachers interested in exploring this kind of path should be aware of. It is likely best to know who you will be working with to get student work marked, and to pool knowledge sufficiently to make sure students are treated fairly, even if their code results in a project that doesn't just run on a simple double click.

Another issue was that the switch from weeks 5 to 6, switching from ideation to practical implementation of ideas, several students actively resisted some of the ideas that were suggested to them. Primarily, the idea of 'textual worlds' [15] and procedural rhetoric [16]. In other words, the construction of agency through limitations of possible actions, and the communication of ideas through actions was resisted by students. Many found the ideas of agency difficult to comprehend and in some cases

antithetical to their narrative ambitions: they wanted things to happen to their characters, and for their sense of right and wrong to be preserved, rather than for narratives to support player actions.

These shortcomings can and will be addressed in future versions of the course, initially by placing a greater emphasis on a wide array of narrative possibilities over the canon of narrative theory.

4 Conclusion

Teaching IDN is challenging because of the crossover between it and STEM-centric subjects, especially when the students are from a humanities background. However, by looking to work produced in experimental classrooms, the work of art therapists and some theories of art and practice, it is possible to create a classroom environment that is enjoyable and supportive of student experiences but also that ensures the creation of high quality outputs in line with 21st century expectations of impact.

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