

CREATIVE TECHNOLOGY – THE CTSG: GAME DESIGN IN 7 STEPS

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ABSTRACT

This paper reports about a series of workshops in game design, originally meant as promotion for the Creative Technology curriculum of the University of Twente, but evolving into an element in the curriculum itself, with as the goal to create the CTSG, the Creative Technology Superpower Game(s). In the paper, both the goals and motivations of the workshop is dealt with, and the structure and means of executing such workshops, to give potential instructors of such workshops not only an example but some guidance and words of advice as well.

INTRODUCTION

To attract students to our Creative Technology curriculum¹, a series of workshops was organized, with as the main subject *game design*. The workshops were meant to introduce the topics of our curriculum, covering both new media and smart technology, as well as (societal) themes where creative engineering might bring potential solutions. To arouse personal involvement and interest, the participants were asked to state their favorite *superpower*, inspired by a presentation of Matt Costello entitled *Celebrating Creative Genius – Across Media*² at PICNIC 2008³. These superpowers were later to be used in the actual game design.

Given the fact that our graduates will act, so to speak, as *mediators* in the creative industry and related areas of society⁴, as well as the nowadays self-evident requirement to be able to sell your work in pitches and presentations, the overall motto for the workshops was emphasized to be:

*communication is the key to creativity*⁵

In the course of the workshop(s), students were required to give presentations ranging from 1-minute pitches

to 5-10 minute competitive proposal discussions. It must be noted that *communication* was also one of the potential game topics, as alienation and loneliness may considered to be potential dangers of our highly technological society, and as such one of the paradoxes of the (socially) networked society. And, as an aside, communication is, as many of us know by experience, generally not the strongest point in CS departments, reason the more to bring the *communication* topic explicitly to the attention of our (future) students.

The material in this paper stems primarily from a re-enactment of the workshop in the *multimedia authoring*⁶ class of the author, with more senior students, which was held to have a somewhat more controlled setting in which to obtain materials and ideas. Anyway, in my experience, the challenge of designing a game around superpower(s), or a combination of superpowers, to *improve the world* has proved to be appealing to all levels of students.

structure The structure of this paper is as follows. First an outline of the creative technology promotional workshops will be given, with a brief explanation of why we chose for this format, that is *paper&pencil* based work. The possible themes of game design will be discussed, as well as the structure of the workshops and the actual assignments. Then we will look at the results of the (re-enactment of the) workshop, that is both superpowers and related game scenarios. After discussing, on a more general level, techniques for design and creativity, we will explore the future potential of game development around the superpower theme(s), in particular for the Creative Technology curriculum. And finally, we will draw the conclusions.

CREATIVE TECHNOLOGY PROMOTIONAL WORKSHOPS

A *paper&pencil* workshop was decided for, to be able to cover a lot of ground, so to speak, in a relatively short time, usually between 45 minutes to an hour and a half. The alternative of using computer-based tools to introduce (potential) students to creative work seemed

¹create.ewi.utwente.nl

²vimeo.com/3188577

³www.picnicnetwork.org

⁴create-media.blogspot.com

⁵www.cs.vu.nl/~eliens/.CREATE/create-workshop.html

⁶www.cs.vu.nl/~eliens/mma

at first more appealing, but would take on reflection simply too much time. Although the proposal for *paper&pencil* based work originally met with some scepticism, the results in terms of interest of the participants and information conveyed to and about the participants proved to be (very) satisfactory. It must be remarked, however, that the workshops were complemented by a hands-on practicum with sensors and arduino boards⁷, to give potential students also a feel for the (smart) technologies used in the curriculum. Such a practicum was, however, not part of the re-enactment described in this paper.

The (original) workshops are organized in seven rounds, as indicated below:

workshop game design – in 7 rounds

1. introduction – getting to know each other
2. selection of game theme(s) – the playground
3. exercise(s) – associative chaining
4. visual style – design & reference(s)
5. narrative content – story line(s)
6. game mechanics – play & score(s)
7. wrap up(s) – speak out!

After a first round, where each participant was asked to state his/her name and favorite superpower, we started with the assignments. However, before starting the actual assignments the participants/students are primed by the presentation of a collection of videos, with brief explanatory remarks, using a selection of clips from .CREATE TV⁸, ranging over *future technological innovations, urban threats and violence, the impact of media, novel ways of human-computer interaction*, as well as a selection from *watchmen*⁹, to emphasize the personal responsibility of the students to become a *superhero*.

As an observation, in one of the workshops a participant remarked after hearing all participants' superpowers that he felt that he *knows these people better than his own friends*. Another important exercise, by way of warming-up, that is bring the participants in the right mood, is *associative chaining*, in which the assignment is to make a brief story by having each participant contribute a phrase or line, in turn, until the story reaches a certain length, say 20 lines for a group of five. For this assignment, as well as the later assignments, groups of 4-5 people were formed. Dependent on time, a selection was made from the other assignments, focussing on visual style, narrative content or game mechanics. After each assignment, including the *associative chaining*, the participants/groups were asked to give a brief presentation, with a comparative evaluation with a slight competitive edge at the end of the workshop.

⁷ www.arduino.cc

⁸ www.cs.vu.nl/~eliens/ximpel/project/tv

⁹ watchmenmovie.warnerbros.com

THEMES AND VARIATIONS

An auxiliary goal of the workshops, that is of both the promotional workshops and similar workshops that are part of the curriculum, is to inspire and prepare (potential) students to become creative engineers that are able to apply the new technologies in a societal context, and as we hope, in a way that will *improve the world*, with as an additional observation that ultimately the future world is their world, after all. Six potential topics were indicated and in addition (potential) students are invited to come up with their own ideas, to which the response is usually (very) low!

theme(s)

1. **urban** – (un)safety in urban environment(s)
2. **climate** – reduction of energy consumption
3. **fitness** – (social network) support for sport and fitness
4. **media** – prevention of information overload
5. **scenario(s)** – event(s) in public area(s)
6. **communication** – in private/public space(s)
7. **idea(s)?** – open call for additional theme(s)

Interestingly, in the experimental group at VU, students were extremely reluctant to commit themselves to one of these goals (2 out of 15), whereas in the promotional workshops the (not yet) students eagerly selected one or more of the themes, with an overall preference for (3) and (6).

The format in which these topics were discussed differed widely among the various workshops. Sometimes a plenary brainstorm was held, and sometimes these topics were discussed in small groups, where the instructors asked the participants to indicate the personal relevance of these topics and urged for potential solutions.

STRUCTURE AND ASSIGNMENTS

After the first round of introduction, the participants of the workshop are divided into groups of 4-5 people, and set to work on designing the game map and/or front portal, define the game mechanics of a mini-game and describe the story-line as well as the actual tasks of the player(s) and associated scores.

structure

1. create (y)our identity – draw (y)our avatar
2. invite the player(s) – design game map / front portal
3. invent game mechanic(s) – sketch scenario(s)
4. create challenge(s) – define task(s) & score(s)

The first assignments, in all workshops, including the re-enactment, is to draw a self-representation, that is an avatar, possibly with attributes to indicate the endowment with superpower(s).

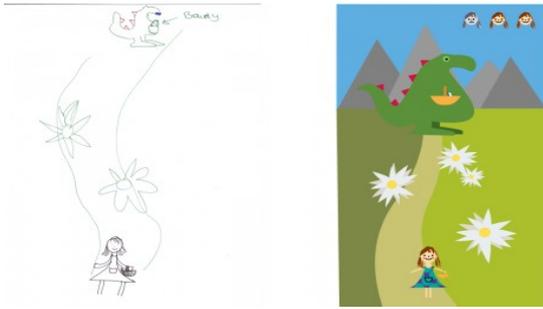


Fig 1. (a) student sketch (b) enhanced version

Some participants, included already a game environment, as for example depicted in figure 1 (a), a sketch originally made by a (potential) student, and 1 (b), which shows an enhanced version of that sketch and explicitly includes the dragon which is hardly visible on the original, made by Marek van de Watering who acted as a co-instructor in one of the early game design workshop(s)¹⁰.

For the (potential) Creative Technology students, it is important to take into account the technical prerequisites, that is the technology that may be used to realize the game.

(pre)requisite(s)

- smart technology – rfid tags, motion sensors, ...
- new media – camera(s), screen(s), game world(s)

Interestingly, these technologies may effectively take the game out of the console or computer terminal into (interactive) space(s), encompassing both the private and public domain. Ultimately, such technologies allow for the realization of ARGs (Alternate Reality Games), that (minimally) enhance existing (urban/corporate) spaces into game environments.

SUPERPOWER & GAME SCENARIOS

The workshop format is a convenient way to involve students in design activities, and bring focus into game design. Although with different format(s), a similar approach was used for the *game @ VU*, *VU @ Second Life*, and *Clima Futura*, see Eliens & Bhikharie (2006), Eliens et al. (2007a) and Eliens et al. (2007b). In the re-enactment of the workshop at VU University Amsterdam, with more senior (that is pre- and post-graduate level) students, 15 students participated. They were given an explanation of the author's intentions as well as an overview of the structure of the workshop, unlike the participants of the promotional workshops for Creative Technology. The first round resulted in the following list of superpowers:

- teleporting (2), flying/levitation (2), mind reading (2), create what you think, change materials, see

- ahead in time, shape shifting, invisibility (2), control the force of nature, healing

Such a list is representative of most of the workshops, although alternative superpowers, from other workshops, include *devastating smile*, *clearvoyance*, and the *capability to detect invisible(s)*.

By way of illustration, how a superpower may be connected to a scenario of playing a minigame, look at the following quote:

my superpower ... healing ... to deal with exponential epidemics, my scenario would be a world map with potential sources, and as a minigame I propose one to improve the skill of taking instant decisions of where to go ... and, indeed, practice healing

The students participating in the re-enactment were explicitly asked to think about how to apply their superpower to improve the world, or more specifically, to think of a mini-game that one way or another was related to their superpower. For this the students were invited, after stating their identity and superpower, to create groups. This resulted in six groups of about 2-3 people.

As already observed above, the students @ VU were extremely reluctant to choose for one of the, admittedly ambitious, game themes, nevertheless they experienced no problem in coming up with a variety of game scenarios, which are (in outline) summarized below.

CTS – scenario(s)

1. trophée collection game(s) – fly & teleport
2. conflict(s) – cooperation and interaction
3. virtual friend(s) – act as intermediate in learning
4. combat game(s) – invisibility and self transformations
5. social party game(s) – sequence of confrontation(s)
6. labyrinth(s) – material transformations and parallel presence

Below we will briefly characterize the first four scenarios, that are related, respectively, to fig. 2 (a),(b) and fig. 3 (a),(b).

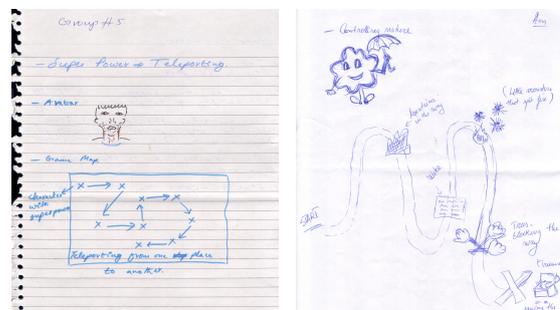


Fig 2. (a) teleport(s) (b) control nature

The first scenario, fig 2. (a), involves *fly* and *teleport* as superpower, and amounts to:

scenario 1: trophée collection

¹⁰creativetechnology.eu/wordpress/?p=194

- (1) *The character has the ability to fly and teleport.*
- (2) *He has some amount of energy which limits his abilities of teleport and flying.*
- (3) *The character should collect items using his superpowers, that will provide him clues to reach his destination.*
- (4) *The character has to fight with some bad guys, and finally*
- (5) *fight the main bad guy ...*

The second scenario, fig 2. (b), involves *control of nature, create what you think* and also *instant knowledge* (not mentioned in the list) as superpowers. Due to mobility of one of the group members, it bears some relation to scenario 3:

scenario 2: conflict(s)

- (1) *The player earns points/credits by helping each other to solve problems.*
- (2) *Credits can be used to be goodies or treats. of teleport and flying.*
- (3) *The player has to take care of blobs and keep them happy with goodies and treats.*

The following scenario does not very clearly involve a superpower but as, hardly readable, indicated in fig 3. (a), one of the (desired) superpowers is the ability of *instant learning*, in particular languages. Apart from that, the scenario is interesting, and seems to apply to a wide range of contexts:

scenario 3: virtual friend

I want a virtual friend with whom I can interact and play, but who can act in the same time as my personal assistant, and can collect knowledge for me, and get to know me and what I am interested in, so that s/he can act as an interface between the knowledge and me. You must however earn credits to keep your (virtual) friend happy ...

Finally, as what may be considered a more conventional game scenario, we have a combat situation, fig. 3 (b), which involves the superpowers of *invisibility* and *self-transformation*:

scenario 4: combat

- (1) *Superpowers involved are invisibility and the power to change limbs/weaponry.*
- (2) *Turn-based fights, with possible avoidance (using stealth), confrontation using matching powers/weapons.*
- (3) *The mission is to find and detonate a bomb.*

It is interesting to note that some superpowers were added during the development of the game scenarios, and that others became more well-defined during the process of development.

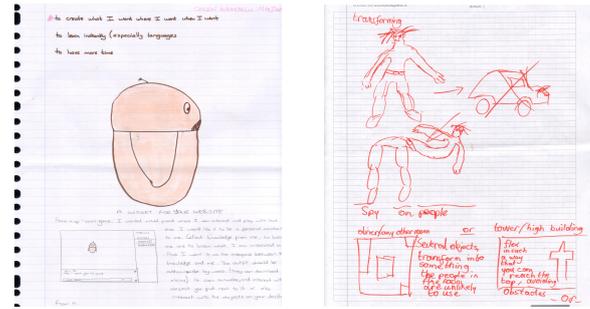


Fig 3. (a) power to create (b) transforming

TECHNIQUES FOR DESIGN & CREATIVITY

Reflecting on issues of design and creativity it is worthwhile to consider, following Jones (1992), whether *design is art, science, or a form of mathematics*. Clearly, our workshops are focussed on the early phases of design and involve, as indicated in the table below, both *experience* and *brainstorming*:

	divergence	transform	convergence
(1)	<i>experience</i>	...	value analysis
(2)	brainstorming
(3)	dependency graphs
(4)	<i>requirements</i>

(1) community, (2) system(s), (3) products, (4) component(s)

Other methods of design, in particular requirements engineering or more mathematically oriented methods, such as dependency graphs, must be considered as detrimental to the ideational phase of design. To assist the instructor we provide a list of techniques to promote/encourage creativity, taken from Jones (1992):

creativity technique(s)

- analogy/metaphor – similarity & figures of speech
- brainstorming – large quantity of ideas in short time
- blue slip(s) – small cards to express ideas
- extrapolation(s) – apply proven methods
- progressive abstraction – alternative problem definition(s)
- 5W+H technique – who/what/where/when/why/how
- force field(s) – identify contributing or hindering force(s)
- peaceful setting – relax and open mental process
- problem reversal(s) – to provide different framework(s)
- association(s) – use inclination to associate things
- wishful thinking – to counteract analytical approach

As a remark, personal experience seems to be a key motivator, and even more so for young (potential) students, an observation that is supported by Eliens (1979) and Munari (1966).

ELABORATION(S) – GAME DEVELOPMENT

In the first year course *we create identity*¹¹, students were repeatedly confronted with questions such as: *what is the CTSG?*, *why the CTSG?* and *how to realize the CTSG?*, without further explanation of what the phrase *CTSG* stood for. After students discovered the meaning of *CTSG* (Creative Technology Superpower Game), it became clear that, whereas ideas may be easily generated, as testified by the workshops, the realization of such a game may be quite daunting. However, the 2009 group of students succeeded in realizing an impressive exhibit in the newly built SmartXP lab, an interactive space with an abundance of technical facilities for research and education, after which the group gained enough self-confidence to take on the mission of actually developing the **CTSG**, in a range of possible games, covering relatively simple educational games, such as math games, Eliens & Ruttkay (2009), as well as urban games in the context of the GOGBOT festival¹², a regional festival featuring technology and art. As we observed in Eliens & Ruttkay (2008), a very helpful set of criteria for distinguishing games from other (online) applications were presented to us in a workshop on educational games in a museum context, which mentions 4 essential characteristics or criteria to assess the extent whether an application may be considered to be a game:

criteria

- *challenge* – relevance, feedback, confidence
- *curiosity* – cognitive or sensitive discrepancy
- *control* – contingency, choice, power
- *context* – intrinsic or extrinsic metaphor(s)

Leaving a more detailed interpretation of *challenge*, *curiosity* and *control* (again) to the inventiveness of the reader, the *context* characteristic, however, needs some elaboration, especially when discussing the **CTSGs**. As we observed, it is rather easy to use extrinsic metaphors or game formats for arbitrary content. For example, a memory game can be reused over and over again, just by changing the images according to the subject, that is language learning, climate change, etcetera. These kind of mini-games or casual games lend themselves to a variety of learning tasks and may be constructed using pre-defined game formats. Much more difficult is to design games with an intrinsic relation to the topic. It seems, however, that the notion of **superpower** provides a suitable metaphor, to relate real-world situations to a game, in which the player may perform actions or solve problems using superpower(s) and thus become a *superhero*, if only by analogy with (superhero) movies. Cf. Bolter and Grusin (2000).

¹¹www.cs.vu.nl/~eliens/.CREATE/create-ca1.html

¹²2009.gogbot.nl

CONCLUSIONS

In this paper we have reported on our experiences with a series of workshops in game design. Despite the promotional nature of these workshops, the material presented here should be of use to instructors who wish to set up similar workshops. As a tool to focus on topics of societal relevance, the format of the workshop allows instructors to get to know their students and motivate them, using the superpower metaphor, to become personally involved in the various aspects of game design.

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REFERENCES

- Bolter J.D and Grusin R. (2000), *Remediation – Understanding New Media*, MIT Press
- Eliens A. (1979), Creativity: reflection and involvement, Ninth Int Conf of Aesthetics, Dubrovnic, August 1979
- Eliens A. and S.V. Bhikharie (2006), *Game @ VU – developing a masterclass for high-school students using the Half-life 2 SDK*, In: *Proc. GAME'ON-NA'2006*, Monterey, USA
- Eliens A. Feldberg F., Konijn E., Compter E. (2007a), VU @ Second Life – creating a (virtual) community of learners, In *Proc. EUROMEDIA 2007*, Delft, Netherlands
- Eliens A., van de Watering M., Huurdeman H., Bhikharie S.V., Lemmers H., Vellinga P. (2007b), *Clima Futura @ VU – communicating (unconvenient) science*, In *Proc. GAME-ON 07*, Bologna, Italy
- Eliens A. and Ruttkay Z. (2008), *Record, Replay & Reflect – a framework for understanding (serious) game play*, In *Proc. Euromedia 09*, Brugge, Belgium
- Eliens A. and Ruttkay Z. (2009), *Math game(s) – an alternative (approach) to teaching math?*, In *Proc. GAME-ON 2009*, Dusseldorf, Germany
- Jones J.C. (1092), *Design Methods*, Wiley (2nd edn)
- Munari B. (1966), *Design as Art*, Penguin