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Games That Speak Without Words;

An Investigation into Seamless Tutorials in Videogames.



London College of Communication

28th February 2014

Acknowledgements

First off, I would like to thank my course director - Roy Caseley, for the meticulous and honest support since day one. I am grateful to my tutors: Elaine Gilbert, Florian Stephens and Jerry Boucher for proper guidance and responsiveness. The synergy of the class's community gave me all the help and support needed to complete this endeavour. I would like to thank everyone who participated in playtesting and survey collection, your contribution greatly mattered. Lastly, I would like to express immense gratitude to my family and friends for your empathy and patience.

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Abstract

The dissertation focuses on the visual methods of conveying instructions to the player without the use of text; to clarify this, it does not involve usage of text for: UI elements, game menus, character dialogue and so on, rather it investigates optimal methods of teaching a player about the game without the text.

The introduction identifies seamless and intrusive instruction methods. Intrusive methods often rely on text to instruct the player, and whilst these methods are good at explaining precise information, they can appear too demanding. As a result, they can break the flow of the experience, making the game less enjoyable. Whereas, seamless methods provide the game with: immersive gameplay, innate rewards and a stronger motivation to play. The introduction also explains that all videogames communicate through the interactivity, which enables a more sophisticated form of communication.

The introduction gives background knowledge for the main body of the research. The main text explores: language of videogames and the role of text within them; several theories from linguistics and psychology explain the significance of text and how it can be replaced or avoided through the design.

Since secondary research explores practical design, the investigation also generated a game for the primary research, which applies theories and concepts from the secondary research. The data from playtesting was gathered with an online survey. The survey confirmed that players prefer the gameplay with seamless tutorials, although a lot of current videogames still produce conventional tutorials with text. Explaining rules of play without words can offer several advantages: it broadens audience, as players do not have to know or understand the language to play.

Introduction

Learning Rules of Play

Understanding the rules of the game system is vital to the play. Rules of play can be learned in a variety of ways depending on the gameplay: a physical sporting game, such as football, is usually explained by the players who already know the rules; a boardgame, such as Scrabble, includes an instruction manual, however face-to-face mentoring is a more common method of explanation. Yet another approach becomes available when rules are simple enough to follow and can be grasped through observation and experimentation. For instance after observing a few matches of checkers, the game can be played at the beginner level, however all rules must be elaborated to partake in the full experience.

Ernest Adams (2014) describes different ways of explaining rules for videogames: early console videogames were treated as boardgames hence they would conventionally come with an instruction manual, despite the fact that videogames offered a new element –interactivity.

"Videogames' special virtue of interactivity... ...though you can appreciate a photograph or watch a film quite happily without being able to operate a camera or movie projector, you cannot play a videogame without using the technology yourself."(Poole, 2007, p282)

With the acknowledgement of interactivity, intro-levels were made, where the player could use observational skills to deduce the meaning of the game system through the play, and finally in-game tutorials and "how-to-play" instructions became almost ubiquitous. So as to explore optimal methods for delivering rules and mechanics in videogames, instruction elements (i.e. quick-time-events, pop-ups etc.) must be categorized and analysed.

Intrusive & Seamless Tutorials

Intrusive Instruction Methods

We can separate game instructions into two general groups by looking at the way game rules are negotiated to the player. "If the player did not feel that rules were blinding, they would feel free to cheat or to leave the game as a "spoil sport"."(Salen & Zimmerman, 2004, p.123) The rules must appear present but seamless, if the authority of the game system becomes too apparent the player will be discouraged to play the game. In accordance to this statement it is possible to draw the line between intrusive and seamless tutorials.

Intrusive tutorials tend to demand the player perform in-game actions before rationalising the need for their application, which may lead to confusion as the actions appear meaningless. "...meaningful play is tied not only to the player action and system outcome, but also to a particular context in which the action occurs." (Salen & Zimmerman, 2004, p.60) Ernest Adams (2014) elaborates how several instruction elements can appear too demanding and comments on the general attitude towards each design.

Displaying several pages of instructions regularly leads a player to simply skipping the tutorial altogether as it appears uninteresting and tedious in contrast to the gameplay. On the other hand when instructions are unavoidable they turn into a dull experience, which does not lead to learning the gameplay- "...by the time I reached the end [of the instructions] I had forgotten half of it" (Adams, 2014).

Pop-up texts- elaborating mechanics or objectives, although they may be useful for instructing player with precise information, are often misused because games continually require players to perform variations of the same task; as Raph Koster(2005) explains: "[games allow players to]practice pattern and run permutations on it"(Koster, 2005, p36); as a result pop-up-texts become redundant and repetitive.

Implementation of quick-time-events often breaks the flow as the player is only partially in control of the actions. Additionally, players can sometimes perform an action that is otherwise unavailable during the core gameplay loop, which can lead to the ludonarrative dissonance. An instance can be seen in GTA4 where "Niko [protagonist] is shown during framed-narrative cut scenes to struggle with being asked to do such violent things, but while on furlough from these cut scenes Niko is able to behave as violently as the gamer wishes" (Bissel, 2010, p55) Dissonance can decrease aesthetic distance and as a result, break the flow of the game, while making the rules appear inconsistent and ambiguous.

A short in game cut-scene, explaining rules, can be unreliable as the player becomes a mere spectator rather than a participant. A player's attention can shift to speculating rather than following the instructions. Steven Poole(2007) explains that in films there is a knowledge differential between the protagonist and spectator. Whereas in videogames, the player is simultaneously the protagonist and spectator; conclusively players can find it difficult to understand what is needed from her as a protagonist after watching a cut-scene, as her roles as protagonist and spectator were separated. Moreover it remains unknown whether or not the player has understood the given instructions, as cut-scenes do not ensure that player plays the experience, let alone sees it.

That is not to say that any of the listed instruction methods should be seen as negative, all of them have the potential to add to the overall experience, however they should only be used when appropriate.

Seamless Instruction Methods

Seamless tutorials appear intangible as they blend within the overall experience. In the same way as the player decides whether or not she wants to play a game, the player learns mechanics because she wants to, not because she is told to. "As a game designer you generally want players focussed on the experience of play, rather than on making sense of the rules" (Salen & Zimmerman, 2004, p.136). A constant suggestion comes from the study of motivation, -in order to keep an individual more engaged in the activity, the reward must come merely from the engagement in the activity, that is to say, caused by intrinsic motivation, as opposed to extrinsic motivation, where the reward is external to the activity. "Deci identifies two intrinsic motivations that might be labelled as "personal": the desire to be autonomous (to determine what we do and how we do it) and the desire to be competent (to be good at what we do).....This finding is typical of games." (Shirky, 2011, pp. 75-76). Seamless instruction can be done with an intuitive arrangement of surroundings, where the player can progress further only after solving a particular problem and, it is very natural to human nature as- "Our passage through life from one moment to the next requires that we make sense of our surroundings- that we engage with, interpret and construct meaning "(Salen & Zimmerman, 2004, p. 41).

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Computer interactivity can provide a game with interactive feedback, thus player can sometimes learn by relying solely on the feedback. "Feedback serves the purpose of cueing the user whether or not they are being successful in figuring out the black box." (Koster, 2014)

Intrusive and Seamless Tutorials Evaluation

Conclusively, seamless tutorials tend to maintain a player in the flow state, since the immersion is secured it is easier to deliver pacing; also it gives presence of greater control making gameplay more meaningful. Relying on a player's curiosity and creativity makes the experience of discovery rewarding and more personal. Seamless tutorials can make it easier for player to identify with the avatar as there is no difference between spectator and protagonist.

Intrusive instruction methods such as videos or quick-time-events are also known as embedded narrative. The embedded narrative is

"...pre-generated narrative content that exists prior to a player's interaction with the game. Designed to provide motivation for the events and actions of the game, players experience embedded narrative as a story content " (Salen and Zimmerman, 2004, p. 383)

Instructions on how-to-play the game, although useful can appear too intrusive and clumsy to the experience, the current solution for games that heavily rely on commands, such as Tony Hawks and Tekken series, is to keep instructions available in the menu, where they can be accessed on demand. The overuse of Pop-up-text tends to clutter the screen, however when it is used solely for conveying important information it is extremely helpful.

Overall, intrusive tutorials are better at conveying precise information and motivation for the play, while seamless tutorials are better at maintaining immersion. Further research will focus on how seamless tutorials can be more effective at conveying information.

Voice of the Interactivity

Videogames communicate through their interactivity; interactive communication offers a different spectrum of exchanging and presenting information. It is important to further sort interactivity as it occurs on different levels. In the book Rules of Play(2004) the authors split interactivity in games into four modes:

Mode 1: Cognitive Interactivity –interpretative participation.

Mode 2: Functional Interactivity- interaction with software and hardware.

Mode 3: Explicit Interactivity- interacting with designed choices and procedures.

Mode 4: Beyond-the-object-interactivity - (costume-role-play, fan-culture, merchandise etc.)

The research will mainly relate to the Mode 3- Explicit interactivity, as it refers to the conveyance of the information between the player and the game system.

Since interactivity is a form of communication in videogames, videogames should be able to communicate with the player without relying on text. Specifically, this does not refer to use of text in UI elements, in-game-chat, or character dialogue for the narrative's sake, rather it refers to explaining in-game objectives and mechanics without the use of text.

This brings us to the core aim of the research- the investigation into the possibilities of minimizing, replacing or avoiding the use of text (words) in videogames.

Main Research

The definition of a word as a linguistic unit must be elucidated, as well as its role within a language. This will give answers to how the functionality of signs can be incorporated with the interactivity.

Language

John Fiske(2011) gives a broad definition to any kind of communication- "...[it] involves signs and codes. Signs are artefacts or acts that refer to something other than themselves.....Codes are systems in which signs are organized and which determine how signs may be related to each other." (Fiske, 2011, p.1) In that sense, in a spoken or written language, the words are signs that possess a distinct meaning, whereas grammar is a system that allows formation of the message. "In games, this concept of grammar takes the form of rules, which create a structure for a game, describing how all of the elements interact with each other." (Salen & Zimmerman, 2004, p,45) A game of chess can be described as an eloquent form of a language. "...the [language] system is abstract-like a successful game of chess, there is rarely a need to stop and consult a rulebook to check if a move (or an utterance) is legitimate. The rules are known without necessarily needing to be continually tangible."(Cobley, p. 15) (note that abstract system is a type of formal system) Raph Koster(2005) proposes that: all games are formal systems. A formal system must be communicated to the user in order to be understood, since all games are developed by games designers and players agree to the given rules, it is logical to conclude that games communicate via signs, hence videogames have a language.

Semiotics and Semantics

Further research enables examination of the core concepts of the two sub branches of linguistics: semiotics and semantics.

Essentially "...there is a difference between the cries of animals and the speech of humans. It is the difference between natural signs and conventional signs."(Cobley, 2001, p.4) Natural signs are formed independently of interpretation, for example: formation of dark clouds in the sky can signify that a storm is approaching, a distant sound of a barking dog can mean that there is a dog nearby, natural signs can be understood universally regardless of culture or spoken language of the interpreter. While, conventional signs are signs that users design and agree upon meaning to utilise for the purpose of communication, for example: English speakers interpret the word "cat" as a small domestic feline mammal, whereas Italian speakers use a word "gatto" to describe the same animal.

A word is a type of sign, henceforth it is important to elaborate meaning of the sign to understand its functionality. Saussure(1974 cited in Fiske,2011) claims that any sign has two elements termed as; **signifier** and **signified**. Where signifier is a material aspect such as writing or utterance, and signified is a mental concept.



(Fiske, 2011, fig. 14)

Saussure(1974 cited in Fiske,2011) explains that a signifier incites signified, yet a signified demands a signifier. That implies that it is unattainable to generate a visual representation that perfectly defines the meaning of the sign, whereby any mental concept needs a material representation to be explained. Additionally the mental concept of any given individual is always at least slightly different to anyone else; hence there is no ultimate meaning. Fiske continues on that idea "Meaning is not an absolute, static concept... ... Meaning is an active process" (Fiske, 2011, p.43)

Living Meaning

"Meaning is the result of the dynamic interaction between sign, interpretant, and object: it is historically located and may well change with time."(Fiske,2011,p.44) Pierce's (Fiske,2011) widely used term for interpreting meaning is "semiosis - the act of signifying"(Fiske, 2011,p.44) 'Différance' is Derrida's(Cobley, 2001, p.94) concept explaining that meaning is not immediate, the value of the sign changes until the sign is fully revealed. One example is an English nursery song that goes: "ten green bottles standing on the wall"(Cobley, 2001, p.94). First part is "ten", "ten" can take a lot of different contexts, then it becomes "ten green", the meaning keeps accumulating, until it is fully disclosed, and the message is understood. This signifies that people expect meaning to reveal continuously, and signs add together into sentences to produce a more elaborate meaning.

Index, Icon and Symbol

"When we are at play, whether in front of videogame screen, in a chess café, at the bowling alley or in the park, we are citizens of an invisible city, built of signs." (Poole, 2007, p. 350)

Pierce (1931-58 in Fiske, 2011) categorised signs into three categories according to how the sign is related to the object it is representing or referring to. An icon resembles the object in some way, for example map represents an actual geographical location. An Index has a direct relationship with the object, smoke, as an example, denotes the presence of fire. A symbol possesses no link or resemblance to the object; a symbol only means what users agree upon, an example is a word, as it has a conventional definition.

Poole(2007) suggests that "a game concentrating on the interplay of symbols is a richer experience than one involving mostly icons."(Poole,2007,p.318) Poole(2007) exemplifies his statement by contrasting a game of Snap where player mostly compares icons and the game of chess which consists of symbolic manipulations. He(Poole, 2007) concludes that symbolic signs work better in videogames as videogames require a different imagination process- pragmatic.

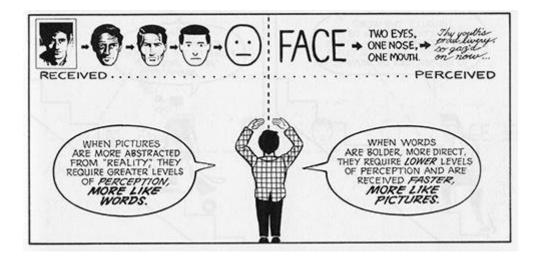
Poole(2007) clarifies how videogames require understanding of symbols - "The game screen is inscrutable when approached as simple representation; it demands to be read as a symbolic system." (Poole, 2007, p.309) Since games communicate mostly via

symbols, and words are also symbols, it is reasonable to conclude there will be ways to avoid the use of words in videogames.

Words and Image

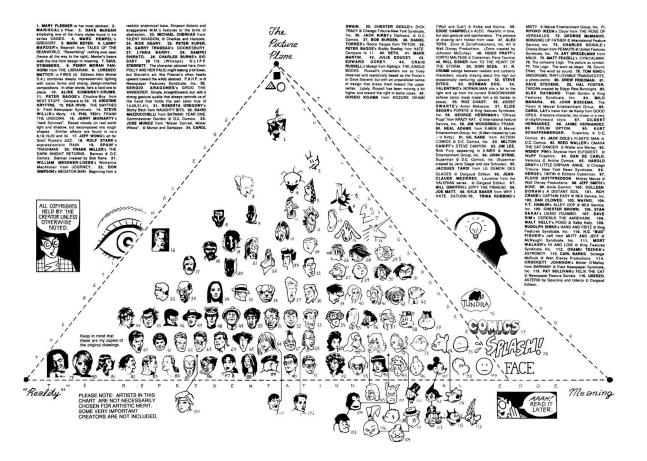
Symbols can be pictorial and non-pictorial; the difference between words and image must be understood. Barthes(1964 in Fiske, 2011) proposes that visual images imply floating chain of signifieds, the reader must estimate the best guess, by choosing some meaning and ignoring other. Words can settle a chain of signifieds making the message more certain. Images provide connotative meaning- open to interpretation, while words are better at denotative meaning- direct, precise definition. "He[Barthes] recognizes connotation gives reader a greater range of possible meanings than does denotation"(Fiske, 2011, p.104)

Scott McCloud(1994) explains the transition between realistic images and abstract ones with iconic abstraction scale. McCloud(1994) proposes that realistic images are better at expressing: complex, realistic, objective and specific meaning whereas abstract images are better at conveying: simple, iconic, subjective and universal meaning. The concept goes farther, McCloud(1994) "words-- --are the ultimate abstraction."(McCloud, 1994, p.47) as words maintain the meaning yet lose any resemblance. Another difference is that images are received information, whereas words are perceived information.



(McCloud, 1994, p. 49, panel 2)

McCloud(1994) created The Picture Plane, which maps relation between reality, meaning and abstraction as shown below. The Picture Plain represents pictorial vocabulary for any visual art.



(McCloud, 1994, pp. 52-53)

McCloud(1994) explores the concept that formalised language can evolve, representing invisible ideas becomes possible. He(McCloud,1994) gives an example of smoke- in cartoons/comics it is usually drawn with few lines coming from the source; however a strong reek of rotten garbage cannot be seen, so artist must come up with a visual metaphor, a strong smell can be represented with few wiggly lines and flies hovering around the source. Once the symbol is used it can be taken out of its original content and used in other places, and the message will still be clear. "Whenever an artist invents a new way to represent the invisible, there is always a chance that it will be picked up by other artists."(McCloud, 1994, p129) This technique gives the ability to describe invisible or intangible matters such as feelings, attitudes, phenomena and others without utilizing words.

Codes: Digital and Analogue

"Codes are, in fact, the system into which signs organise" (Fiske, 2011,p. 61) According to Fiske (2011) there are two types of code: analogue and digital. Units in analogue codes are difficult to distinguish, for example an analogue clock has 12 units for each hour, and as a result if the minute hand is in-between 15 and 20 minutes marks it takes a moment to work out what is the precise time. Digital codes have units that are clearly separated; hence if a digital clock shows that the time is 20:33, there is no further ambiguity about the accuracy. Understandably, digital codes are easier to grasp since units are distinguished from each other. That makes them easier to write and notate; analogue codes are difficult to notate.

Code Functionality

Fiske(2011) elaborates that codes perform communicative and social functions. "One way to categorize these functions is to distinguish between representational and presentational codes" (Fiske, 2011, p. 63) Representational codes are able to produce meaning independent of their existence, for example text can represent concepts and ideas outside of written symbols. Representational codes are composed of either iconic or symbolic signs. Presentational codes cannot stand for anything other than themselves, these codes are indexical. Tone of voice is a presentational code because it indicates current attitude towards the subject, hence nature of the presentational codes compels one's presence. Presentational codes have two functions: indexical information and interaction management, where indexical information conveys identity, emotions, attitude and so forth, whereas interaction management expresses the kind of relationship- for instance, the voice of the speaker can indicate desire to end the conversation. It is recognised that representational codes are the only codes that can convey referential function, whereas presentational codes are most efficient at conative and emotive functions. According to Guiraud(1975) "...it[referential function] defines relations between the message and the object to which it refers" (Guiraud, 1975, p. 6) It must be objective, observable and verifiable information. "The emotive function defines the relations between the message and the emitter." (Guiraud, 1975, p. 6) emotive functions express attitude towards the subject, they are often subjective. The conative functions can co-ordinate or call to action- "...the message takes second place to the signs aimed at motivating the receiver, either by conditioning him through repetition, or by triggering off subconscious affective reactions."(Guiraud, 1975, p. 7)

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Taking advantage of the code functionalities can reduce use of the text in videogames, for example presentational codes can convey identity and attitude, hence, if an ingame object is clearly exhibiting hostile behaviour, it is logical to assume that the object is an enemy; additionally presentational codes are efficient at evoking reactions, for example if in-game object looks like a door, the player is likely to walk through it. On the other side representational codes can convey specific information or instructions, hence text can be used to explain complicated rules. However a games designer should take into account that game-objects are commonly symbols and icons, hence, they can be used instead of text. Moreover games are easy to process- "They[games] are concentrated chunks ready for our brain to chew on. Since they are abstracted and iconic, they are readily absorbed." (Koster,2005, p. 36) accordingly, games should not need much explanation, as they tend to be naturally comprehensible.

Affordance and Visible Design

Further research sees at the psychology of the design, that makes the functionality more intuitive with the use of visibility, appropriate clues and feedback. Norman(1998) proposes that regardless of the intellect or experience of the individual, poorly explained design will always appear confusing to any user. As a solution- "There are psychological principles that can be followed to make these things understandable and usable" (Norman, 1998, p. 3)

One of the most significant principles of the design is visibility- "The correct parts must be visible, and they must convey the correct message" (Norman, 1998, p. 4) Once the functionality of the object is identified by the designer - "The answer should be given by the design, without any need for words or symbols, certainly without any need for trial and error." (Norman, 1998, p.3) There is a similar principle mentioned in Rules of Play(2004) -discernable design."Discernability in a game lets the player know what happened when they took an action. Without discernability, the player might as well be randomly pressing buttons or throwing down cards." (Salen & Zimmerman, 2004, p. 35)

Affordance is an assumption that there is a psychology of materials and objects-"...term *affordance* refers to the perceived and actual properties that determine just how thing could possibly be used..."(Norman, 1998, p. 9) Affordance can present strong clues to how objects might operate, buttons are for pressing, slots are for inserting and so forth. "When affordances are taken advantage of, the user knows what to do just by looking,: no picture, label, or instruction is required." (Norman,1998, p.9) although complex objects might require instructions.

Constraints- limit the possibilities making the design more likely to be used on purpose. Norman(1998) exemplifies a pair of scissors- it is visible that a number of possibilities is limited: the holes afford user's fingers to be inserted, the size of the holes limits the way of holding the scissors. The idea of the limitation echoes in rules of the game-"Rules provide the structure out of which play emerges, by delimiting what the player can and cannot do."(Salen & Zimmerman, 2004, p. 80)

Analysis and Evaluation

A game was designed and produced (see Appendix A) in order to support secondary research and to gather primary data. The game takes advantage of concepts and theories from the secondary research(see Appendix B). A questionnaire was designed to gather valuable data from playing the game (see Appendix C). Once the game prototype reached its intended stage, a webpage was produced (see Appendix D), comprised of: a playable version of the game and a questionnaire, enabling visitors to play the game and then participate in the survey, additionally Google Analytics API(explained in Appendix D) was embedded in order to monitor visitors on the webpage.

The online survey, underneath the actual game, gathered the required data, and had a total of 89 unique visitors(see Appendix E) out of which, 29 individuals (32.6%) have responded to the survey(see Appendix F). The results have proved to be consistently self-similar, meaning that the consensus prefers games that are explained without the use of text. Moreover, participants gave several reasons why the absence of text can generate more satisfying gameplay.

Visual communication makes players feel self rewarded for figuring out the gameplay, making the experience more meaningful and immersive as the reward is intrinsic.

Learning through the interaction increases players' curiosity, making it more desirable to figure out functionality of the new in-game objects. Players like to figure out what to do in the game, rather than being told what to do, this backs up the idea that the rules must appear invisible to the player.

It is clear that players simply do not like tutorials with text, they confirm that most videogame are usually self-explanatory and when text appears, it is awkward and redundant.

Some players mentioned that, the fact that they have played similar platformer games before made it obvious to understand what to do in the game. While accepting this opinion, it should be stated that previous experience and the design of the game could have created an appearance that the game is extremely intuitive, for instance, the game has a fictitious object- a flower that propels the character upwards, the object only makes sense in the game, hence it is unlikely that players have interacted with the object before, yet none of them reported confusion.

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The fact that the game is not fully complete and lacks some gameplay elements was noticed by some players, they reported that although the game was intuitive, it did not have a narrative objective as to motivate player's overall progression, understandably, a game has to be a complete product to fully guide and motivate the player.

It is important to acknowledge that the primary research has its limitations. Although focus group produced consistent results, perhaps if it was of a larger sample, more concrete conclusions could be drawn. The game was at playable prototype stage, consequently, it was missing some planned elements, and a more complete version could improve overall experience of play by making the game more holistic and coherent. Another aspect is that while conclusions were drawn from a single game, other games could offer different results.

Conclusion

The secondary research was vital for understanding and designing intuitive gameplay for the prototype. Consequently, it would have been unattainable to generate primary research without the acquired knowledge from the secondary research. Secondary research explores a lot of useful theories and models for communicating information to the player without the use of text, which, can be directly applied in the game design.

By observing primary research it becomes evident that tutorials with text can be avoided, moreover participants frequently stated that they prefer tutorials without text. Additionally, seamless tutorials invite greater interactivity, increase immersion and make the overall experience more rewarding.

It is important to note that text in videogames should not be considered as a poor design; rather it should be used only when it is necessarily; text performs well at conveying precise and complicated information.

Videogames that do not use text to instruct the player can appeal to a broader audience, since more players can play videogames as they do not need to know or understand the language of the instructions.

Potential future research can focus on: appropriate methods of using text in videogames, language localization and instruction through the narrative.

An interesting idea explored through the research is that videogames can be made without the text; however a lot of videogames with text instructions are still being produced, perhaps indicating that the importance of this aspect in game design is not given the acknowledgement that it is due.

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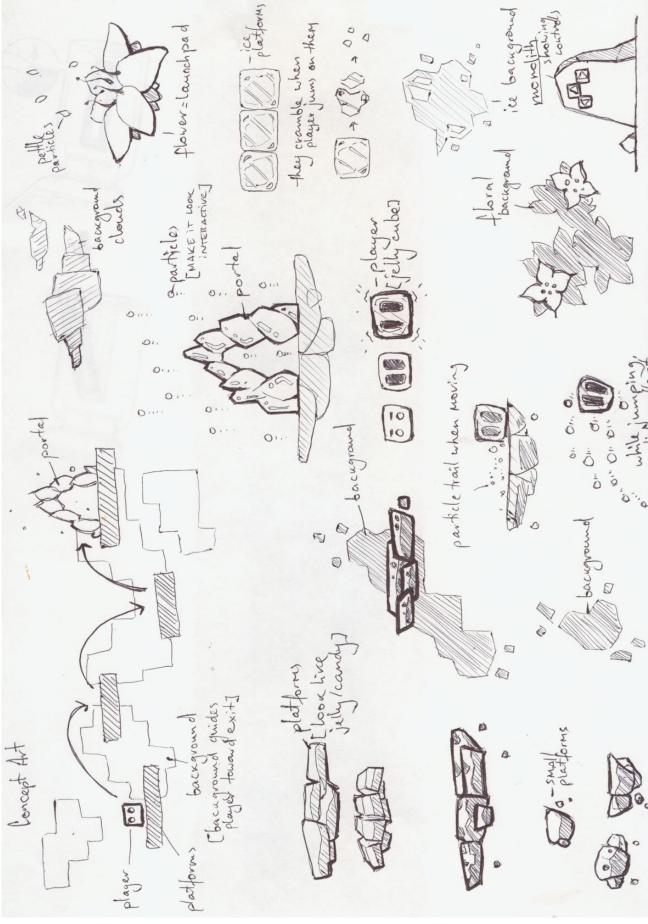
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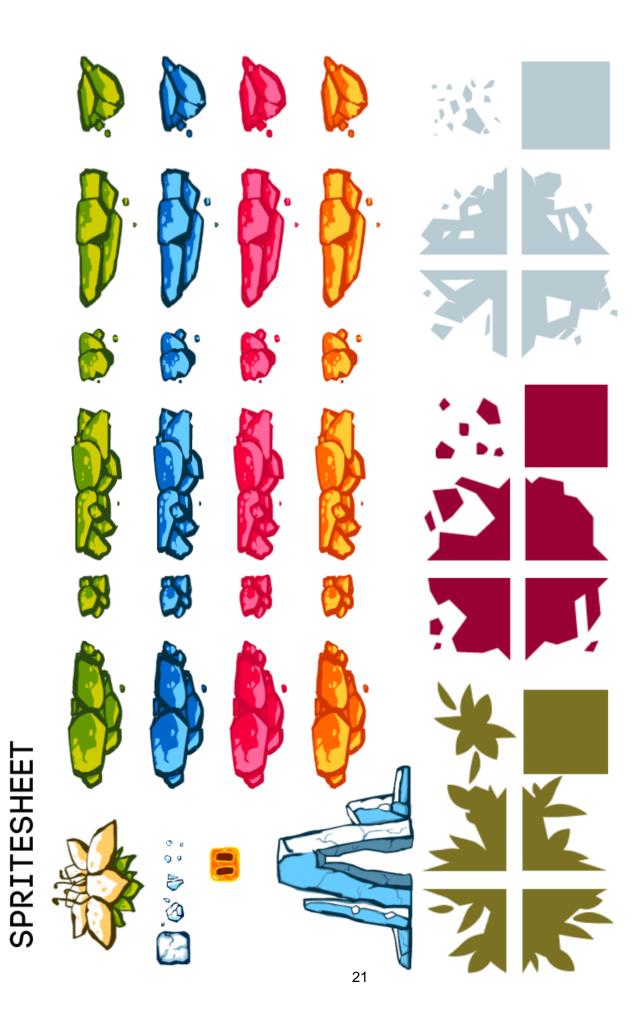
Appendix A- Game Design Document

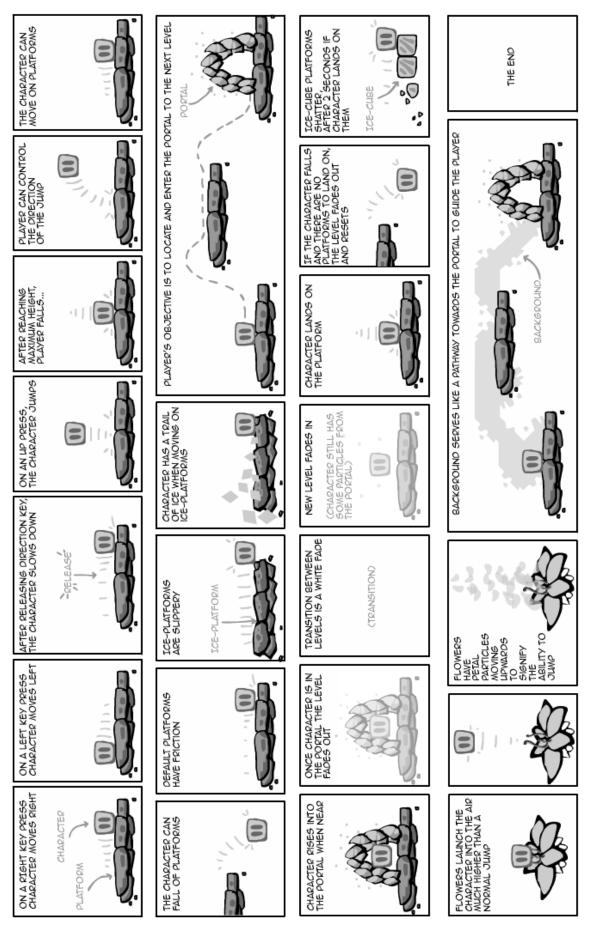
The main idea behind the game was to produce a prototype that does not use text to instruct the player, yet it utilises different visual cues and seamless instruction methods to guide the player. The game's title is Jelly Quelly. The game is a platformer where the player controls the protagonist named- Jelly Quelly. The character makes the way through the different levels which introduce platforms with different properties. The player has to learn about the game through the interaction and observation. It is important to note that the prototype only focuses on intuitive gameplay and communication without text, hence other aspects such as narrative, sound design and so forth are not taken into the account, even though they can contribute to the intuitive gameplay, they take a long time to develop, hence the game has its limitations. The game introduces new objects gradually, starting from self-apparent such as platforms and portal to more quirky ones, such as a flower that launches the character into the air. Game design is explained in the Appendix B.

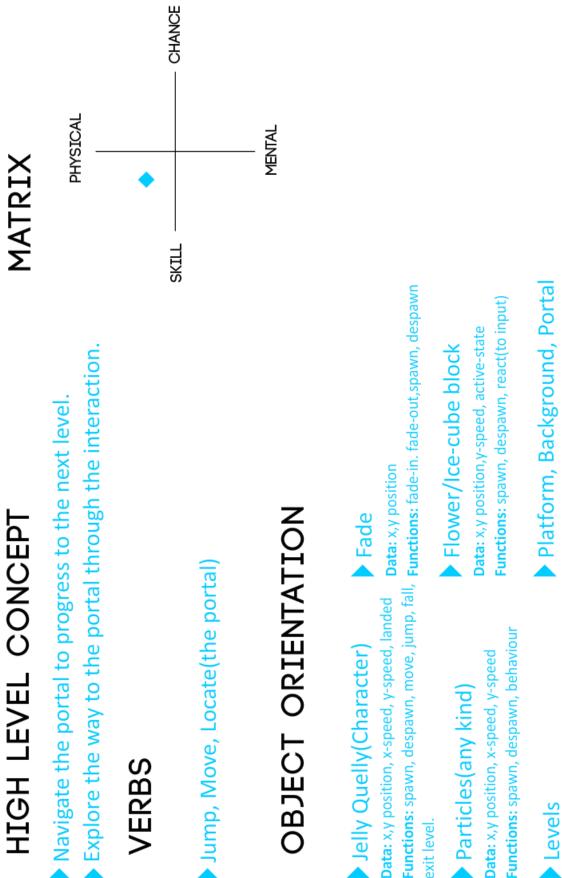
The game was fully made and compiled in the Adobe Flash CS6, coded in ActionScript 3, the game can be played on Desktop and via web browsers.

The game design document was created to document the intended design. It includes: the concept art, spritesheet, storyboard, high level concept, verbs, object orientation, matrix and finite-state machines. The design document enables game designer to efficiently focus on the game development.





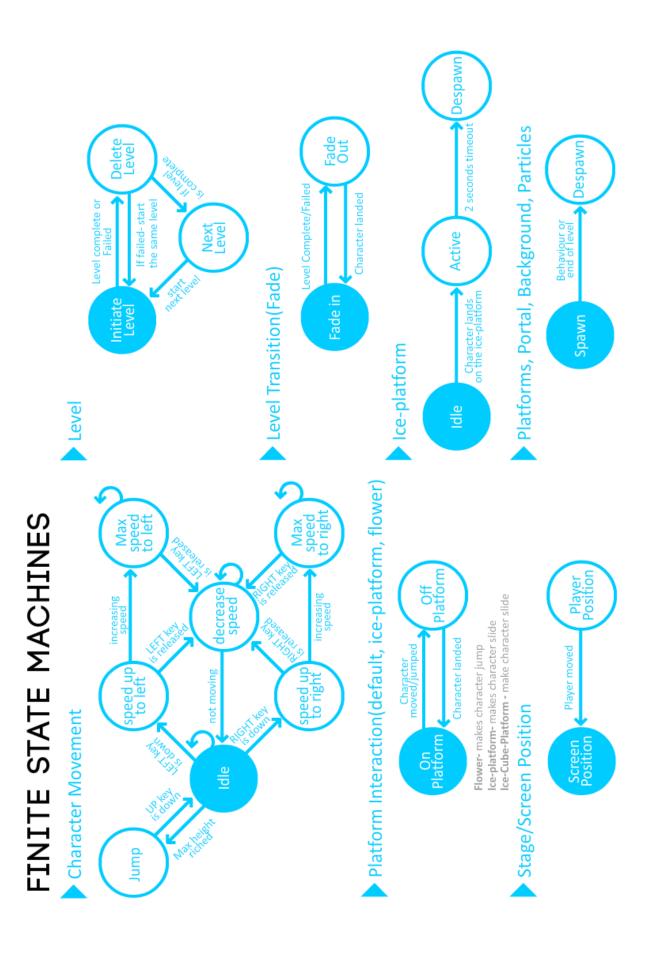




Data: level number, complete, reset Functions: spawn, despawn

Functions: spawn, despawn

Data: x,y position



Screenshots of the final prototype. The game is available at <http://zh4n.com/jelly.html>.





Appendix B -Game Design Intentions and Development

Once the basic prototype was developed, playtesting and level design took place. For clarity's sake, the design process behind each in-game object is explained individually. Playtesting involved 10 playtesters, who, were observed during the gameplay, their comments taken into account, and the game was amended immediately. The comments were not recorded because the interviews were unstructured and at the playtesting stage the game forgoes a lot of change and comments quickly become obsolete or irrelevant.

Default Platforms- the character can land and move on default platforms with normal friction. Initially the game had platforms with four different colours, exhibiting the same default function. Several playtesters asked if the platforms had different functions. After that question it was apparent that colours had to be taken away to reduce the confusion. All default platforms were changed to the green colour, thereafter this question was not brought up again.

Ice-Platforms- the character can land and move on these platforms, friction is decreased making it appear that the character slides on these platforms. During the testing, playtesters expected that blue platforms(Ice-platforms) are likely to be slippery, however some of them did not notice the difference. The solution was to add ice particles whenever the character is on these platforms to signify that these platforms have a different behaviour, this solution solved the problem.

Shattering-ice-platforms- the character can land and move on these platforms, friction is reduced making it appear that platforms are slippery, if the character lands on these platforms, the platforms shatter after two seconds. Shattering-ice-platforms were clear to all playtesters, since these platforms provide a clear feedback, visually they look fragile, and when they shatter they produce little shattered pieces of ice- players interaction makes the functionality clear. In some cases these groups of these platforms are slanted towards one side, indicating the direction where the character should be moving to, all playtesters understood this hint.

Portal- the character passes from one level to the other through the portal, once the character is close to the portal the character lifts up into the middle of the portal, the screen dissolves into the whiteness and then into the next level. The portal has particles floating around it- signifying that the portal is a dynamic object, once the character passes via the portal the character has a few of those particles appearing in the next level for the short time to indicate the interaction with the portal. At the

beginning, the portal did not have particles, it did not lift up the character and the level did not dissolve into the next level, many playtesters reported that there was no sense of passage, it was a very abrupt experience, hence all the current amends were added. Thereafter, Playtesters confirmed that the portal feels like a passage and progression to the next level.

Background patterns- are there to guide the player towards the portal. During the playtesting, levels with different shapes and sizes of backgrounds were produced to test players reaction. Conclusively players seem to follow the pattern when it is drawn as a line-like shape.

Flower-Platforms- launch the character upwards much higher than a normal jump. Flower-platforms expand when the character lands- creating a bounce effect, flowers also have petal particles flying upwards signifying that they can defy gravity. Although the flower has unreal properties all symbols in the flower indicate that it can lift up the character, additionally flower's lower part is green and it has a similar pattern to default platforms, re-enforcing the idea that the character can interact with the flower by jumping on it.

Avatar- the game character is called Jelly Quelly, it is a cube of gelatine, hence it has a wobbly appearance. Playtesters usually think that it is a jelly-cube, although in some cases they report that it is a piece of soap. The qualities must be further modified to increase the resemblance to gelatine, to reduce the uncertainty.

Level Design Explained- each level is designed so that the player can learn a new skill about the gameplay gradually and seamlessly. Initially the player is presented with a character landing on the platform, the character wobbles- that should indicate that the player can control the character in some way- as it is the only animated object on the screen. The people who have played games before might use arrow keys to move the character as it is a most typical way of controlling the character, however for players who are not familiar with the controls, there is a stone in the background, with an image iconic to the direction keys- this should guide the player to use the correct keys. Once the player figures out how to move the character she is likely to move right as there is nowhere to go on the left. As the character moves, it leaves a trail of orange particles, indicating performed movement and dynamic behaviour.

As the character approaches the portal in the first level, there is an ice-platform just before the exit, if the player is curious she can try to jump on top of it and likely find that the ice-platforms are slippery. Also when the character is moving on the ice-platforms

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character forms ice trail instead of orange trail, on the other hand character can ignore the platform and move towards the exit (portal) without jumping, a portal is shaped like a door and it has white particles moving around it, that signifies that the door is likely to be dynamic, when character approaches the door, character lifts into the door and level fades into the next level, where character drops down on the platform with few particles seen at the portal, that demonstrates the progression.

In level two, the player should naturally move right as there is nothing to be drawn to on the left side, on the right side there is a blue platform, the player is likely to notice that it is has decreased friction (if she has not noticed it in level one already), at this point the player can either keep on sliding and land on the green platform below the blue platform and stop, or try to jump upwards where a lot of platforms are positioned. If the player landed on the green platform she should realize that jumping on platforms is the only way to advance through this level. Soon in this level, the player has to jump down or simply drop down on the platform below, when the player is on that platform she can see a portal below. The level offers two ways of completing this section, the player can follow the background pattern and enter the portal, or player can move to the section without a pattern and do a leap of faith into the unknown, which, actually has a platform below, rewarding player for trying to complete the level faster.

In the third level, now that the player can move and jump, the character must move left as there is nothing on the right. In case the character decides to go right anyway, there is there is a set of platforms below which lead character back up towards the left direction. In this level the character is presented with a flower-platform, which shares some similarity with a regular platform, player can decide to jump on it and through the interaction find out that it makes the character jump much higher than a usual jump, there are two more flowers that can be reached when jumping on the first flower, which, lead to the portal- as a result rewarding player for the experimentation. Alternatively, the player can complete this level by jumping on green platforms.

Level four starts with the player landing on the platform above the portal, player makes her way downwards towards the portal, when the player reaches the platform directly below the exit, the level design puts the player in the position where she must jump on the flower in order to complete the level- at this point player should learn the functionality of the flower.

Level five introduces shattering-ice-platforms, they are transparent and have an appearance of cracked ice or glass, they have the same outline as blue platforms, the player can either jump on the shattering-ice-platform next to the character or to keep

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on moving right on the path made out of shattering-ice-platforms, either way character will cause ice to break, player should form a mental concept that these platforms can be landed on only for a short amount of time before they shatter. The rest of the level does not require player to jump on shattering-ice-platforms to complete the level, however jumping on shattering-ice-platforms will lead to a quicker way of passing the level.

Level six requires the player to use the shattering-ice-platforms to progress, if the player has not learned the functionality of the shattering-ice-platforms already, this level has a pattern of platforms, suggesting that the character should jump on them, some platforms are green others are shattering-ice they are positioned in a way that it is logical to jump on them, that should teach the functionality of the shattering-ice-platforms. Near the end of the level there is a section where shattering-ice-platforms are sandwiched between two blue platforms and below the shattering platforms there is a portal, the only way to complete this level is to break the shattering platforms and fall in the portal.

Level seven spawns the player on top of the shattering-ice-platforms, at this stage the player knows that sometimes she has to make the character fall to progress, bellow those platform there are visibly more platforms of the same kind, also the background pattern is drawn downwards suggesting that the level progresses downwards. After the player performs the falling mechanic few more times, she reaches a line of shattering-ice-platforms leading to the flower reminding the player, that these platforms are not always used for falling, the rest of the level is designed in the similar manner to strengthen the understanding of the game elements, last two levels combine all objects in different ways to challenge the player. If in any level the player misses platforms and falls, the level fades and the player restarts the level from the beginning.

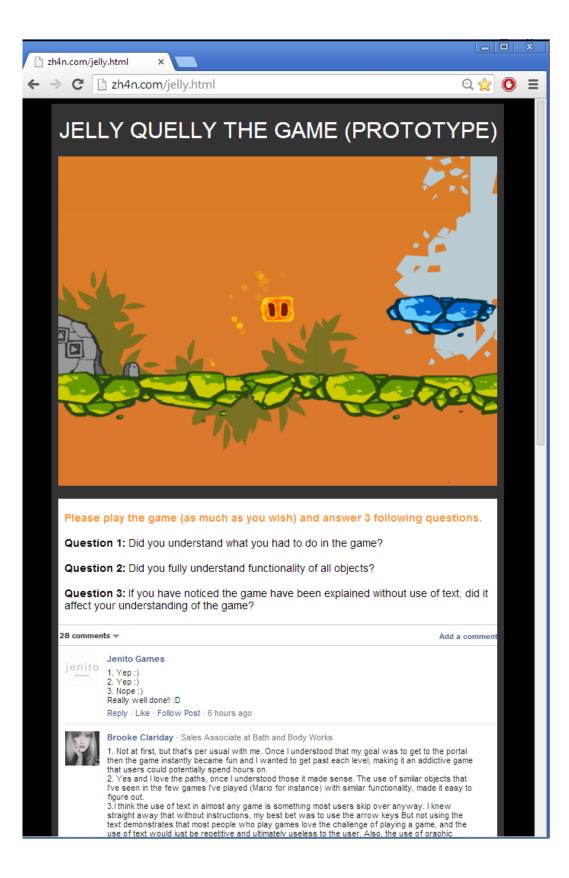
Appendix C- Questionnaire Design

A Questionnaire was designed to retrieve qualitative primary data. The questions were designed to collect qualitative data, rather than quantitative, because if the quantitative data was to be collected it would become obsolete with every update of the game, as every small change in the game affects the overall experience. Qualitative data is more personal, it gives a general insight to how the player perceives the game. To deduce more accurate data, all participants played the same version of the game. The survey consists of the three open questions, which are constructed as to retrieve the most efficient data. Question one - "Did you understand what you had to do in the game?", this is a general question, which, can answer why some game elements were not clear, without explicitly telling that the text was not used, if the text is really necessarily to the understanding, the player should mention it. Question two - "Did you fully understand functionality of all objects?". This question is more specific, as it provokes the player into a deeper answer about every object, again, it is not mentioned that text was not used for explaining objects. At this point, the player should state if any of the objects were not clear enough, participants can suggest different ways of explain the objects better, including addition of text. Question three - "If you have noticed the game has been explained without use of text, did it affect your understanding of the game?", the last question focuses on the aim of the research, it directly mentions the absence of the text and how it affected the experience, participants should explain the effects of the text in the game.

Appendix D- Webpage Design

In order to collect primary data, a webpage was constructed and uploaded online on http://zh4n.com/jelly.html. Online webpage is easily accessibility and it enables survey participants to directly documented their feedback.

The webpage was programmed in HTML, it has a playable version of the game embedded in SWF format - meaning that any desktop user could play the game. The Webpage also has a questionnaire section under the game, which, has a request to answer 3 questions in the comments section. The comments section was made with embedded Facebook Comments API(2014), it allows users to comment on a webpage using their preferred social network's account. Additionally Google Analytics API(2014) was embedded in the webpage to monitor visitors number as well as to store and process user data, such as total time spent on the webpage.



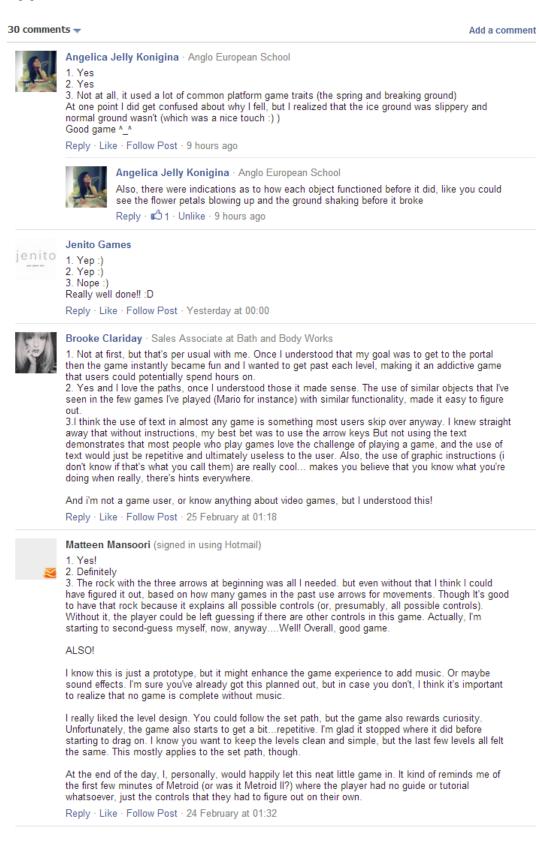
Webpage screenshot available at <http://zh4n.com/jelly.html>



Appendix E- Google Analytics: Raw Data

	Language	Visits	% Visits
1.	en-us	88	74.58%
	en-gb	18	15.25%
	ru	3	2.54%
4.	es-es	2	1.69%
5.	fr-fr	2	1.69%
6.	it	2	1.69%
7.	hr	1	0.85%
8.	it-it	1	0.85%
9.	lv	1	0.85%

Appendix F- Facebook Comments: Raw Data



	Bryce Fitzsimons · UC Davis 1. yes 2. yes 3. no, the game is based on common platformer patterns. Reduction of a game to its core components, so no textual explanation was needed. Reply · Like · Follow Post · Edited · 23 February at 23:06
	Calvin Dewaine Simpson · Christ The King Sixth Form College 1) yes i understood the objectives and the challenges in the game 2)yes the instructions was labeled on the rock at the beginning 3) not at all, it was still informative without any use of text Reply · Like · Follow Post · Edited · 23 February at 22:48
	 Fei Fei Lo · Following · Works at Animal Fair Pet shop 1) Yes, the first level was very simple and the object of the game was made clear. 2) Yes, it came very quickly in each level 3) nope Reply · Like · Follow Post · 23 February at 22:28
	 Neil Highley · London, United Kingdom 1) Yes, although I didn't notice the blue streak until level 3 or so. 2) the parallel introduction, giving two possible ways at first, then reducing to only the flowers worked well 3) From previous platform games I understood the narrative involved. Not sure whether someone without that knowledge may understand. A ghost character in front may have helped for the earlier levels to show how the game worked, but only for those without that shared platform narrative history. However, anyone with a good sense of trial and error may get it eventually. Reply · Like · Follow Post · 23 February at 22:15
	 Rosie Almond · Student Ambassador at University of East Anglia (UEA) 1. yes, starting at a very simple level demonstrated that the aim was to reach the level exit, and in further levels it became clear that following the trail would lead you to the exit. 2. yes, again, introducing them one at a time and the use of trial and error demonstrated clearly the functionality. 3. no it did not, after using the objects once it is easy to understand without a text explanation Reply · Like · Follow Post · 23 February at 21:40
No.	Ahmed Kamel · Queen Mary, University of London 1. yes 2. yes 3. no Reply · Like · Follow Post · 23 February at 21:20
A	Оля Нифонтова · Novorossiysk 1. yes 2. yes 3. nope, everything is clear Reply · 🖒 1 · Like · Follow Post · 23 February at 19:44
	Nicola Zamboni 1. Yes 2. Yes, the rock at the start shows the controls, ice platforms (blue) makes the character slide and flowers make the character boost upwards (the petals works as a great visual aid on what the object does without even trying it). Ice cubes has two functions: they serve as paths towards the goal (like regular platforms) and they can also obstruct the path (the player needs to break them in order to continue.). The gates shows the exit to progress in the next level, and finally the background trails show the way towards the exit. 3. Not at all. Reply · Like · Follow Post · 23 February at 19:37





Kate Sherska · Works at Lbc Baltic 1. Yes, easy 2. Yes 3.Everything is clear without any text Reply · Like · Follow Post · 23 February at 16:33



Imogen Bird · Brentwood Ursuline Convent High School

 Yes it was simple and obvious after a little bit of exploration of the controls
 I understood all accept the ice end level thing, at first i thought that would kill me and have to restart. Apart from that everything was obvious
 If it had been explained with text it would have felt more tutorial like, when with basic exploration it was obvious what you had to do.

Reply · Like · Follow Post · 23 February at 16:33



Liyi Zhang · Honolulu, Hawaii

1. I understood what to do, although I am biased as I have been playing video games for a long time.

Everything appeared clear, and if not, simple experimentation gave the answer. Nothing was confusing.

3. I understood everything about the game without the need for text. A few levels in I clocked that the background actually trails towards the exit, but otherwise I had been following the platforms and crumbling platforms - maybe subconsciously I followed the trail. The dipped crumbling platforms were a good indication I was supposed to fall through them, more platforms to jump towards/fall onto were placed in a linear enough fashion to understand that that was where to go next. But again, I have too much bias as an experienced gamer.

Reply · Like · Follow Post · 23 February at 15:37



James Adam Nightingale · London College of Fashion

A1, yes, having had experience in platform games before. A2, yes, the icy platforms and breaking blocks had easily understandable functionality. The flowers functions were not obvious until I landed on 1 for the first time. The flowers unexpected fiction added enjoyment to the game though.

A3. no, scenery and positions of platforms seemed to make a clear path without text. Reply - Like - Follow Post - 23 February at 15:26



Kelly Moutou · London College of Communication

1. It wasn't initially obvious what you had to do but once you begin exploring the controls, it became apparent where you needed to go.

2. Yeah, the colours and particles showed that each object was something new and different to what has been used before. It envokes a type of curiosity in that you want to know what will happen when you interact with it, therefore providing an indirect explanation of functionality.

3. No, if anything the lack of text improved the understanding of the game as it was directly related to how much I interacted with the game and played through rather than just being told out-right. The use of patterns and background aesthetics meant that text prompts on where to go weren't needed and subconsciously guided the paths taken and, by the end of it, if i wasn't sure which direction to go in, I knew I could rely (loosely!) on the background.

Reply · Like · Follow Post · 23 February at 15:22



Alex Menez II · London College of Communication

I didn't know what I was working toward but controls were easy and the paths seemed non-linear.

Interactive objects were intuitive. (Blue/Green paths gave the impression they functioned differently)

Using no text helped aesthetically and bypassed that awkward 'tutorial' feeling when I started.

Reply · Like · Follow Post · 23 February at 13:48



Leslie Stowe · Works at Violin Tutor

I like what you've done: having played some platformers before I quite easily got to grips with the controls. The functionality of objects was clear by far. The fact that no words were used for levels made it more of a challenge which is desirable for some - I liked it since you had to figure out what to do. Also it looks very pretty. One such aspect that I think could be added is maybe a timer so you could try to beat your score at a level or something like it. Definitely an awesome game! Keep it up Zhan! Reply · Like · Follow Post · 23 February at 13:17



Luke Wale · Senior Developer at NEC Australia

I like what you've done. The "path" that you put as the background works well without hand holding too much. Q1. Yup - get to the end of each level. Q2. Yup. Q3. Yup, each element was introduced in a way that was self explanatory and then reinforced in future levels.

Reply · Like · Follow Post · 23 February at 05:13



Justin Smith · IUPUI Yoinked from chat:

[03:55:02] fex: This is surprisingly cool, for a prototype. And yeah, I like the way you've handled things textlessly

[03:55:08] fex: Using the background smears to indicate direction

[03:55:25] fex: The slippery blue surfaces weren't immediately apparent, because the controls feel

- slippery even on normal ground
- [03:55:29] fex: Which is kind of a huge pet peeve of mine [03:55:37] fex: But that just seems to be popular in platformers these days
- [03:55:38] fex: So meh
- [03:56:01] fex: Art is pretty sexy, for a prototype

[03:56:17] fex: gotcha

[03:56:26] fex: In that case, I might make the controls way less slippery on green areas

[03:56:30] fex: Like, almost immediate stop

Reply · 📫 1 · Like · Follow Post · 23 February at 03:58