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Desenvolvimento de módulo de aprendizagem em UX design – A valorização de metodologias de diagnóstico no desenvolvimento de projeto

UX design learning module development – The usefulness of problem-solving methodologies in project development

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Surgem novos desafios quando se incentivam os estudantes de design em projeto de design de interface. O atual desenvolvimento hardware, de comportamentos e de consumo exige dos jovens designers novas especialidades, habilitações e competências. O módulo experimental descrito de aprendizagem projetado para a unidade curricular de Sistemas Interativos grau de Licenciatura em Design de Comunicação, na Escola Superior de Artes Aplicadas, Instituto Politécnico de Castelo Branco será implementado no primeiro semestre no ano lectivo de 2016/17. O módulo tem a duração de 15 sessões, o projeto de aprendizagem visa o desenvolvimento de um projeto de UX que incidirá sobre o desenvolvimento de um aplicativo dedicado exclusivamente para a plataforma Apple Watch, no módulo de aprendizagem serão aplicadas diferentes metodologias, implementando no fluxo de trabalho a análise de informação, permitindo uma melhor argumentação de projeto e um desenvolvimento mais sólido das propostas desenvolvidas. O módulo de aprendizagem não pretende ser uma receita, mas sim, uma abordagem estratégica para análise de informação qualitativa aplicada no contexto do diagnóstico, nos elementos referentes à estética, funcionalidade e acessibilidade. Esta estratégia pretende promover junto dos alunos a sua capacidade de análise de informação por meio de diferentes ferramentas de imagem, não só ferramentas técnicas, mas também conceptuais.

Palavras-chave UX design, acessibilidade visual, diagnostico, módulo de aprendizagem.

New challenges arise when encouraging design students to focus the subject of user interface design. The present development in hardware and consumer behaviors requires new specialties, skills and competences from young designers. The described experimental module of learning designed for the course of Systems of Interaction, bachelor degree of Visual Communication Design, Superior School of Applied arts Polytechnic Institute of Castelo Branco will be implemented in the first semester on the academic year of 2016/17. The module has a duration of 15 sessions The learning design experiment aimed at the UX project development, will focus on the development of an app exclusively dedicated to the Apple Watch platform, the learning module will apply different methodologies, implementing Information analysis in the students work, that will foster a better argumentation and a more solid development in their proposals. The learning module prompted not to deliver a recipe but a strategic approach to information analysis on a qualitative scope applied in the context of problem solving methodologies, visual accessibility and aesthetic parameters development. This strategy will foster in students their ability in working information through different image tools, not only technical but also conceptual.

Keywords UX design, visual accessibility, diagnostic, learning module.

1. Introduction

The area of UX design is in constant renewal, every day new practices appear from the constant flow of requisites placed by consumers and technological evolution. New practices mimic the need for survival in the overwhelming flow of new settings in different layers, cultural, social, technological, and so on. In visual parameters of interaction the symbolic interpretation gains each day an empowered value.

Today we live in a very saturated realm of digital mobile applications and different logics of operation. Besides the content, must be distinguished in most mobile apps the designed ideas and the ones intuited by the public. Different perspectives of interactions produce different visions and allow further expansions in mobile apps design. New developments in hardware allow new areas of interaction. Interaction surfaces, such the one portrayed by the Apple Watch provide new outcomes and challenges in User Interface Design. The presented learning module explores the perspective of symbolic interaction. Symbolic in terms of area of interaction, the surface limits, due to the hardware specification in terms of the display area, is very small. Settings such as visual accessibility, finger interaction, and system perception play a major role defining the way students will design the interaction and test several possibilities.

The most important application development is to understand what is the application use in the flow of everyday use and the consequent attrition. The mobile application has to enter a real use routine testing. From the first confrontations with the users needs, will result the loss of certain features and functionalities. At the same time the mobile app will win other features and functionalities, focusing on core functions dictated by the everyday use.

The designer's job is to shorten that process, so it is crucial to understand what is the attrition of daily interaction, many of the times those clues are not visible, so the designer has to promote new strategies to outcome such problems. The added value of design is necessary to understand the mechanical wear of everyday use. Good designers should understand more about the wear of everyday life, but, unfortunately, we see in many products that they don't, or their opinion is not well accepted by the company product managers. Sometimes the designer is still following behind the hype of technology. The quantitative analysis is non-sufficient to understand and define the interaction surface. When users can access simple tools delimited in the app, the design gives the power to user to mix those tools and construct new perspectives of use.

The qualitative analysis aims to understand the scope and effectiveness of symbolic component from the image portrayed by the app visual interface, its adequacy, taking into account their specific communication and the hidden emotional code. Emotional communication is the product skin and can empower the application mechanics. However, when the mechanic or the emotional communication is not adequate in the specific time and cultural space when it reaches the public, it will fail its commercial or divulgation purpose.

The interaction with new paradigms comprises information produced in the under structure or fabric of our daily life and it comes almost real when in contact with our reality and the fabric of the user reality. Those bits of information that escape from the under layer contain images and symbolic elements, built of crude information, those aspects in contact in our reality framework conceive different meaning. The under layer has a rich flow of sparkling symbolic elements, the essential blocks forming different structures of meaning. Correlated with an empty plane of interaction, it has more chances of visibility in empty regions not yet filled with symbolic elements of interaction. The interaction refers to a field of occurrences that relates to action toward objects thus creating symbolic context of interaction. Symbolic interactionism tends to focus on the language and symbols that help us give meaning to the experiences in our life (Blumer, 1969).

Around the symbolic interface in the current framework, the user builds meaning through mental images.

The different moments of interaction have an inconsistent purpose, carries different parts of a larger message in which the construction of meaning comes from the observer participation.

The symbols construct the frame where, over it, the consumer lays down different images in tile configuration, changeable over time, according to evolutionary society settings. Images play the connection between reality and the symbolic reasoning, the symbols aggregate the information, allowing a more effective understanding by consumers.

To sense is to make sense, it is an active conscious process of sensible being in the world which operates across a range of records, from the habitual and affective to the reflexively conscious and conventionally representational (Adey et al, 2014).

2. Development and strategy

The Learning module comprises eight weeks of activity distributed in introductory - argumentation, development, test and exposition activities. In the introduction, students implement problem diagnostic and image diagnostic. The problem diagnostic focuses on finding unsolved situations where an app could be a real contribution to a persona type, also focuses in the app limits and context of use. The Learning module also centers on finding the business model related to the app, when testing the scenario, students discuss the cultural / political and social implications of a proposed mobile app. The image diagnostic works parameters related to the cultural image framework, archetypes and the cultural code related with the app, This second diagnostic occurs after the first usability tests, carried out with the low fidelity mockup.

For the learning module distribution of learning materials and discussion the classroom will work with the digital platform Trello. This platform allows the distribution of materials and allows simple actions related with tasks and project management, furthermore it provides an interface with a very short learning curve. It is important to conduct the activities in a non-cluttered platform. In addition to this platform, students will work with the digital tool proto.io specifically in the last phases, testing the motion prototyping and the graphic layout maps. This test will be carried out in several cycles, pursuing a refinement and a flow without "noise" in the app functionality.

The proposed learning module, in the diagnostic phase, presents to students the chance to work on a specific briefing and the information processing through different filters. The learning module organizes the diagnostic in two phases. The first phase works concepts of product development collecting information from trends and persona evaluation, and problem focus.

The second diagnostic phase focuses the aesthetic parameters related with the UX design. Each different filter provided different feedback and guides the qualitative development of the visual communication project.

The first diagnostic, the foresight research, allows students to focus on diagnostic methods and promotes another perspective on information. When focusing a particular problem and due to the overall complexity involved, the students process the gathered information to work the contents, and the boundaries on symbolic connections. In this specific classroom context, the students group will work with the research tool provided by Google trends, followed by the persona evaluation. Later the information collected in Google trend will enrich the persona profile creating a more detailed and contemporaneous profile.

Google Trends an online search allows students to retrieve how often Google users queried specific keywords, subjects and phrases over a specific period. Google Trends computes how many searches have been done for the terms entered. Although the daily updates the data provided by Google Trends, the data could contain inaccuracies for some reasons, including data sampling issues and a variety of approximations that are used to compute results.

The second phase of diagnostic addressed the persona evaluation, configuring three different persona's in multiple cultural environments, in these perspectives, the students developed different perspectives and the archetypes behind the engagement with the product. Those archetypes related with the mobile app could work in different levels. After completing the different persona's using different tools to retrieve contemporaneous information, students highlighted the most important references in the persona's profile related with the different user perspectives.

Working with several references in the scope of social and cultural context is central when assembling a persona. Only then, designers have a scope on pace's and behaviors, the use of trend search engines helps to collect information up to date related with consumer preferences.

The goal is to grasp the visual context, creating a more pleasant experience, a better effort co contextualize within defined perspectives. Those perspectives come from the persona study, after filtering the information, the working group will get a common structure, related with a specific unsolved situation in the persona's scenarios. The process gives awareness on scenarios built to sum many components unattainable through other channels. Only an empowered systematization in the creative process can better output the results achieved during the design process.



Image 1. The different phases in project sequence, differentiating the diagnostic nature and the interventionist nature in the process.

The project must balance the two "strings" in the accessibility settings, the external perspective (visual) and the internal (the structure). The low context, is present in the screen effectiveness in communicating the message, but well adapted to a high context where physical mobility is key in designing visual accessibility and where the expressiveness (aesthetic feedback) from the app screen is crucial.

The two elements must be tuned with perception, the process by which individuals select, organize, and evaluate stimuli from the environment to provide meaningful experiences for themselves (Adler 1997, p. 71).

Symbolic interactionism makes use of explaining concepts that support the reasoning construction but, like a support structure, are not a part of the final structure and are taken down before construction is complete. An explaining concept orients and supports observation and interpretation activities without dictating the end result. Co-experience takes part in such concept. Using the concept of co-experience can help to set up observations and identify interpretations in findings, especially when the focus is broad and fuzzy, as in the early stages of product design (Schiffenstein & Hekkert, 2008).

To engage student in this two-side strategy the working group must "feel" the different settings. The most easy affordable way to producing fast modifications and inputs is by prototyping not

only with wire frames but through layers of several adjustments using the device real dimensions and employing different visual distances from the closest reading till the length of the arm distance, these testing setting work not so much on information reading but more on information perception. Therefore students try different levels of understanding from the objective interpretation to the intuitive perception.

Design a learning experience on UX design is not an easy project given the several steps that also must include the accessibility factors. Stimulating students on accessibility it's a different task and in some stages goes out from the screen into the reality bringing the wire frame interface into the "light" of mobility and perception/reading in a limited framework.

In the first visual accessibility tests, the students repeat the wire frame design test twice. In those tests the students produce annotations directly on the frame content. After they insert the annotations in the wire frame mockup, students print the layout and go through new tests and repeat the process till they solve any flaws still visible in accessibility settings.

To engage students in this problem, first of all they have to feel what problems derived in the distinct perceptions, the perception on information at long range, and the objective reading at a closest range, and how the screen size limitation is "played" in the overall design. This experience with the physical limitations will launch quality parameters to the last phase referred as "final frame maps", this last phase involves the device screen resolution and the test/demonstration of moving sequences constructed and organized and pre produced to the final developer.

In the project sequence after the last wireframe consensus, before starting the "pixel layout", the image diagnostic research, can retrieve useful data, for future overall aesthetic quality in the app.

In the UX project design scope, the image diagnostic, or third diagnostic in the process, works the image bonds and limits, in a more efficient and sequential fashion. The proposed aesthetic solutions must be coherent with the app strategy underway. In this perspective, the image diagnostic is the third diagnostic present in the project sequence chain, after the persona research and wireframe tests.

In the second image diagnostic, more directed to the aesthetic framework, in the first conceptual tool, students filter the information on a cultural context perspective, applying the concept presented by Edward T. Hall. The addressed approach in a communication project design must match and follow particular cultural settings retrieved from persona evaluation and cultural contextualization, following the Edward T. Hall definition of communication in lower and higher context.

Hall offers a systematic approach concerning the effectiveness of communication in cultures of low and high context. This approach is crucial for understanding communication and its extensions in the various forms of the message because the context as the vehicle of communication interferes in the message content and structure.

The context is an important way to deal with the enormous complexity of human transactions. Distributing context analysis in a graphic arrangement. Hall places the high context messages at one end and low-context messages in another extreme of a continuum.

A high-context communication or message is one in which most of the physical context information is present or previously internalized in the person, while there is very little explicitly in the message transmitted. In a low-context culture, the opposite is true. In a low-context culture, for example, twins who grew up together can communicate between them with the same effort than two lawyers in the courtroom during a trial.

The second filters focus on the emotional archetypes through Martins (2006) and Hartwell and Chen 2012 definition. Martins (2006) offers an attractive approach strategy in his book *The Emotional Value of Brands*, where the author presents the Carl Jung emotional archetypes (E.A) as support to define a brand personality. The Martins (2006) model, although not yet translated to English, offers a rich tonal range of associations delivering a pleasant didactic approach, Figure 1. Although this author and others, apply the concept into corporative brand meaning, his approach allows other ramifications to broader visual communication categorizations.

A design project always targets a product, physical or conceptual in his nature. As both a face and a function, archetypes can reveal how a brand shows up in the world, how it is motivated and what triggers it. Archetypes can facilitate the understanding of the brand and why it attracts certain customers (Hartwell & Chen, 2012, pag. 9).

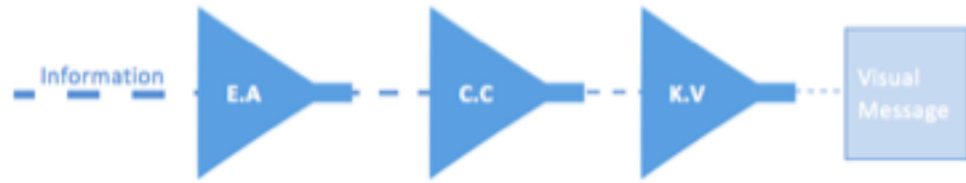
The archetypes work as strange attractors of consciousness. The brand attracts customers when the brand is congruent with an archetype that is either dominant or emerging in the consumer consciousness (Mark & Pearson, 2001, pag.155).

In the third filter student work the storytelling strand, constructing the narrative sequence applying a Kurt Vonnegut shapes of stories perspective. The author shows graphically how to depict a narrative, mapping out the shapes of stories. With irreverence and perceptive insight the author draws two axes, along the "G-I axis" of Good Fortune and Ill Fortune and the "B-E axis" of Beginning and Entropy, (Vonnegut, 2005).

The Kurt Vonnegut technique allows the combination with images retrieved from different images banks, resulting in image sequences illustrating different narratives. Correlated with dramatic intensity, each student group work those narratives and test the Emotional archetypes and cultural context characterization.

This diagnostic method fosters learning transference. According with Findlay (2014) the concept of learning transfer is crucial when establishing that learning is also an effect. The ludic factor is

Image 2. Different filters applied in the Learning module second diagnostic. E.A= Emotional archetypes C.C= Cultural context. K.V= Kurt Vonnegat story map concept



the necessary motivation to increase self-efficiency, but also to transfer knowledge and learning to other contexts. The ability to transfer knowledge into other domains may only be possible at a meta-level, because the level of transformation that allows the motivation process to continue and intensify may be intrinsically vital to the acquisition of learning abilities.

Based in this approach students developed their options focusing on questions related with project evaluation in the app architecture, this should comprise several routes and cycles but display a certain level of accessibility for user assessment. Managing a high quantity of information in only one screen of information, students aim their developed skills in accessing a direct and non-cluttered interface.

The following phase, more related with the aesthetic properties concerns the graphic layouts. This phase enclosures the final maps with the frames on the device full resolution. Involves applying symbolic information retrieved from the second diagnostic, tuned with the app target.

In the UX sequence logic, the movement prototype comes in the eighth place. One of the interesting aspects offered by the motion prototype is the model incorporation in a larger UX diagnostic evaluation sequence. The motion prototype comes in the last phase in a logic sequence constituted by eight steps, from the persona till the aesthetic qualities evaluation in the user experience. In the last phase, the motion prototype tests the last layout and promotes changes in the graphical maps, in several turns, till achieved a coherency between the movement and static layout aesthetics.

The resulting final maps incorporate the main and the transition frames in the app. The transition maps link to short movies animating the time and type of transition, those act as instructions to the app programmer.

Design interactions through the use of video tools as experimental practice allows the incorporation and validation of till now neglected tools for project development. In the background of motion graphics project, the flowchart displays the logic between the several elements in the project and how they interconnect with each other.

In the video digital composing tool, the timeline in each composition enables the student to design and test the future visual reactions on the visual interface.

The student designs the time unit through these visual constructions, creating different parameters to different functionalities in the app, in different levels of hierarchy, experiencing the flow in the app, designing the different visual responses or alerts each one with different "dramatic" levels.

A graphic evaluation enables a better design of the time and how certain visual responses work in the future app framework.

Image 3. Learning module distribution of activities.

Learning module distribution of activities														
First five sessions					Second five sessions					Last five sessions				
Introductory / argumentation					Development / test / argumentation					Development / test / argumentation / exposition				
S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	S13	S14	S15
- Presentation - Diagnostic and Filter concept - Explanation			- Guided information analysis for the diagnostic filters		- Core functionalities - Sequence of functionalities		- First mockups wireframes - Test Wireframes			- Image diagnostic - Final maps		- Motion prototype		

3. Methodology

The learning module comprises fifteen sessions, with the duration of the course (3 months). In the first two phases is crucial the students involvement in working sessions composed of the technical and conceptual model construction and their discussion. In the first stage related to the Introduction and discussion, students work the diagnostic practice, through the persona method. Although general, the diagnostic practice will provide clues and a stronger argumentation for later development in each group.

The first sessions involve persona construction and cultural code, followed by cardboard sketching with function and the mobile app architecture. From those evaluations, students produce a low fidelity mockup. After this phase, the information gathered by the entire classroom is subject to analysis by each group. From this point forward each group undergoes the second image diagnostic evaluation, this time focused on aesthetic elements, collecting information for each proposal. Each group will conduct the second phase of the project development till the final interface proposal. The teacher can contribute on online and traditional classroom learning settings, given that the

first part is more focused on traditional classroom activity and the second half more focused on online interaction.

The learning module follows a quasi-experimental approach where the teacher can't control some variables related to technical settings. Such factors include the software installed on the student's laptops and their access to other sources information presented in different languages.

In the first part, the teacher conducts the discussion and promotes clues into the diagnostic in an interventionist methodology, provides more concise activities conduction.

Conclusion

To bring new insights to the classroom has several implicit challenges, the learning module must allow a contemporaneous view into some of the problematic present on user experience. Through the proposed subject, students must develop different solutions of interactivity for a very small screen, the restricted symbolic concepts gain a new relevance. Although not easy to incorporate distinct concepts in the proposed learning module the construction in a sequence of different phases allow students to experiment a planned project direction. The Learning module must communicate an open assembly structure and must provide to students the layout of activities, fostering in them a critic insight and ludic perspective, distributing a proceeding instead of a formula.

The learning module attempts to create a tool perspective in the different concepts and stages. Attempting to delay the responses through the creation of different filters, promoting in students a more organized working practice in visual assessment.

This module is a contribution to overcome the preconceived idea in students that visual responses are all intuitively expressed. The module works the idea that these can result from an strategic and tactic analysis of information, producing solid results, even when based on a qualitative assessment. Often we hear that designers cant give to much value to fashion, but fashion relates to trends and the images that compose them, although constantly renewed, are the aymbolic coating, the renewal skin of acient symbols. Is very important to foster this perspective near students, to foster an updated literacy on this permanent changeable imagery patchwork that forms the product image.

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