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WEBSITE FOR ZAO MAKEUP

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Bachelor's Thesis
Autumn 2017
Business Information Technology
Oulu University of Applied Sciences

ABSTRACT

Oulu University of Applied Sciences
Business Information Technology

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Title of Bachelor's thesis: Website for Zao Makeup

Supervisor(s): Minna Kamula

Term and year of completion: Autumn 2017

Number of pages: 43 +3

The aim of this thesis is to create a functional website for Zao Makeup Suomi. The commissioner of this thesis, Helena Reinilä, is an entrepreneur and importer of natural makeup brand Zao Makeup. Zao Makeup has already an international website but to serve Finnish consumers and retailers better, our task is to build Finnish website for the brand. Website will be developed with WordPress and Bootstrap based Sage starter theme. The website will be built with modern web development tools and follow modern web development standards, such as responsiveness. Thesis consists of WordPress introduction, User Experience Design, Graphic Design and final product which is the completed website.

The topic of the thesis came from OUAS student intranet Oiva and was chosen based on the interest in topic. Previous working experience from the field through practical training provides possibility to utilize existing skills as well as develop and extend the knowledge further. The topic gives possibility to grow as Web Developer and give acquirements for working on Web Development field in future as well as provide new contacts and experience.

Topics discussed in the thesis provides knowledge base for the website development and takes an insight to the things to be considered before beginning building process of the website. Thesis discusses WordPress as content management system, the importance of User Experience Design, design objectives of Graphic Design and describes the building process of the final website. The outcome of the thesis is responsive, user-friendly and easily manageable website that follows the brand guidelines.

Keywords: WordPress, custom theme, graphic design, user experience design, website

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1 INTRODUCTION

Topic for the thesis came from commissioner Helena Reinilä who is an importer of ZAO Makeup, natural cosmetic brand. The development task is to create a Finnish website for ZAO Makeup beauty brand. The commissioner is an entrepreneur and owns her own beauty salon, Kauneudella. Helena is the only one who imports ZAO Makeup brand to Finland and she needs a Finnish website for the brand. Brand has its own international website (at the time of writing in <https://www.zaomakeup.com/en/>) but main purpose for this development task is to bring the same information that ZAO Makeup provides on their website, in Finnish and make a website for Helena so that she can direct customers on her Finnish website rather than in the brand's international website. The website will be more convenient for Finnish consumers and Helena's customers who are interested about ZAO Makeup and provide all the needed information for them in Finnish.

The reason why I chose this development task for my thesis topic, is because I want to utilize the knowledge and skills that I gained from my practical training in Thailand. I want to challenge myself and create a website from the beginning for real client. This topic will allow me to not only use my existing skills but also give me valuable experience, confidence and reference for future working life. The design of the website will be simple and follow international website structure of ZAO Makeup. We want to take only the most important parts of the information about the brand and products for the website and make it easy to navigate and browse. The design will follow structural guidelines of ZAO Makeup's international website. Before developing the website, I will create User Experience (UX) design and graphic design of the website to help us to define the functionalities of the website and its design details.

This thesis will consist of both theory background and practical description of the implementation process. Thesis has four major parts; User Experience Design, Graphic Design, implementation process of the actual website as well as description and background of WordPress. Website will be implemented with WordPress content management system and starter theme Sage. This thesis will describe the process of the website building from the beginning till the launching of the final site.

2 INTRODUCTION TO WORDPRESS

WordPress is one of the most popular content management systems (CMS) and open source blogging systems available. It has active worldwide user, developer and support communities and it separates itself from other similar systems with its hosting options, functional extensions, and creative designs and themes. WordPress is widely used as a developed content management system by individuals and enterprises alike. Aspects such as self-publishing, low-cost webhosting and MySQL database make WordPress popular amongst the users. When WordPress first appeared in 2003, it was developed with PHP including MySQL open source database and it was designed to be extended. Popularity of WordPress was driven by its simplicity, flexibility and its extensibility made it popular platform for web development. (Stern 2010, 1-3.)

Other popular open source content management systems such as Drupal and Joomla manage content repositories when WordPress has its roots in a blogging system. Blogging systems are developed to perform simple content management operations such as create a post, store it in stable storage such as a filesystem or database, and display the formatted output based on certain criteria. Requirements for sorting, searching, selecting and presenting content evolved to contain metadata and content taxonomies as the types of content displayed in blog pages expanded and difference between blogging software and content management systems declined. Content management systems manage the creation, storage, retrieval, description or annotation, and publication or display of array of content types as well as covers workflow tasks. WordPress stores content in raw form to its database where it separates the MySQL persistence layer as a data model, the theme-driven user interface and display functions, and the plugin architecture that interposes functionality into the data to presentation flow. The data model uses an abundant set of tables to manage categories (taxonomies), content tags (folksonomies), author information, comments, and other pieces of cross-reference value. (Stern 2010, 5-6.)

2.1 The Codex

Before using WordPress and developing websites with the content management system, one should get familiar with WordPress Codex. WordPress Codex is an online manual in <https://codex.wordpress.org/> for WordPress which includes active repository for WordPress

information and documentation. Web Developers around the world using WordPress use the Codex as a reference and utilizes its documentation from beginner to advanced developer topics. Codex has variety of topics regarding WordPress development and clear guides and solutions for numerous issues. One can learn to use WordPress, work with themes, write a plugin, and contribute to development with documentation of the Codex. It is a multifunctional tool for any Developer using WordPress and gives an extensive value for its users and is an essential resource for anyone looking to learn more about WordPress. Although the Codex is translated to multiple languages, the most comprehensive information can be found from the English version. (Stern 2010, 72.)

The Codex has an individual Function Reference page for each available WordPress API function. Function Reference pages explain in detail how a WordPress function works and is used. It also includes list of individual parameters along with data types and a description of each. Toward the bottom of the Function Reference page, is an example which is the most useful section for developers. The example shows the correct way to use the function. (Stern 2010, 73-74.)

2.2 Templates and template hierarchy

Template files are PHP files that control the content shown to the user and render the HTML to the browser to control how the content is shown. WordPress itself decides which template file to use based on the content requested. Theme can have large quantity of template files due to different tasks that certain template files are used for. However, some themes might have only a few template files. To determine which templates to use when, WordPress has mechanism called Template Hierarchy (see Figure 1). Understanding the Template Hierarchy helps the developer by providing hierarchical structure for the templates and have more control over the template files and their usage. One of the strongest traits of WordPress is Template Hierarchy that brings along flexibility and allows control over the website and what is delivered to the browser. (Stern 2010, 185-186.)

The most important template file is the index.php template. Index template is the template of last resource that WordPress will use when a more specific one to use is not found. The index template may contain only one or several different loops from different categories or tags, or it can contain none. The index template can function as an error page, where other pieces of content on the

website has more specific template. In addition, a style.css file with properly formatted header information with an index.php template is required by WordPress. To avoid repeating the same block of code in several places, the best practice is to break the templates to reusable parts. The header, the footer, and the sidebar information is essentially the same on all pages which makes them reusable components and are usually in their own separate templates. (Stern 2010, 193.)

The header.php file includes everything at the top up to the content area of the rendered page. The file includes the HTML head and start of the HTML document as well as usually the site logo and navigation when top horizontal navigation scheme is used. File can also include any additional elements at the top of the page, such as a search area or secondary navigation. It is very important to include wp_head() function to the header.php since that is a hook for WordPress to queue in certain functionality to the site and is used by plugins. As well as other necessary templates, also header.php should be included in index.php by using traditional PHP include or require family of functions or better, use WordPress core functionality get_header() method. The functionality includes the file from the current theme's directory into the current file for rendering. (Stern 2010b, 194.)

Similarly, with header.php, everything below the content area should be separated out into a footer file footer.php. Historically the footer file has included the copyright and contact information but in recent years, it has expanded to include additional navigation options and relevant site information. WordPress provides function wp_foot() for footer which allows WordPress to inject any necessary information from active plugins and will include HTML closing tags. To include the template for index.php the get_footer() function should be used. Other part to include in its own template is sidebar. Sidebar is usually everything to the right or left of the site content and it can include content from navigation to supporting information on the site. To include the sidebar.php to the index template get_sidebar() function should be used. More advanced frameworks can have multiple sidebars that break from the common notion that a sidebar is vertical space on the left or right of the site content. Some of these frameworks have sidebars above, below or middle of the post loops which transfers power to the site administrator and allows placing sidebar widgets any part of the layout of the page. However, the usage and amount of the sidebars on the site should be taken into consideration despite of the various widget controls and options to keep the balance of the elements. (Stern 2010, 195-197.)



FIGURE 1. WordPress template hierarchy. (Wordpress.org 2017m, cited 14.11.2017)

2.3 WordPress themes

WordPress themes are collection of various files such as template files, image files, style sheets, custom pages and necessary code files, that perform together to create the design and functionality of a WordPress based website. The themes provide control over the look and presentation of the content on one’s website and depending on the theme author, each theme can differ from others, offering multiple options for site owners to change the look of their website. The collection of theme files that creates a graphical interface with an underlying unifying design are called template files. Display of the site is modified by the theme, without modifying the underlying software. (Wordpress.org 2017a, cited 20.3.2017)

Theme structures the content, provides personality and functionality for the website. Combination of the files and file types, such as PHP and CSS files, are used to establish the desired outcome within the theme. However, well-constructed WordPress theme keeps the style separate from the structure and logic. Keeping the CSS and PHP files separate will improve the maintainability and efficiency of the theme. However, every theme has variation of these files and each theme's files are different due to different styles and structure. (Stern 2010b, 185.)

When starting to build website with working theme, licensing on the original theme, code quality, amount of required modifications and source artwork for the creative assets should be considered. Preferred source theme to start with has permission to change it. In addition, code quality should be reviewed to ensure easy modification in future as well as review if the theme accomplish the desired presentation goals with its templates and styles. Other things to consider, are search engine optimization and need for source art, such as Photoshop document, to modify. Pre-built theme provides convenience and quicker way to build website but in the long run it can cause complications and restrict modification. Therefore, in many cases it is better practice to use own starter theme and rebuild the theme from scratch. (Stern 2010b, 187.)

Own custom theme

When building a website with WordPress, one has an option to use either premade starter theme or build one's own custom theme. Building an own custom theme gives opportunity to improve one's CSS, HTML, and PHP skills as well as be fully in charge of the theme design and functionalities. Occasionally, premade starter theme restricts the possibilities and flexibility of the design and functionalities excessively. If the website design and functionalities match with the starter theme, building the website can be quicker and easier. Otherwise, building an own custom theme gives more possibilities, flexibility and more control over the theme. Using own custom theme will be more efficient than reconstructing premade starter theme to fit to the needs of the project. (Wordpress.org 2017b, cited 20.3.2017.)

2.4 WordPress child themes

When using a premade WordPress theme, it is recommended practice to consider creating a child theme to modify an existing theme. Creating a child theme for existing theme, can be better approach than modifying the theme itself considering it will ensure that the parent theme can be updated without losing the work and modifications that one may have done. Child theme can be used additionally with a theme framework, which are a set of standards used by web developers for theme creating, or to add custom functionalities to child theme. (McCollin 2013, 200.)

Any theme, such as premade or own starter theme, can be used as a parent theme. The parent and child themes have a relationship that defines how WordPress uses theme template files. As a default, WordPress uses template files contained in the child theme. If the same version of the template file exists on both themes, the one from the child theme will be used. However, if the child theme does not have the required template file, the file from parent theme will be used (see Figure 2). The stylesheet of the child theme is used by default and additionally parent theme's stylesheet can be used as well if it is specified in the child themes stylesheet. Child theme can be used after defining it into its own stylesheet. (Wordpress.org 2017c, cited 20.3.2017.)

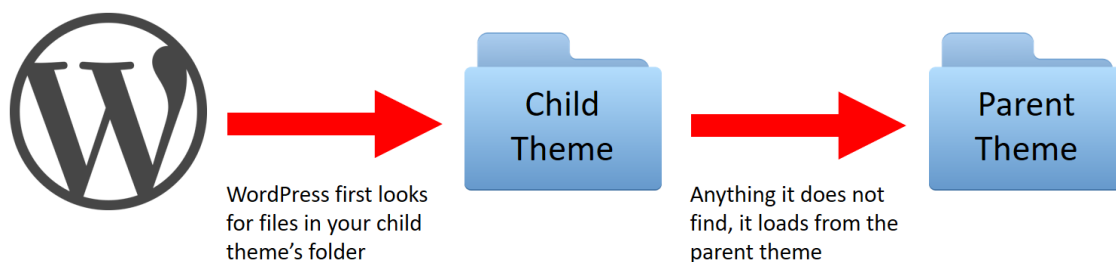


FIGURE 2. Relationship between child theme and parent theme. (Wordpress.org 2017n, cited 14.11.2017)

2.5 WordPress plugins

WordPress has several add-ons, or plugins, to provide solution for specific needs, such as e-commerce, photo galleries and portfolios, web forms, social media integration, and more. Plugins are used to extend and provide solutions for the functionalities of the WordPress theme and platform. Majority of WordPress users do not have need for add-ons, so they exist separately as plugins that one can install according for their own purposes. Several plugins are available for free on WordPress Plugin Directory page, but installation of the plugins can be done also through Dashboard. More complicated plugins are available for a nominal cost from the developer when one purchases the plugin with a set price to download and use the plugin and to obtain support from the plugin author. (Sabin-Wilson 2013, 311.) Some plugins may be packaged with theme or require separate download because some themes require specific plugins for the functionality or to serve certain purpose in the theme. All plugins locate in the plugin folder. (Stern 2010b, 187.)

3 USER EXPERIENCE DESIGN

User experience (UX) design, also known by various other names, such as UXD (user experience design), human-computer interaction (HCI), user-centered design and experience design, is the design that focuses on creating experiences. UX Design is commonly used on Web Design as a user centered design practice to create easy to use and pleasant user experience for websites. Successful user experience provides intuitive, convenient and satisfying interactions between the user and the interface. Although, user experience design is generally used on digital interfaces, such as websites and mobile applications, it can also apply to various different types of products and designs, such as kiosks and product interfaces. Well implemented user experience design can ensure that user have the benefit of the design. (Nichols 2014, 7-8.)

3.1 Features of an excellent UX Design

User experience design can be stated as excellent when it has embodied all three fundamental measurement components of UX Design. First one of the components, useful, focuses on usefulness and to fulfill the component requirements, the design should provide usefulness in all aspects, such as content, features and functions and meet the users' needs. Second component, usable, suggests that the design should provide easy to use and intuitive functionality that is simple and relatively quick to act on. Third component, desirable, proposes desirable and pleasant user experience. Desirable design should engage the user with excellent visual design and content. As a conclusion, the fundamental measurements present a valuable and ideal guideline for an excellent UX Design. (Nichols 2014, 9.)

Despite of the three fundamental measurement components, UX design can as well include other, more specific components such as, information architecture, content strategy, interaction design, usability and visual design. Information architecture divides a website into basic contents such as, navigation, content organization, visual priority of page elements and interaction design. Particularly, interaction design works as a guideline for user interaction with experience and defines the excursion of the user completing the task. Furthermore, it measures the events during the user experience. Information architecture is generally implemented as a wireframe. Wireframe is a

simple sketch of a web page and it provides a skeletal structure for website framework. In addition, technology and functional requirements are commonly included to wireframes and information architecture. Content strategy defines how content is related and used in user experience. It refers to content planning, managing and development as well as purpose and relevancy of the content. Content can be any type of recorded information and outlining and defining the characteristics of the content are part of the overall user experience. Therefore, it is important for the user experience to arrange the content so that it contributes user's task and is implemented in order that it is easy and quick to scan through. When content strategy focuses on arranging the content in a logical and pleasing way, visual design aims attention at visual aspects of user experience. Visual design supports the user experience design by ensuring aesthetically pleasing solution that follows brand consistency. (Nichols 2014, 10-11.)

Interaction design defines the guidelines for the user interactions with the user experience. Purpose of the interaction design is to assist to define the way that user follows to accomplish the given task. Interaction design takes into account for instance, the way how the user navigates, choose buttons and follow links. Interaction design will be implemented according to the functionalities and types of interactions of the project. Likewise, interaction design, usability is connected to user experience interactions. Usability measures the performance of users' interactions with the experience. Deficient usability can result to poor user experience and therefore, one should know the needs, thinking and behavior of one's users. Methods such as, user interviews and usability testing, can be used when examining the user behavior. (Nichols 2014, 10-11). User flow diagrams may help in Interaction Design and define the most logical path users should take to accomplish a certain task. When most tasks may be unique for the website, most likely the website will also include several common tasks such as logging in, getting back to the home page, and searching. For these tasks, there are standard interaction models available, which do not require creating a specific user flows. (Lopuck 2012, 77-78.)

When creating an interactive UX Design, one should think Graphic Design as a communication design which is inherently tied to the usability of the website. To make it easy for user to navigate and accomplish certain tasks within the website, graphics and icons should be defined by the way they look, where they are placed relatively to other elements and in which order they are presented. (Lopuck 2012, 77).

3.2 UX design for Mobile

User experience design for mobile differs a bit from UX design for desktop. When designing anything for mobile, one should take into account that when people are on their phones, they are interacting with the phone in another environment not centered on the phone. For this reason, the experience with the phone is not as long as with the desktop and with phone, people want convenience and quick access. (Mendoza 2013, 12). When beginning to plan any UX design, the best way to begin is by creating a wireframe. Purpose of the wireframe in the mobile UX design is to plan and set in action the format of the mobile experience. Wireframe gives a base for groundwork, intent and interaction with the experience. There are few criteria's, such as screen size, platform and interactions, to define for the experience before starting to create the wireframe.

Other things to consider, are to define if the UX design is for an application or mobile website or if the design is meant for smartphone or tablet. By building a mobile wireframe, one will be able to document the narrative and intent of the experience. Mobile development requires one to set some context to the narrative and to select a suitable device frame for the design. Frame can be selected depending on the device of use, but for mobile web it is requested to use more generic device frame. Selecting a frame for the device will help to visualize and contextualize the experience with the device. An image of the device or an illustration of the frame can be used as a guide, when creating a visual design for the frame. However, when creating an experience for mobile web, it is requested to use more generic illustration or an image of the device that everyone knows as it makes it easier to imagine the design. (Mendoza 2013, 67-69.)

3.3 Usability vs. user experience

User experience and usability can be often confused the same because of their close relationship to each other. However, these two concepts have fundamental differences. When UX is a board design practice ensuring the usability of a solution, usability pursue to test the performance of the solutions. Therefore, the usability can be seen as a product and output of UX. UX seeks to examine the performance of the solution and usability examines the user's goals embodied by the solution. Purpose of usability is to ensure easy and intuitive functionality of the solution through research and testing. When testing usability, the focus should be in the ease of use of the solution.

Navigation, content, dead ends and cognitive overload are common problems that usability testing can help to solve. Navigation should lead the user where they are heading, and dead ends should be eliminated by keeping the links and buttons updated. Content should be clear and user flow should be simple with no excessive amount of functions and fields. To ensure effectively easy, clear and concise solution, usability measures such as clarity, consistency and ease of use should be taken into account. (Nichols 2014, 13-14.)

3.4 Implementation of the UX Design

First official meeting concerning the requirements and development process of the ZAO Makeup website was held 28.3.2017 in Oulu with commissioner and her assistant. During the meeting we discussed the functionalities and requirements of the website as well as the implementation process. The first part of the process was to create an interactive User Experience Design and it was created with Mockplus prototyping tool. The prototype was sent to commissioner and it was tested and modified according to the feedback. On the meeting we decided to follow the structure of ZAO Makeup's official website and simplify it to suit our purposes. Majority of the pages got similar structure and layout than in ZAO Makeups official website. When creating an own version of brands official website, it is favorable practice to follow the guidelines of the brand to keep recognizable and consistent appearance. According to modern standards and commissioner's wishes, the website will be responsive on mobile devices. The website will be tested with tablet view, both with Android and iOS smartphones, PC and Mac devices. This is to ensure that the website is compatible with most of the devices and provide good user experience. Because web browsers have some difference in displaying the websites, the website will be also tested with the most common web browsers such as Chrome, Safari, Internet Explorer and Firefox to see that the design looks correct on every browser.

4 GRAPHIC DESIGN

Successful graphic design consists of the perfect match of content and presentation with fundamentals such as, layout, color schemes, typography and usability. Way of presenting content is vitally important and creating a graphic design for the website helps to build appealing and exciting website where the user wants to return. Grid-based design arranges the content to line up along the lines of an underlying grid which creates consistency and commits the designer to follow positive discipline. With fluid design on the web, the relative size and position of the content elements change as the user resizes the browser window. This brings challenges to the placement of the elements and the best practice is to place the most important elements above the 'fold' in the top of the screen area. Text areas and images should be in proportion to one another and clutter such as fussy background images and too many different fonts should be avoided. (Pipes 2011, 38.)

4.1 Visual Priority

Visual priority is an important part of the graphic design as it helps to give attention and help the most important parts of the content stand out. To achieve balance, one should focus on creating well-prioritized layout and focus on one thing at a time. One should decide which elements are the most important and give them more screen space as well as make sure that they are within the initial viewable portion of the screen. By dividing the design into three sections, big, medium and small, may help to define the visual importance of each element. In this division, the big section is for the most important content, medium for the next most important content and rest of the page for the less important elements and content. This division limits the amount of detail that can be included for the smaller sections. Using a division into three different sized sections, prevents from giving the same visual priority to every element of the page. It allows guidance for user's eyes around the page in a prescribed manner and improves the readability and navigation throughout the page. (Lopuck 2012, 123-125.)

To help to organize the layout of the website, it may help to break the page into different areas that can be designed separately. The illusion of spacious design can be achieved by using color fields and rule lines and this will help the independent operation of each section which is easier for eye

to digest. Other way to organize the layout, especially on mobile devices, is to think about the point where the web page gets cut off from view. This point is called fold line. However, the fold line is not the same with different devices or screens which makes it more difficult to define on the page. When defining the fold line, the most important content should be above it to ensure that the content is seen. Otherwise, the user may pass the most important content by accident. When planning the layout for the web pages, it is recommended practice to plan open space around the design elements. The open spaces give the eye a chance to rest and identify the page elements quickly which improves readability. White space, the open clear area around the design elements, gives the design a comfortable feeling. White space can be used around the most important elements to make them stand out and give the design a spacious feel. Other way to make an important element to stand out, is to let it float outside the grid. Placing the element outside the grid, adds a visual interest and attention for the element. However, white space and floating elements should be limited to certain extent and use these methods only for the most important elements that need the most attention. (Lopuck 2012, 125-129.)

4.2 Type Design and fonts for the Web

Different font types have different effect on the Web. That is why it is very important to choose the font carefully, because of their powerful effect for the whole website. Amongst all the graphic elements that go into a website, the chosen font can make the biggest impression and affect to overall feel of the website. When designing the website, there are two text types to be considered of: HTML text and graphic text. HTML text contains majority of all text on the website and graphic text is in an image format and is created for example with Photoshop. Whether the website uses either of the text types, reading the text on the computer screen can be uncomfortable on the eye. However, this can be minimized by limiting the amount of text, dividing the text into smaller paragraphs and choosing the right font, color and size. These will improve the readability of the text tremendously and decrease the work load of the eye. (Lopuck 2012, 133-134.)

When on printing, the text can be high resolution and relatively small, on computer, the monitor displays everything in small dots, pixels. Regular monitors display 72 dots per linear inch when in printing the resolution can be 150 and 300 dots per inch. The difference is significant and for this reason the same font that may be suitable for print, may not suit for the Web. In addition, other

factors, such as text and background color, line-height and limiting the column width, improves the readability of the text. If the web page contains a lot of text, dark text with light-colored background will give a pleasant contrast for the text. Black text might make the text too blunt and glaring, so it can be better to choose other, more settle, dark color for the text to make it appear softer. Increasing the line-height, the space between the lines of text, makes the text looser and more decorative while helping the eye to find the next line (see Figure 3). In addition, limiting the width of the text columns, for example to 450 pixels, helps the reader to read the text more quickly and accurately. (Lopuck 2012, 134-135.)

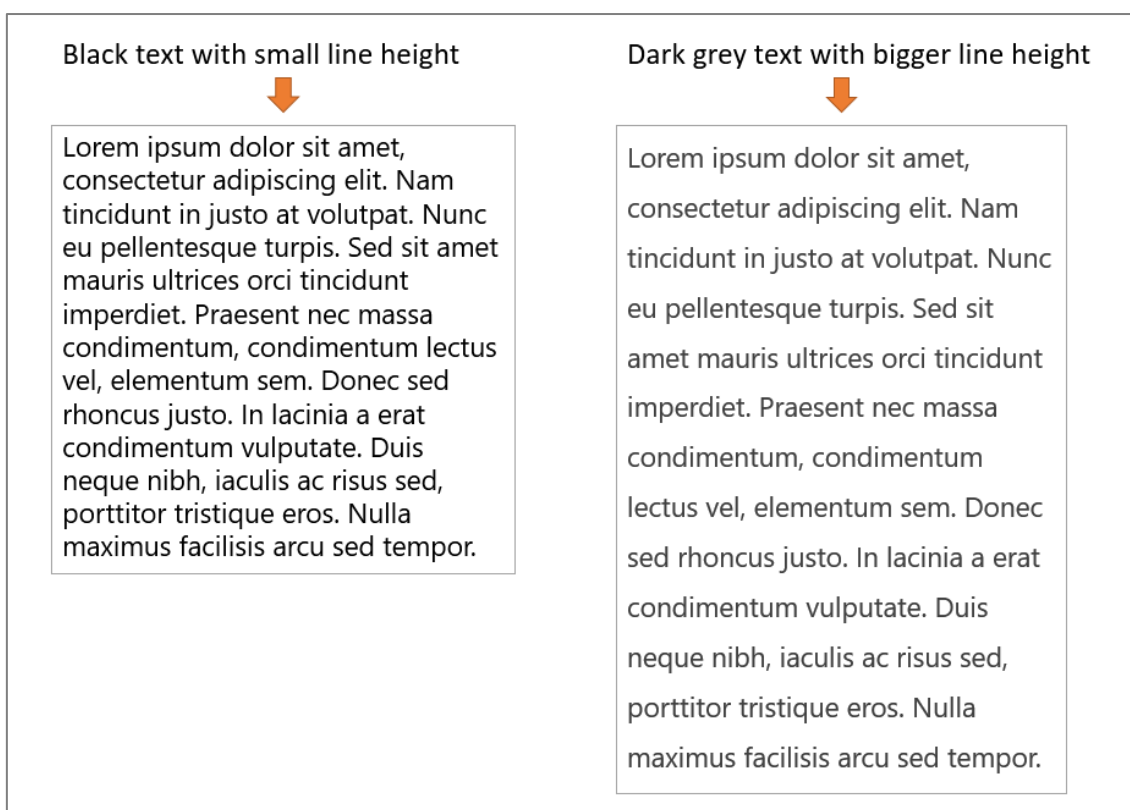


FIGURE 3. Difference between the line heights.

There are many different fonts at the present moment and some of them are more suitable for the Web than others. When choosing a correct font for the website, it can be somewhat difficult and time consuming to find a font that works well in the context. There are some fonts, such as Comic Sans, that are already out of fashion and usage of those fonts should be avoided. However, there are some general guidelines to help to select the right font. To choose the correct font, one should be familiar with difference of standard and display fonts. Standard fonts should be used for pages of body text and the more decorative fonts, display fonts, for short headings, callouts, and

subheadings. Standard fonts, such as Garamond, Times, Georgia, Arial, Helvetica, and Verdana, were designed for readability and to work well for larger blocks of text. Standard fonts work well in the smaller point sizes and in larger blocks of text because they are designed for easy readability. Font weights, such as Roman, Body, and Regular, are used for body copy. Display fonts in other hand, have font weight variants, such as Bold, Condensed, Semi Bold, Black, and Ultra. These are used for more detailed and personalized pieces of text and they suit the best for headings and subheadings. Display fonts engage people's attention and using them in long texts should be avoided. (Lopuck 2012, 136-137.)

Other guidelines for choosing the correct font are to consider the thickness and difference between serif and sans-serif fonts.

4.3 Colors for Web

Colors work differently on computer screen than in the print. For that reason, it is important to understand the roles that color has in the website and how the colors work on the Web. Colors seen on the computer monitor is a RGB color system. This system uses only colors red, green and blue, combined together to create other colors, including black and white, on the monitor. RGB color is an additive color process when CMYK printing process, that use Cyan, Magenta, Yellow, and a Key color, black, is a subtractive color process. The method used to mix two or more different colors together to create a new color in any medium, is either additive or subtractive process. These terms refer to the way the color white is produced. The reason that printing is a subtractive color process, is because the color white is achieved by subtracting all colors from the page. To create white on a computer screen, the display mixes all three RGB colors together at full strength which makes it additive color process. Even though the computer's RGB system is capable of mixing over 16 million different colors, the monitor may limit the display of these colors. (Lopuck 2012, 151-154.)

Color theory

Color theory allows to understand why some color relationships are successful and how to create effective color combinations to communicate information. The goal of color theory is to produce

pleasing color combinations and harmony to achieve intended reaction. Choosing a color scheme and palette for the design can have positive impact and bring best results. This can be done by choosing known color combinations or creating groupings that are based on research or attributes of the target audience. To help to choose proper color palette, there are numerous color wheels and models to visually compare colors, how they interact with other hues and show the relative relationships between specific hues. Colors are categorized depending on their placement on the color wheel and on how they react to other hues. To be able to choose pairings with predictable visual results, it is important to understand the most common color groupings. Basic color wheel (see Figure 2.) includes primary colors red, yellow, and blue, secondary colors violet, orange, and green and tertiary colors that are located between primary and secondary hues on the color wheel. Furthermore, color wheel includes also complementary hues, that are any two colors located directly opposite or across from each other on the color wheel, and split complementary hues, which refer to a primary color and two secondary colors that are located adjacent to the hues' complement on the color wheel. (Shering 2012, 17-19.)

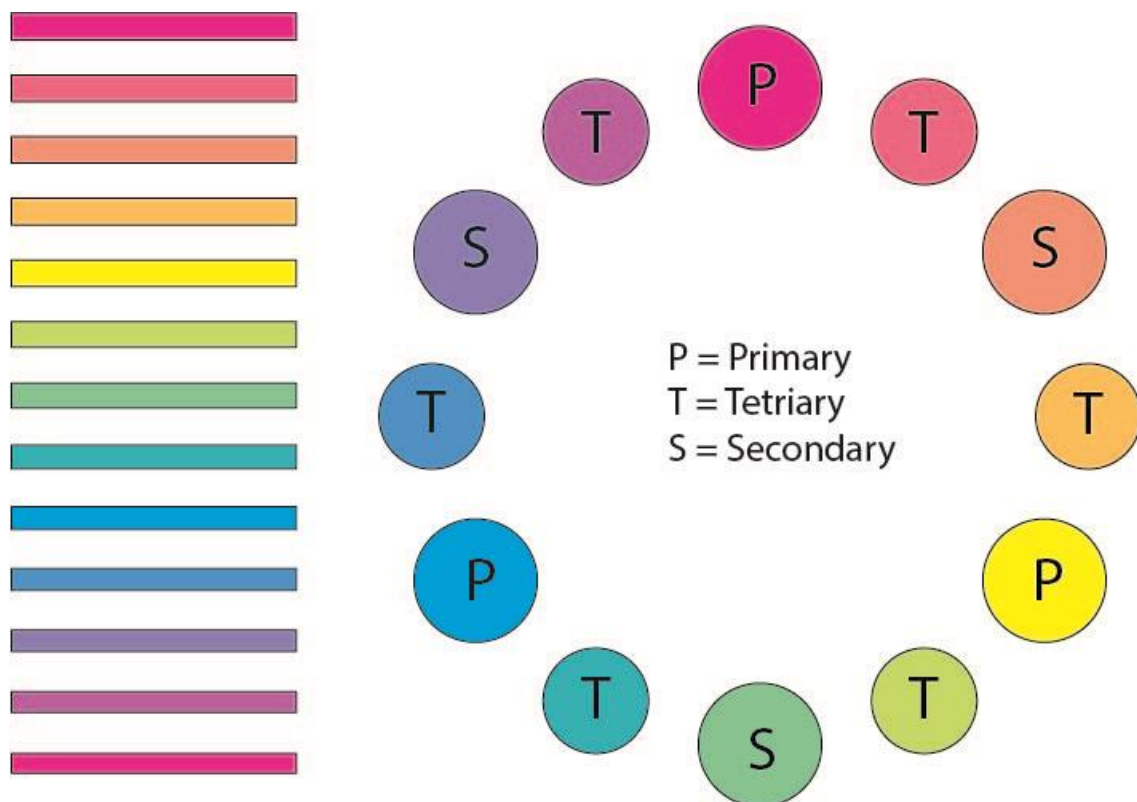


FIGURE 4. Color wheel.

4.4 Implementation of the Graphic Design

Graphic Design for the ZAO Makeup's website was created after the User Experience Design was approved with the commissioner. ZAO Makeup's official website has dark color scheme but they had published posters and images (see appendix 1) with their new upcoming color scheme. The new colors were decided to use for the ZAO Makeup website since the ZAO Makeup's official website could be updated to its new appearance in the near future. The colors were picked from ZAO Makeup's new posters and other materials as well as the color scheme of the website to be used in the Graphic Design as well as on the website. The actual look of the website evolved during the project, but the Graphic Design gave base for the visual look of the website. The difference between the visual look of the final website and Graphic Design were remarkably insignificant that the Graphic Design was not updated to match exactly the look of the final website. The structural solutions affected to the visual look the most by changing the layout of the product pages. Graphic Design was created with Adobe Illustrator and the width of the design template was set to 1060 pixels to have 960 pixel width for the content and 50 pixel extra on both sides of the design. 960px width serves majority of the users whether they use large desktop display or small mobile display. Color mode was set to RGB to ensure the color compatibility with the Web. (Patterson, J. 2012, cited 25.5.2017)

Image slider and introduction text was placed above the fold line to ensure that the most important information is seen first when entering the website. Navigation was simple, proportioned and followed ZAO Makeup's international websites layout. The focus group of the website are mostly women interested in natural makeup products, so the colors of the site were designed to match the preferences of the focus group while keeping the colors soft and pleasant. The design was created for all individual pages and one-page design example for product page. The font in the design, and the final website, was set to Arial which is easy to use Google Font.

5 DEVELOPMENT OF THE WEBSITE

Current developers have a wide range of tools to use to build functional and user-friendly website as well as help with version control, installation, file management and extending the theme. This chapter describes the development of website as well as tools, WordPress as content managements system, pages and layout of the website, testing and responsiveness and website launching and deployment.

5.1 Tools

Sass

Sass, syntactically awesome style sheets, is a meta-language on top of CSS that is used to describe the style of a document cleanly and structurally, with expanding the abilities of CSS. Sass includes more features to CSS such as variables, nesting, mixins, inheritance and partials which makes stylesheets easier to maintain. This makes managing of the stylesheet more efficient and makes its structure organized as well as helps to avoid unnecessary repetition of the code. (Frain 2013, 37.)

With Sass one can store different values to variables, which allows more efficient way to reference a value than with just CSS. Using variables can decrease unnecessary repetition and make managing the CSS easier. When using variables, the value is in one place and variable is used instead. This allows easy modification and value needs to be changed only in one place unlike in CSS where value should be changed in several places to achieve desired outcome. Color conversions can troublesome, but Sass provides color function to convert certain color to RGBA. Nesting allows rules to be nested within one another, which keeps the code clear and reduces CSS selector repetition. For responsive design, Sass provides a media query (MQ) mixin that allows placing the media queries wherever they are needed. Mixin allows three predefined width variable values, xs, s and m, to be used within the mixin. Sass can be configured to compile the CSS to compressed format as well as number of other formats. When Sass file is saved, it gets automatically compiled into compressed CSS. This makes is production ready and compresses it in the smallest possible file size. (Frain 2013, 31-36.)

Node.js

Node.js is a platform for developing web applications, application servers, any kind of network server or client, and general purpose programming. It is designed to build scalable network applications through an ingenious combination of server-side JavaScript, asynchronous input/output, and a synchronous programming. Node.js is built around anonymous functions of JavaScript and a single execution thread event-driven architecture. Fundamentally, Node.js is a standalone JavaScript virtual machine, with extensions and clear focus on application server development. It is implemented around a non-blocking input/output event loop and a layer of file and network input/output libraries, all built on top of the V8 JavaScript engine. Although, Node.js supports developing servers or clients for any network protocol, the biggest use case is in regular websites. On regular websites, Node.js is used in a place of a technology such as an Apache/PHP or Rails stack but it can be used also on existing website as a complement. As an example, adding real-time chat or monitoring to existing websites can be efficiently done with the Socket.IO library of Node. Unlike normal JavaScript, Node writes JavaScript applications outside web browsers. There is no Document Object Model, DOM, nor any other browser capability built into Node, but a DOM can be added using JSDom. Node's bundled modules provide capabilities such as command-line tools, DNS lookup, file system access and control functions to see child processes. (Herron 2013, 27-28.)

Git

Git is a version control system that is capable of recording the changes made to a file or a set of files over a time period and it allows to go back in time to recall a specific version of the file. More formally, Git is a software package that will monitor the files for changes and allows tagging the changes at different levels when initiated. Tagged stages can be revisited whenever needed in future. After installed and initiated, Git creates a local directory at the same place where files locate and uses it to manage the entire history of the changes made into the files. Version control system in an essential part of efficient workflow and it will provide solutions for file management with its power, simplicity and ease of use. In addition, version control system will reduce time and effort put into present solutions. Git shows its true power when it comes to making considerable amount of changes to the existing content. If something unfortunate happens after committing changes and

mistakes are made, Git allows reverting the content of the document back to a particular older state. (Somasundaram, 30-31).

The architecture of Git is adjusted for better speed, performance, flexibility, and usability. Git is proven to be multiple times faster than its competitors and it takes only few seconds for Git to handle several million files. To perform efficiently, Git sees a relation between the files and works upon it. Instead of storing the difference between versions of each files, Git takes a snapshot of the entire set of the files. Although it takes a snapshot each time that a version is created, it stores only a reference to that file that points to the previous snapshot in the new snapshot. The security of Git is based on check-summing using an SHA-1 hash before anything is stored and after that the document is referred to using that checksum. This ensures that it is impossible to change the contents of any file or directory without Git knowing about it. (Somasundaram, 38-41).

5.2 WordPress

After expanding from the most-popular self-hosted blogging software to extended content management system built on top of MySQL and PHP, WordPress has become remarkably portable as well as simple to install and operate. WordPress is easy use without being a systems administrator, developer, HTML expert or design aesthete. WordPress can be extended and tailored for a wide variety of applications since it has been developed using a powerful set of Internet standard platforms. (Stern 2010b, xxv.)

Theme

WordPress currently has three premade themes: Twenty Fifteen, Twenty Sixteen and Twenty Seventeen (see figure 5). However, none of these themes suit for the projects purposes because of their looks and functionalities, so another, Bootstrap based starter theme Sage is used instead. Sage is created by team called Roots and has broad documentation of the functionalities and development of the theme. Sage is a starter theme with a modern front-end development workflow and includes the latest version of Bootstrap framework. Sage utilizes Git's gulp setup that enables writing stylesheets with Sass, check JavaScript errors, optimize images and synchronized browser testing. Front-end packages, such as JavaScript frameworks, can be added with Bower package manager that automatically compiles the packages to theme assets. Sage manages the template

inheritance with theme wrapper that manages the markup by one file instead of being distributed across all template files.

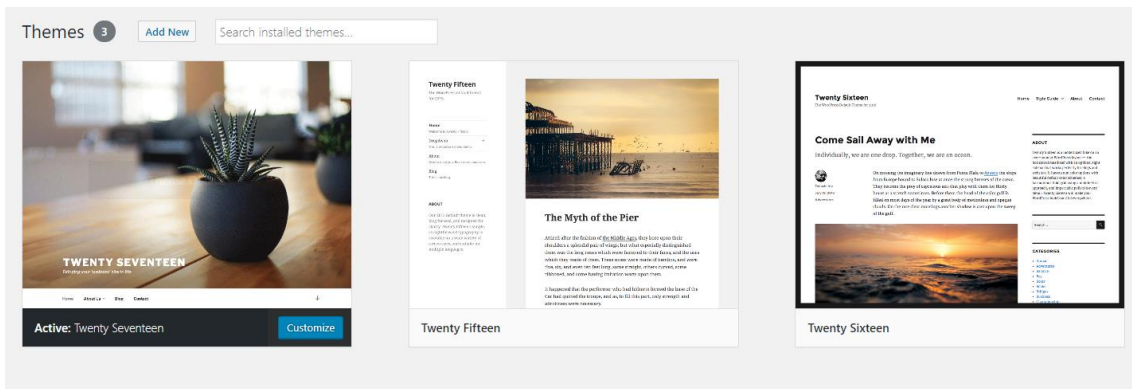


Figure 5. WordPress premade themes.

Plugins

When developing a website with WordPress, several plugins can be useful for the developer and reduce the workload. Advanced Custom Fields (ACF) extends the functionalities of WordPress and allows to add extra content fields for the backend and the value of the field can be seen on the frontend. To show the value on frontend, one must call the field on the page template with a PHP function or short code. ACF has various field types such as text, file, image, Google map, date picker and flexible content. The fields can be grouped and sorted to templates that are easy to save for later use. (Advanced Custom Fields 2017, cited 18.10.2017.)

Page Builder by SiteOrigin is a simple content creation interface that gives the user ability to build responsive grid-based pages that adapt to mobile devices. Page Builder has drag and drop interface that enables easy content management and building for the user and provides tools without needing extensive knowledge of coding languages. Page Builder can be integrated with any WordPress theme which ensures that design can be changed without losing any of the content. WordPress has its own widgets which Page Builder utilizes, by integrating them with its' own add-ons. These add-ons extend the functionalities of the builder and provides more tools, possibilities and flexibility for the user. (SiteOrigin 2017, cited 3.10.2017.)

Contact form 7 is a free WordPress plugin for creating contact forms. The usage of Contact form 7 requires only basic knowledge of WordPress administration and allows the administrator to manage

multiple forms and customize the forms and mail. The form has qualities such as Ajax-powered submitting, CAPTCHA and Akismet spam filtering. (Wordpress.org 2017g, cited 3.10.2017.)

In the modern Web, search engines have major role in directing traffic to the website and lack of proper SEO can be costly for the business. There are plenty of tools to improve search engine optimization (SEO) and one of the leading ones are SEO plugins. Yoast SEO is a search engine optimization plugin for WordPress created by Yoast. Although, WordPress itself is technically good platform for SEO, it can still be improved with plugins such as Yoast SEO. The purpose of the plugin is to take care of technical optimization and assist to write improved SEO friendly content. Yoast SEO creates a snippet preview for posts and pages, in which one can see a rendering of the optimized search result of individual post or page. By updating the meta data with snippet preview, one can increase search engine rankings and click through rate for organic search results. With plugins Page Analysis functionality, one can check if there are images with relevant alt tag on the posts, whether the posts are long enough, whether one has written a meta description and if that meta description contains relevant keyword and if posts include any subheadings along with other functionalities. In addition to, plugin allows one to write meta titles and descriptions for all tag, category and custom taxonomy archives with the option to further optimize those pages.

By default, the plugin will tell search engines to index all the pages, including category and tag archives, but only show the first pages in the search results. Likewise, one can control which pages Google shows in its search results. Plugin can also generate XML sitemap for the website with its advanced XML sitemap functionality and notify Google and Bing of the sitemaps existence. Images in the posts and pages are included in the XML site map for improved image visibility on search engines. Considering the importance of the social media presence in modern society, Yoast SEO covers social media integration and allows integration of social media accounts related to the website as well as Facebook OpenGraph implementation and Google+ sharing tags. (Wordpress.org Suomi 2017, cited 16.10.2017.)

Master Slider is a WordPress plugin that provides simple way to build, organize and display content slides in existing WordPress theme. Master Slider includes 8 starter templates which can be used to create a slider. Slider can also be built with own custom design. Master Slider is built to be responsive and designed to work on any screen size and supports many different viewing environments. In addition, sliders responsive features support touch swipe navigation both on iOS and Android devices. Master Slider incorporates the latest HTML5 and CSS3 techniques to provide

smooth transitions of the slides. The customization options of the plugin allow controlling image aspect ratios, drag and drop interface for easy slide ordering, smart slide preloading, slide controls, supports SEO and is free of charge. (Masterslider 2017, cited 13.11.2017.)

Coming Soon Page & Maintenance Mode by SeedProd is a plugin that can be used to create a simple coming soon page or maintenance page. The features of free version of the plugin includes features such as responsiveness, customization, multisite support and it uses WordPress best practices. The coming soon page is easily customizable and can be customized with CSS and HTML. The website can be developed privately when logged in to WordPress while the users trying to access the website see only the coming soon page when the coming soon page mode is enabled. This allows building the website on the hosting server safely and private. (Wordpress.org 2017h, cited 13.11.2017.)

Duplicator is a plugin that gives WordPress users the ability to migrate, copy, move or clone a site from one location to another which serves a simple backup utility as well. Duplicator manages efficiently standard WordPress migration and WordPress backups with zero downtime. The plugin enables pulling down a live site to localhost for development, manually backup a site or parts of it, duplicate a live site to a staging area or vice versa and bundle up an entire WordPress site for easy reuse. Duplicator creates a package that bundles all the site's plugins, themes, content, database and WordPress files into a zip file and the package can be used to migrate the site to any location. (Wordpress.org 2017j, cited 14.11.2017.)

What the File is a WordPress plugin that adds an option to toolbar showing what file and template parts are used to display the page currently viewed (see figure 6). This is convenient way to see the template parts that the page is using and see if the page uses the correct template. Plugin can be helpful when working with page templates and considering template hierarchy. What The File supports both BuddyPress and Roots Theme based themes. (Wordpress.org 2017i, cited 13.11.2017.)

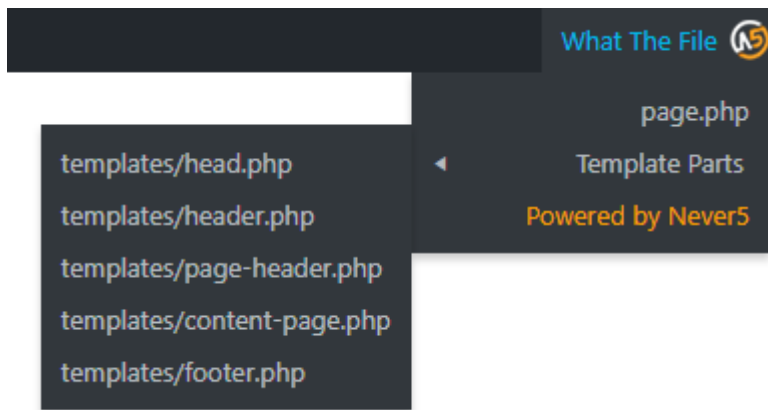


FIGURE 6. What The File toolbar. (Cited 13.11.2017)

EWWW Image Optimizer plugin will increase the site speed by optimizing the images if the website. Optimizing images will save storage space and bandwidth as well as improve conversion rate and search engine rankings by speeding the page loading. Plugin will automatically optimize new images uploaded to WordPress, optimize all previously uploaded images and optionally convert the images to the best file format. For faster and more efficient image optimizing, the plugin supports bulk optimize feature that optimizes all images if the site at once. (Wordpress.org 2017k, cited 14.11.2017.)

Another plugin for images is Regenerate Thumbnails. The plugin allows regenerating the thumbnails for the image attachments. Regenerating thumbnails is necessary after changing image dimensions in WordPress settings or registering custom image size. The plugin allows regenerating the thumbnails for all image uploads, individual image uploads, or specific multiple image uploads. (Wordpress.org 2017l, cited 14.11.2017.)

Custom post type and taxonomy

WordPress allows registering new post types as custom post types with `register_post_type()` function. This function allows one to define a new post type by its labels, supported features, availability and other specifics. Registering custom post types can be done manually or with a plugin. (Wordpress.org 2017f, cited 18.10.2017.) For the learning and familiarity purposes, in this project custom post type is created manually by adding the function code to `functions.php` file with `register_taxonomy()` function for custom taxonomy. Taxonomy is a way to group posts together according to various characteristics of the posts. Taxonomy consists of terms such as individual group names and in this project the terms of the taxonomy are product categories. Creating a

custom post type and taxonomy, gives more flexibility and clarity for creating products and allows possible further addition of regular posts for the site. After successful registration of custom post and taxonomy, new tab in WordPress dashboard options is added (see figure 7). (Wordpress.org 2017e, cited 18.10.2017.)

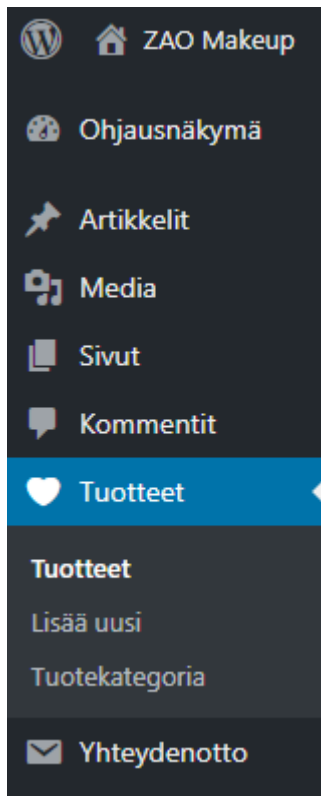


FIGURE 7. Dashboard view of custom post type.

5.3 Pages and layouts

Home

Home page works as a landing page and is usually the first page of the website that new user will land on. Home page should be appealing and informative for the user and engage the user to explore and return the site in future. On Zao Makeup Suomi website the home page includes an introduction part where general information about the makeup line is presented with certification logos. In addition, Zao Makeup Suomi has a Facebook page that is integrated to the home page as well. Social media integrations on the website creates social aspect and engages people as well as brings more traffic to the website. The original plan of the website included also an Instagram integration (see appendix 2), but it was removed due to the lack of proper Instagram feed plugin.

Products

The main section of the website are the products. On ZAO Makeup Suomi, products are implemented as custom post type labeled "tuotteet" with custom taxonomy "tuotekategoria" as product categories. Products are categorized in six different categories; 'huulet' as lips, 'kasvot' as face, 'ihon puhdistus' as cleansers, 'kynnet' as nails, 'silmät' as eyes and 'tarvikkeet' as accessories. These categories are custom taxonomies which are related to products custom post type. Single product page includes shades, product information, ingredient list, link to the web shop and product image. Products in accessories category uses different page template and layout because of the differences in content.

Tutorials

Tutorials page includes few tutorials as an embedded YouTube videos from Zao Makeup Official channel. These videos are chosen randomly from the channel and at the end of the page is a link to the YouTube channel from where user can find more videos. Videos are added by using the page builders' video -widget where the URL of the video can be added, and widget automatically embeds the video to the site. Tutorials are on the page to display the makeup looks that can be created with Zao Makeup products. To keep the page decent length, only three videos are embedded and if the user wants to see more videos, they can use the link to direct them to YouTube.

Retailers

Retailers page includes a listing of Zao Makeup retailers in Finland. Retailers are in alphabetical order according to the city and includes both name and possible link for the retailer's website or Facebook page of the retailer. In the original plan of the website and user experience design (see appendix 3), retailers page included a search field which updates the list of the retailers according to user input. However, the search field was left out from the page since the implementation would have required more advanced skills and the ready-made code or plugins that were found, lacked the proper functionalities and flexibility. Page builder set its own advantages and restrictions so

compatibility with ready-made JavaScript plugins was weak. List of the retailers is implemented to be clear and alphabetical order keeps logic in finding the retailer.

Contact

Contact page has a small paragraph for instructing the user to use contact form if the user is interested of becoming a retailer or contacting via email in other matters. Contact form for the page is created with Contact Form 7 plugin and added to the page with shortcode. Contact form includes fields for company name, company ID, name of the person, phone number, email and message from which name of the person, phone number and email are required fields. Required fields secure that the user fills in the crucial information that it needed for further contact and narrows the room for error.

Links

Links page has images of the certification logos, name of the certification and links for the original website of the certification. Link to Zao Makeup Suomi Facebook page and Instagram are on the page as well. Purpose of the page is to provide easy access for the user to read more about the certifications and engage on social media. The page replicates Zao Makeup's own official website and includes same information that the official page.

404

404 -page is the dead end of the website where the user lands if the page that they were looking for do not exist. 404 -page is important to have on website and it should inform the user that the page they were looking for might be missing and redirect the user to either on previous page they were on or to the home page of the website. It is a good practice to include an error message as well as a link to alternative page. This improves user experience and

5.4 Testing and responsiveness

Testing the responsiveness of the website can be done in few different ways. The best and the most reliable way is to test the website with real mobile devices. However, having a wide range of different mobile devices is a bit unrealistic for average person's testing needs and circumstances. The other option for testing, without requiring actual mobile devices, is to use developer tools provided by the browser the one is using. Google Chrome has range of tools for developers to test website on browser and to test websites responsiveness, one can use the viewport controls. The viewport controls allow testing the website against a variety of devices with full responsiveness. One can test the website either with responsive or specific device mode. Responsive mode allows viewport resizing without restrictions, when specific device mode emulates certain device characteristics and locks the viewport to the exact viewport size of a specific device. (Google Developers 2017, cited 2.10.2017.)

Mobile navigation

One of the major aspects of responsive design and development is mobile navigation. Mobile navigation will be implemented according to modern mobile navigation requirements and desktop navigation will be used as a reference. Often, responsive mobile navigation will be built as its own navigation which will be hidden on desktop view and shown only mobile devices. Similarly, the desktop navigation will be hidden on mobile. Mobile devices set challenges for navigation due to the limitations of the small screen and need of prioritizing the content over the UI elements. Hamburger menus can accommodate a large number of option and is well suited for browse-mostly sites. Navigation bars and tab bars take space of the page and is suited best for the navigations with only few navigation options. Hamburger menu can utilize different variations of transitions and structures when navigating through different levels of the navigation. Accordion is convenient option for hamburger menu structure. Accordion enables to see all the levels of the navigation while navigating through the levels (see figure 8). This allows the user to navigate back easily and shows the exact place where they currently are in the navigation. (Budiu 2015, cited 14.11.2017.)

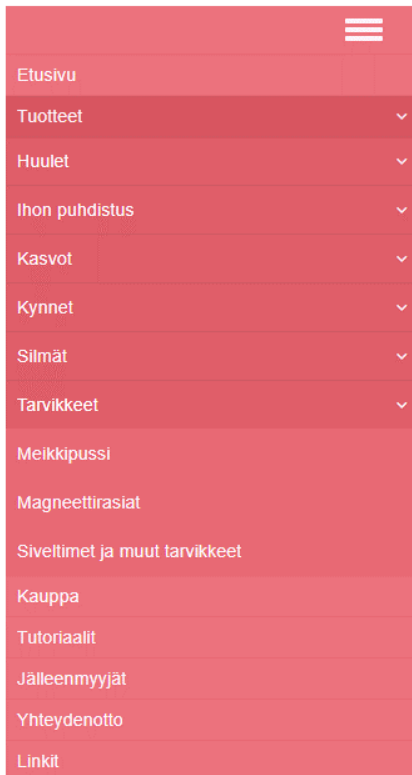


FIGURE 8. Mobile navigation of Zao Makeup Suomi. (Zao Makeup Suomi 2017, cited 14.11.2017)

5.5 Launching and deployment

The launch date of the website was set to 16.10.2017. Before launching the website, the possible obstacles were discussed, and final decisions were made. The commissioner assisted adding the products to the website after the layouts and templates were created. Mobile navigation was set up and responsive issues solved before the launch date. The commissioner wanted to track the traffic of the website and collect analytics with Google Analytics, so it was added to the head element of the site. Google Analytics gives an insight of the users of the website, tracks traffic and creates analytical conclusions combining all the collected data from the website. Commonly before launching, the website may locate locally on developer's computer, on development server or different domain, but this project was transferred to its final domain from the beginning. The theme is set up locally and then duplicated to the hosting server with Duplicator -plugin. This allows the commissioner to access the website anytime to see how the development has progressed and request modifications if needed. Moving the site on the final location in the beginning, can prevent possible transfer issues than when moving the website just before launch.

The final meeting with the commissioner was arranged on 17.11.2017. The subject of the meeting was to discuss and evaluate the outcome of the project as well as get familiar with the management of the website. Before the meeting, material about updating and managing the website was prepared and delivered for the commissioner. The solutions chosen for the project were discussed with the future needs.

6 CONCLUSION

The main objective of the thesis was to build functional WordPress based website for Zao Makeup Suomi and the commissioner. WordPress was chosen for content management system based on the commissioner's wishes and her previous experience with WordPress and its management. Familiarity with WordPress from the development and management point of view for both parties prepared common ground to start the project. As the final product, the final website built as planned was delivered for the commissioner. Our mutual aim was to build easily maintainable, user-friendly and visually pleasing website that serves Finnish consumers and retailers of Zao Makeup.

Website was built with Bootstrap based starter theme Sage. Sage provided new learning experience for the development process with its modern technologies and possibilities. The project included multiple new aspects to get familiar with and brought valuable challenges. The project started from creating an User Experience Design which obligated to study the subject and broaden the knowledge base of the subject. Internet and books provide abundance of information and tutorials as well as tools to implement the design. The task was important for the project, since it provided the base and structure for the website. Creating an UX design expanded the understanding of the design and planning aspect of the website development.

Second part of the project was to create a Graphic Design for the website. Graphic Design shows the visual look of the website and helps to understand how the final website will look like. Before creating the Graphic Design, the tools and the subject obligated to study the matter. The learning experience were to get familiar with design principles and tools as well as search inspiration and reference for the design. The design had to follow certain guidelines and replicate Zao Makeup's international website and marketing material which gave the color scheme and layout for the design. Designing the visual look for the website improves creativity, the usage of the tools and design knowledge base. It provides more confidence to create such designs in future and embrace the creativity.

The final part of the project was to implement the actual website. The implementation started by installing WordPress and setting up the theme. The starter theme Sage, that were used in the project, required knowledge of Git, Node.js and Sass which were unfamiliar technologies in the beginning. Before setting up the theme, these technologies had to be studied as well as the

documentation of Sage and installing instructions. After the theme and WordPress were set up successfully, the actual building process started. Tasks were to set up the styles, modify the templates, install plugins and add the content for testing. Building a website from scratch requires both technical and logical understanding of the subject as well as creative thinking. Technical understanding is needed when planning the website to define the requirements and during the implementation to use correct solutions. Logical thinking has a big role when solving problems and finding the best way to implement parts of the website to ensure pleasant user experience for both users and maintainer of the website. Building a website is also creative process and it gives great power for the developer to bring out their own opinions and visions. It is important to maintain good communication with the client and solve problems together. During the project few things such as search option for retailer's page and Instagram feed for the home page were left out from the final website since they required more advanced developer skills. The original plan for retailer page search bar was unsuitable with the layout solution so it was left out. Fortunately, the retailer list is decent length and clearly structured which makes the user experience pleasant even without the search bar. The Instagram feed was left out due to its manual updating needs. This shows that sometimes compromises are needed to get desired results.

7 DISCUSSION

As whole, the thesis was extensive learning process with wide range of topics to consider and discuss before, during and after the development process. For me, this project was the very first project developed from scratch with starter theme and limited knowledge. Overall the development process was educational but also more demanding than thought. I had to learn a lot of new things to be able to deliver desired results. Although, WordPress was familiar content management system for me and I was able to work with it confidently, the tools used to build theme with Sage, was unfamiliar for me and there was a lot to learn before and during the development. The greatest challenge during the development was limited functionalities and needed requirements. To implement the product pages for the website, was the most challenging part of the development. To present the shades of the product as wanted and build the products easily manageable, needed some creative thinking to come up with working solution due to restrictions set by Page Builder plugin. As the result, Advanced Custom Field plugin was used to create custom fields for product image, ingredient list, product description and product link to webstore. The Page Builder was used to create a layout for shade images and names. Page Builder gave challenges to show the content logically on mobile devices and I had to overwrite some styles to create desired results. To allow the correct layout solution, the product pages use its own page template which is restricted to be used only on product pages.

Another challenge was to create mobile navigation. An international website of Zao Makeup is not responsive on mobile devices and therefore there was no reference of how the mobile navigation should look like or function. In this case, I decided to utilize Bootstrap and its classes defined for mobile and accordion. I decided to implement accordion navigation since it is commonly used as mobile navigation and suited for the multi-level navigation purposes. To implement mobile navigation, I had to extend my skills on JavaScript and jQuery to produce functional navigation and use media query to use it only on mobile.

The unfamiliarity with the technical tools such as Git and Node.js as well as unfamiliar starter theme hindered the implementation process in the beginning and stretched the schedule, but I learned a lot through trial and error. I was also working full since the beginning of summer, so I was able to work with this project part-time. Fortunately, I was able to get support from my colleague at work

who is experienced with Sage and the tools as well as has wide knowledge base from web development field. The challenges faced during this project were highly valuable and boosted my confidence with Web Development. The project gave me acquirements to work on Web Development field and become professional Web Developer in future.

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APPENDIX 1. ZAO Makeup poster with new design. (ZAO Makeup 2017, cited 8.5.2017)

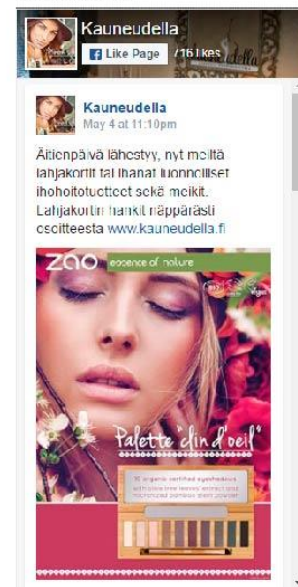


Lorem ipsum dolor sit amet, consectetur adipiscing elit. Aenean lobortis mattis mauris, quis venenatis dui congue eget. Donec vel cursus urna, quis tincidunt justo. Interdum et malesuada fames ac ante ipsum primis in faucibus. Mauris vel blandit nunc, ac pretium erat. Sed sollicitudin gravida neque, vel blandit elit pharetra congue. Sed et nibh tempor, pellentesque nisi ut, lacinia turpis. Etiam ut libero nunc. Donec sit amet laoreet sapien. Nam sed ligula nec massa maximus maximus. Proin lacinia sapien vitae interdum mattis. Fusce elit sem, euismod quis gravida quis, mattis non leo. Donec finibus urna eu massa euismod consequat. Nulla elementum justo mi, non volutpat massa tempor nec.

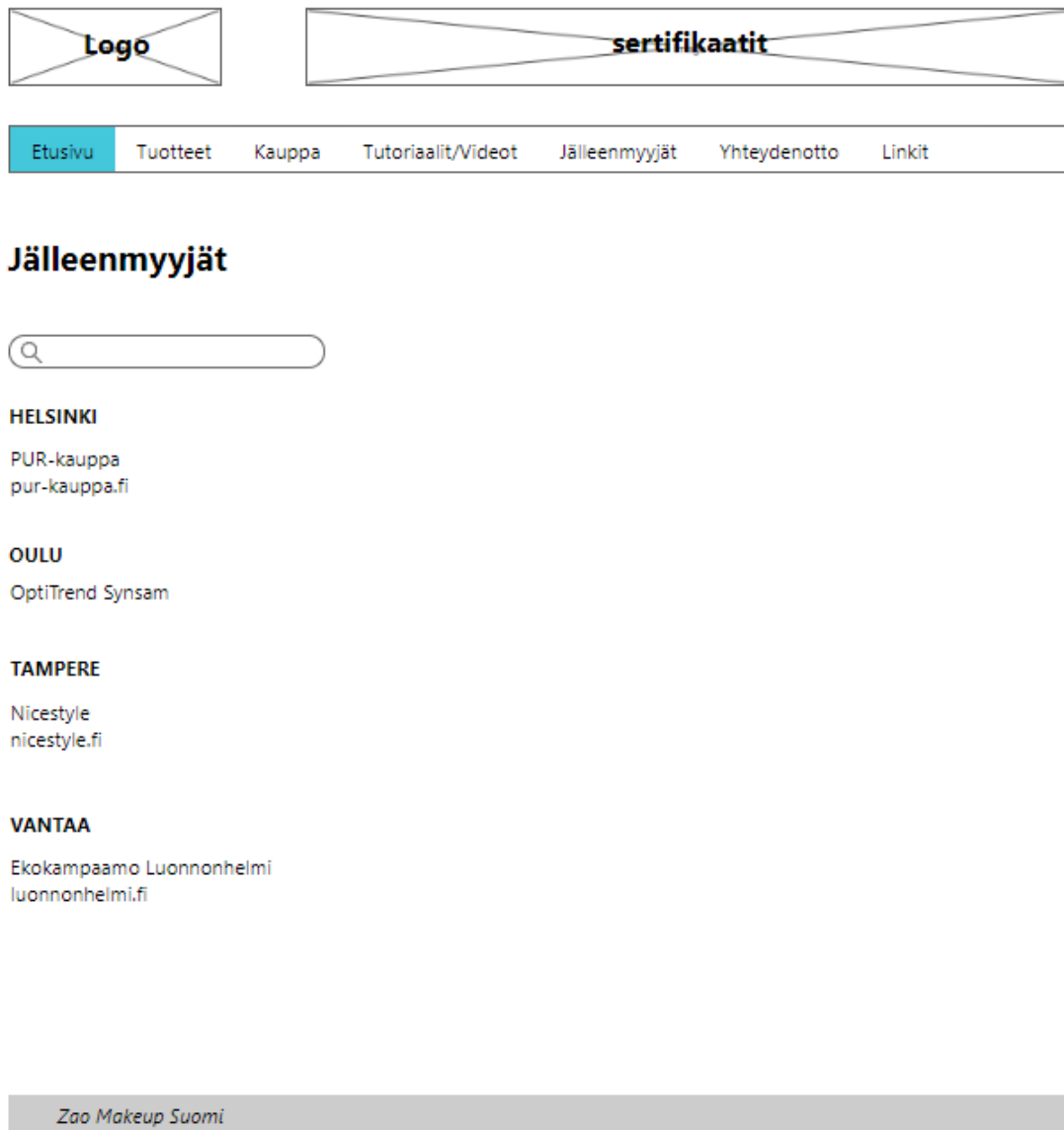
INSTAGRAM



FACEBOOK



APPENDIX 2. Original Graphic Design of the homepage for Zao Makeup website.



APPENDIX 3. Original User Experience Design of the retailers page for Zao Makeup website.