

Technical Association of the Graphic Arts

Ryerson University Student Chapter © 2021

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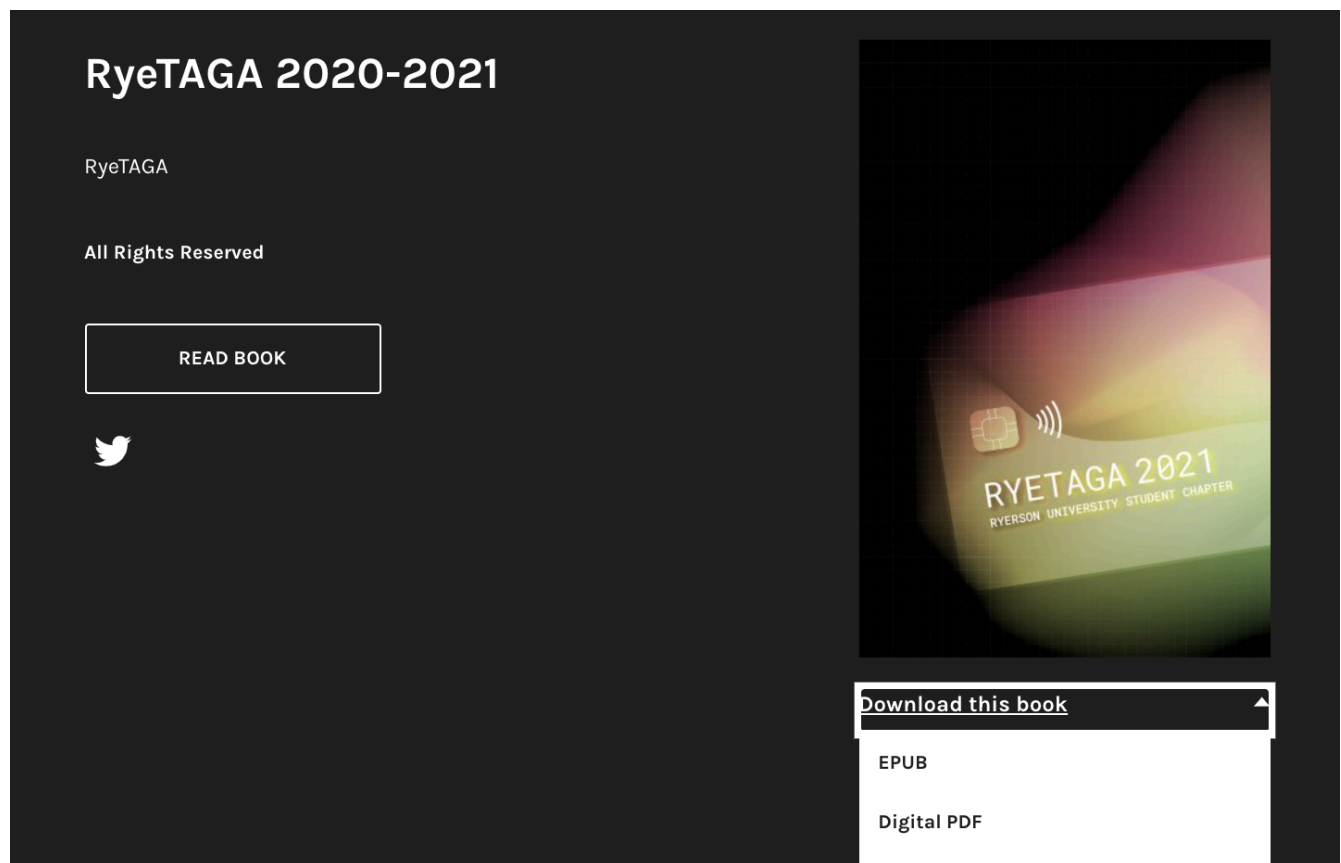


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ABOUT THIS BOOK

This year's 2021 RyeTAGA student journal was created completely digitally. As we expect readers will be viewing the publication on a variety of different devices with varying screen sizes, we wanted to offer multiple different versions to create an accessible reading experience. This year's publication has been created so that it can be viewed on a web browser, ePub, and PDF (digital and print).

Please note that this publication is best for web viewing.



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A LETTER FROM...

OUR FACULTY ADVISOR: MARTIN HABEKOST



Dear RyeTAGA student chapter,

This year's competition for the Kipphan Cup is very different than previous years. Due to the global pandemic there will be no conference to travel to, no fellow students from other universities to meet, and no presentations from leading researchers in industry and academia.

Nevertheless, your combined efforts resulted in a fantastic looking online publication. Countless hours went into this publication, especially figuring out how to get web publishing software to do what you wanted it to do. The dedicated team made this publication possible. The marketing and social media efforts in the

current situation also showed that RyeTAGA is active and doing well.

Hopefully in 2022 the RyeTAGA student chapter will be able to travel to the annual technical conference of TAGA and present their student journal to all conference participants.

I enjoyed working with you in the last two semesters and hope that some of you continue to be part of the RyeTAGA team.

A handwritten signature in black ink, appearing to read 'Martin Habekost'.

Martin Habekost, Dr. rer. nat.

RyeTAGA Faculty Advisor

OUR PRESIDENT: AFRAH IDREES

Dear TAGA,

The RyeTAGA student chapter experience of 2020-2021 has truly been like no other. Working under the restraints of a global pandemic, we were faced with decisions to make regarding the presentation of our usually printed and uniquely bound book. Being a part of the team last year, I witnessed first hand just how much thought goes into the physical production aspect, but this was not completely lost this year.

Though this year's publication takes on a digital, ePublication format, much consideration and problem solving was necessary to navigate the intricacies of software on the web. As a collective, RyeTAGA was able to make use of a multitude of programs, including PressBooks, iBooks, and Adobe After Effects for animation. These were tools that we never would have considered using in the past, but have elevated our journal and spun it in unique ways.

Being the President this year was an honour, as weekly Zoom meetings between the team were always a place of dedication and good spirit. It was a pleasure to watch the directors adapt to the circumstances that we were placed in, and I truly believe that this journal is exemplary of RyeTAGA's ability to rise up to innovation in the face of a challenge. With sincere pride, the Ryerson University Student Chapter presents to you our first ever digital publication.



Afrah Idrees

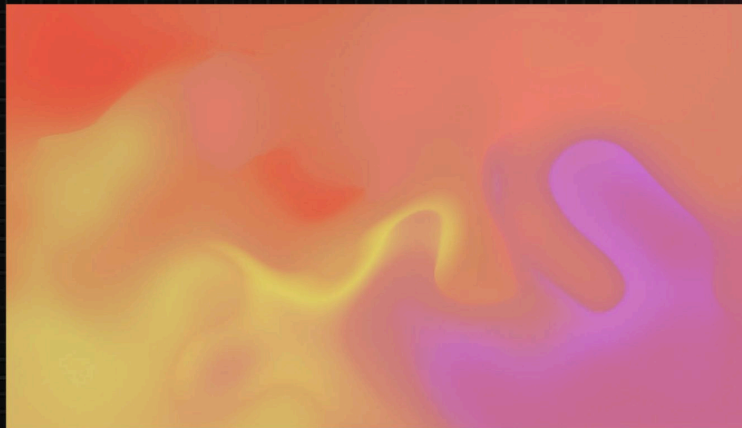
President, RyeTAGA



01

SCANNABLE PRINT TECHNOLOGIES: UNDERSTANDING CONSUMER PERSPECTIVE USING THE TECHNOLOGY ACCEPTANCE MODEL

JANET CHEUNG



ABSTRACT

Technology has evolved immensely over the years. Namely, the widespread adoption of the internet and smartphone devices has had an immense impact on the way that society receives and digests information (Asare & Asare, 2015). According to Statista, smartphone users have exceeded three billion and are expected to grow by several hundred million in the coming years (Holst, 2019). To adapt to this reality, scannable print technologies have emerged and many industries — including packaging — have adopted the advancement.

To adhere to rapid technology developments, scannable print technologies have expanded to reach various mediums, primarily in forms of quick-response codes, augmented reality, and near-field communication tags. While they all fall under the umbrella term of scannable technologies, they are all tasked with diverse roles and when used as marketing tools, may be beneficial or harmful under different circumstances.

This thesis aimed to use a mixed method research approach to better understand the opportunities and challenges of scannable print technologies. Further, conclusions were drawn to determine what should be considered when using these technologies as a marketing tool for product packaging.

LITERATURE REVIEW

The Oxford Dictionary defines packaging as “materials used to wrap or protect goods” (Lexico, 2020). Packaging has evolved to become more than just a covering for a product; it has expanded to act as a marketing tool by using different elements to communicate a brand and push consumer purchases. As there are many products on the shelf fighting for customer interaction, brands have only a few seconds to catch customer attention (Silayoi & Speece, 2007). Research shows that consumer attraction is significantly affected by package design, shape, colour, and size (Alhamdi, 2020). Consequently, it is critical to use these elements to design effective product packaging that persuades the customer to choose your product above all others.

The package becomes the symbol that communicates favorable or unfavorable implied meaning about the product. Underwood et al. (2001) suggest that consumers are more likely to spontaneously imagine aspects of how a product looks, tastes, feels, smells, or sounds while viewing product pictures on the package (Silayoi & Speece, 2007, p. 1497).

While this concept may come across routine, designers must consider the different segments of consumers and their target demographic to create something realistic for the marketplace (Silayoi & Speece, 2007). As previously mentioned, packaging should also adhere to the foundational definition as there is no use in creating a visually pleasing package if it does not contain and protect the product within.

SCANNABLE PRINT TECHNOLOGIES: QR CODES, AR, AND NFC TAGS

Over the years, scannable print technologies have been gradually integrated into global marketing strategies in the form of printed codes—such as Quick-Response (QR) codes, Augmented Reality (AR), and Near-Field Communication (NFC) Tags—which can be read by smartphone devices to increase consumer interaction.

QR codes are an evolution of the UPC code, which is a linear symbol consisting of thirteen numerical digits. While UPC codes are still used today, their primary use is for pricing and inventory operations (Soon, 2008). QR codes are two-dimensional, meaning information can be read vertically and

horizontally. This allows for approximately one hundred times more information to be contained in the symbol, but the information is read quickly nonetheless – hence the name, “Quick Response” code (Soon, 2008). These printed codes can be scanned using mobile devices to guide the consumer to online and offline digital content, such as a website, app download, image, text file, and many others (Okazaki et al., 2012). By allowing consumers with the ability to interact with products at their leisure, “QR codes have changed [the] traditional PUSH model of communication to the PULL model where the receiver is able to interact and engage with a brand” (Fortin & Surovaya, 2018, p. 359). While there seems to be much potential for this technology, it has not been widely adopted by companies and consumers alike (Watson et al., 2013).



Figure 1. QR Code



Figure 2. Augmented Reality Using Smartphones

Augmented reality is another form of scannable technology that has become widely available to smartphone users in recent years. “With an augmented reality system, we become part of the computer environment, rather than just an external, detached observer with limited interaction” (Peddie, 2017, p. 2). By using computers, such as smartphones, AR allows viewers to see on-screen images interact with tangible objects in real life. As a result, the on-screen images are aligned with tangible objects in real time, effectively making it seem as though both items are coexisting in the real world (Van Krevelen & Poelman, 2010). Unlike Virtual Reality technology, AR allows users to remain aware of their physical surroundings while virtually interacting with digitally-seen objects. (Van Krevelen & Poelman, 2010). This relatively new technology has allowed businesses to generate new product development and packaging ideas. According to PTC, in 2018 augmented reality became a “top business imperative” for companies that wanted their brand to compete in the digital world (Campbell et al., 2019).



Figure 3. *Digital Wallet Being Used for Payment*

Finally, near-field communication tags are scannable technologies that have changed the way many systems operate, including payment, navigation, and more (Coskun et al., 2015). NFC tags are an evolution of radio-frequency identification (RFID) tags that allow “short-range wireless communication” between two terminal points (Coskun et al., 2015, p.13348). In short, data is exchanged between two technologies, and this can be applied in whatever way the business sees fit. For example, users may build digital wallets on

their phones and trigger payment upon tapping their phones on a card reader, or video game players may load characters onto their accounts by touching a character card to their controller. Due to its short-distance communication range, NFC provides a secure and protected means of transmitting information (Coskun, et al., 2015). Only three devices are used for NFC communication: smartphones, NFC tags, and NFC readers; even so, the wide ranging versatility and flexibility of these devices allows NFC technology to be applied in increasingly innovative environments (Coskun et al., 2015).

Businesses should take advantage of opportunities to engage and attract customers. The more time customers spend investigating a product, the more likely they are to purchase it (intelliFLEX et al., n.d.). By using scannable print technologies, value is added to packaging that consumers would otherwise discard once the product inside was used. However, the difficulty is getting consumers to change their mindset toward this type of technology; overcoming this would allow for further innovation and smarter implementation (intelliFLEX et al., n.d.).

TECHNOLOGY ACCEPTANCE MODEL AS A FRAMEWORK

The findings in this paper were guided by the Technology Acceptance Model (TAM). As the adoption of scannable print packaging remains unclear in Western culture, this model helped explain the reasons why past campaigns concluded. Further, it supported survey results. TAM was introduced in 1986 by Fred Davis and is defined as one of the “most influential and commonly employed theor[ies] for describing an individual’s acceptance of information systems” (Lee et al., 2003, p. 752). Composed of six components, this model stands out due to the two belief constructs: Perceived Usefulness (PU) and Perceived Ease of Use (PEOU).

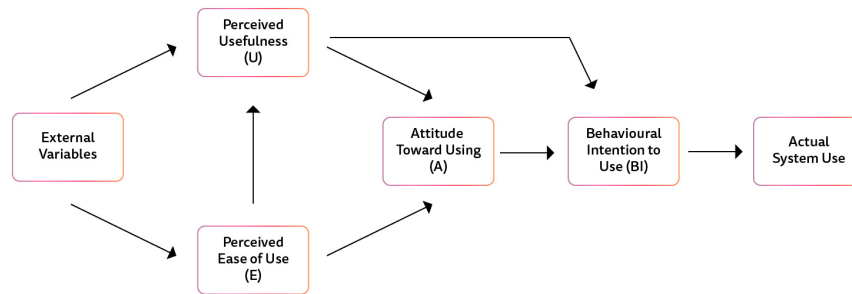


Figure 4. *Technology Acceptance Model*

While Perceived Usefulness and Perceived Ease of Use may be analyzed as independent variables within the Technology Acceptance Model, it is known that PEOU may greatly impact the results of PU. Usefulness improves if users already believe that the technology is easy to use (Erasmus et al., 2015).

It is important to note that TAM says little about technology itself and more about ourselves as consumers; the model is subjective because results shift depending on the audience interacting with the technology. In other words, even if the technology is useful and easy to use, how we perceive it will affect its rating in this model (Lee et al., 2003). Additionally, this model was originally developed to define acceptance of technology in a workplace (Lee et al., 2003); however, it may also be applied to acceptance within society for consumers, which is how this paper utilized this model. Overall findings relied on the twelve items, as developed by Davis (Sauro, 2019). For the purpose of this paper, these items provided the framework to decide the overall consensus for perceived usefulness and perceived ease of use. The twelve items were slightly adjusted to better adhere to the topic of accepting scannable print.

Usefulness Items:

- Using scannable print enables me to accomplish my tasks more quickly.
- Using scannable print improves my performance.
- Using scannable print increases my productivity.
- Using scannable print enhances my effectiveness.
- Using scannable print makes life easier.
- I find scannable print useful.

Ease of Use Items:

- Learning to operate scannable print is easy for me.
- I find it easy to get scannable print to do what I want it to do.

- My interaction with scannable print is clear and understandable.
- I find scannable print to be flexible to interact with.
- It is easy for me to become skillful at using scannable print.
- I find scannable print easy to use.

METHODOLOGY

A mixed methods research approach was employed to gain insights into how the audience perceived scannable print. This type of approach uses multiple strategies to collect both quantitative and qualitative data; it aims to answer research questions from both perspectives to highlight different aspects and allow for an overall better understanding of a topic (Creswell, 2003). For the purpose of this paper, two methods were used to gain insights about using scannable print on packaging as a marketing strategy: (1) a social media review and (2) an online survey open to the public. The two methods occurred separately, but concurrently. Given that users are the sole audience of interactive scannable print on consumer packaging, it is imperative to understand their perspective when determining how to successfully implement the technology in the marketplace.

1. SOCIAL MEDIA REVIEW

To gain a wider view of public opinion on scannable print technologies, a social media review was conducted.

Three campaigns that used these technologies were compared; each campaign's respective hashtag was searched for on Twitter, and the resulting top twenty-five tweets (i.e., search results) were recorded. Each tweet was then analyzed to determine the user's view of the campaign or the use of scannable technology (positive, negative, or neutral), and whether the tweet explicitly discussed the use of scannable print. Analyzing the search results provided deeper insights into the performance of each campaign and the part that scannable technology played.

Twitter is a widely used platform, ranking as the 6th most used social media in the world with over 300 thousand active monthly users in 2020 (Kallas, 2020). Consequently, search results may have ranged immensely depending on which of these users decided to share about these campaigns; opinions may have been tweeted by early adopters and laggards alike. Moreover, a relatively small sample of tweets was collected, which provided a limited range of the opinions available online. This was due to the short time frame allotted to conduct this research, as it would have proved difficult to sort through a larger sample. The results were viewed as objectively as possible, but biases may be present as some tweets may not have explicitly discussed the campaign or scannable print in a positive or negative light. In addition, scannable print may not have held a main role in the campaign; rather, it may simply have been

a supporting element. Finally, results found may not have been a direct consequence of the scannable print on the packaged product.

The three campaigns analyzed were Cadbury's #JoyOfANewKind, Amazon's #SmileCodes, and Coca-Cola's #WannaSprite.

Cadbury's #JoyOfANewKind campaign was launched in South Africa in 2018 to promote their four new martian figurines, which were each paired with a unique chocolate bar flavour. The campaign was available in participating stores from the beginning of June to the end of August 2018. By purchasing these chocolate bars, consumers were able to scan the wrapper using a smartphone and collect stickers to eventually redeem a martian at participating petrol stations. The digital images showed the martians dancing and interacting with one another to help the characters come to life. In addition, augmented reality was implemented using promotional stations strategically placed in stores and spots of public gathering (i.e., shopping centres) to boost the campaign's visibility (Cadbury, 2018).

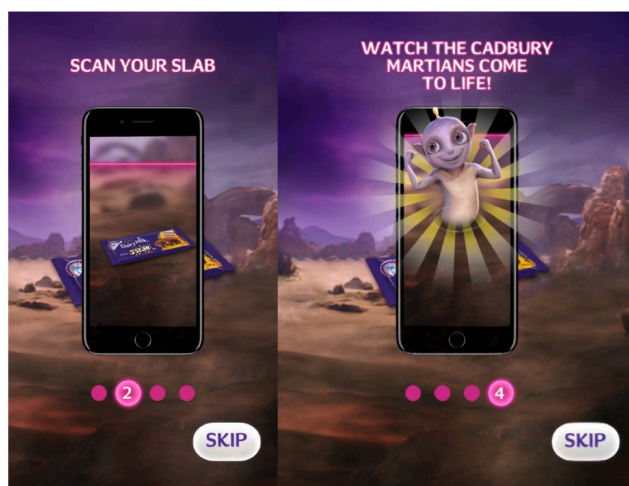


Figure 5. Cadbury's Promotional Photos for #JoyOfANewKind

Amazon's #SmileCodes campaign, launched in 2018, was centered around Amazon's new SmileCode feature that was printed on shipping boxes and public advertisements. A SmileCode is a QR code designed with the Amazon smile logo in the center of the scannable area (Scanova Blog, n.d.). By scanning the code, the user is redirected to deals and discounts on Amazon products, details of a specific product, or information required to unlock Amazon Lockers, which is another relatively new service by Amazon. Unlike regular QR codes, SmileCodes require the official Amazon smartphone application to scan it (Ong, 2018). Printed advertisements were scattered around cities to promote the new features

available using this type of QR code.

The Coca-Cola Company's #WannaSprite campaign stemmed from a Sprite commercial released in 2016 wherein spokesperson LeBron James ended the commercial with the phrase "Wanna Sprite?" (Tribu Creative, n.d.). Alongside this commercial, Sprite released limited edition pop cans that had printed codes disguised as popular lyrics written by hip-hop artists. Upon scanning the code, consumers were able to win prizes ranging from company merchandise to popular electronic devices. Sprite also collaborated with Spotify to unlock playlists by scanning the pop can (Williams, 2017).



Figure 6. Amazon's Smile Code

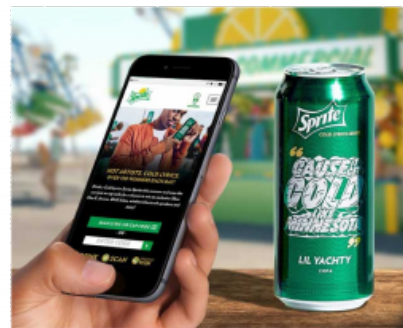


Figure 7. Sprite's Limited Edition Pop Cans

2. ONLINE SURVEY

The survey was made available to the public using Google Forms, and most questions were based on the Technology Acceptance Model (TAM). To encourage people to complete the entire survey, it was important to keep it short in length and the response time to within a few minutes at most.

As such, the twelve TAM-based questions were presented on a five-point scale, rather than the traditional seven-point scale. Respondents were able to choose whether they "Strongly Agree", "Agree", "Neutral", "Disagree", or "Strongly Disagree" with each statement. "Strongly Agree" was represented as a "5" on the scale, and "Strongly Disagree" was a "1." The mean was analyzed to understand the general perception of this technology by the participants.

In addition to the twelve items drawn from the TAM, these questions were also included in the survey:

- Age? (age ranges given)
- What forms of scannable print have you interacted with? (options given)
- Where have you seen scannable print? (options available)
- How often do you interact with scannable print? (time ranges given)
- How can the scannable print experience be improved / what does it do well? Additional thoughts? (quantitative)
- Do you want to see scannable print more widely available? (yes or no)

Together, these make a total of 18 questions (17 quantitative and 1 qualitative).

Due to time restraints, this survey was available to the public for a total of two weeks, which limited the amount of responses. Additionally, this survey was limited by the methods in which it would have reached the public. It was shared periodically through social media announcements directed toward acquaintances, coworkers, and friends. It was expected that the days wherein no social media announcement was released, the survey would have received less responses.

RESULTS

1. SOCIAL MEDIA REVIEW

As previously discussed, the social media review looked at the top twenty-five tweet results that displayed upon searching the keyword that corresponded to the campaign's dedicated hashtag. While these campaigns were released to the public at similar points in time, the responses on Twitter were wildly different.

The #JoyOfANewKind campaign consisted of both scannable packaging with a code on the product's wrapper as well as public interactive displays at shopping centres, which made use of augmented reality. While 68% of the search results (17 of 25 tweets) either spread the campaign message or had something positive to say, there was little mention of the scannable component of the campaign. Further, any mention of scannable technologies centered around the AR element. This potentially indicated that consumers were not interested in the process leading up to winning prizes or collecting figurines. Rather, consumers seemed motivated by the novelty of the activity they participated in, as well as the experience's shareability online. If the provided activity or interaction was not exciting or explicitly beneficial, or if an instant reward was not given, consumers were unlikely to share the experience. In addition, consumers often shared about the product itself; in this case, it was about the newly released chocolate bar flavours instead of the campaign.

Further, a total of 32% of the search results (8 of 25 tweets) were advertisements for the campaign. This statistic showed that there was a reasonable amount of online activity for this campaign by consumers (68%), while companies and their partners also took the time to appeal to consumers online through many publicly available tweets.

This campaign heavily featured scannable technology, but there was little mentioned about the technology. Overall, tweets showed interest in the product, which undoubtedly led to sales and increased interaction for many with the classic brand, Cadbury.

The #SmileCodes campaign was used to promote the new feature Amazon was trying to implement, using their own version of a quick-response code (QR code). It generated many posts from online publications and some consumer interactions on Twitter. In fact, 72% of the search results (18 of 25

tweets) linked to articles published on other websites. This statistic shows that this new way of implementing a seemingly plateaued piece of technology sparked interesting conversations. These articles explained that Amazon's SmileCodes added value to an otherwise plain piece of packaging, successfully extending its product lifecycle. Since its initial surge, however, there has been little mention of Amazon's SmileCodes, if any.

Further, only 8% of the search results (2 of 25 tweets) were posted by individuals who boasted about the campaign in a positive light. This statistic showed that while a select few maybe interested in a new implementation of a technology, this interest may not be shared by the rest of society. Otherwise, the public did not have much interest in the idea of Amazon's SmileCodes.

The #WannaSprite campaign spans several years, but was most recently active in 2018. Since its release, 60% of the search results (15 of 25 tweets) were mostly positive. However, none of the top twenty-five tweets mentioned the scannable aspect of the widespread campaign. In fact, consumers were far more interested in the product itself and the products won through the campaign. By analyzing the campaign's extended history of having a relatively strong presence in consumer minds, it seemed reasonable that consumers were not receptive to the new implementation of scannable packaging.

In addition, the scannable portion of the packaging was not obvious to the regular consumer as it may easily be mistaken for an ordinary graphic on the aluminum can. While this method of implementing scannable print may be aesthetically ideal for the designer and the consumers' viewing experiences, the affordances of scannable print technologies can easily be missed.

2. ONLINE SURVEY

Within two weeks, 120 online public survey responses were collected. Of these participants, 85.8% were between the ages of 19-29, 8.3% were aged 30-39, 4.2% were aged 40-49, and 1.7% were between the ages of 13-18. Knowing the ages of participants enabled conclusions to be drawn between generational norms and consumer behaviour.

All participants indicated that they have interacted with a form of scannable print technology, including QR Codes, AR, and NFC Tags, on many different mediums, such as advertisements, packaging, books, smartphone applications, in-store displays, and more. While the participants were aware of scannable print, 44.2% confessed that they rarely made use of scannable print technologies. Several elaborated that they rarely used the technologies, with the exception of NFC tags as a payment option in stores or on their commute.



Figure 8. Results for Online Survey, Question 2

Next, statements from the Technology Acceptance Model were explored. Twelve statements about scannable print’s usefulness and ease of use were presented to the participants to rate based on their experience. This method was used rather than TAM’s traditional use of evaluating the workplace. Below is a chart that indicates the average responses for each statement based on the five-point scale provided to the participants.

Table 1: Mean Results from Online Survey, Question 5 to 16

Usefulness Statements	Mean Result	Ease of Use Statements	Mean Result
Using scannable print enables me to accomplish my tasks more quickly.	3.83	Learning to operate scannable print is easy for me.	4.23
Using scannable print improves my performance.	3.35	I find it easy to get scannable print to do what I want it to do.	3.63
Using scannable print increases my productivity.	3.38	My interaction with scannable print is clear and understandable.	3.98
Using scannable print enhances my effectiveness.	3.47	I find scannable print to be flexible to interact with.	3.63
Using scannable print makes my life easier.	3.90	It is easy for me to become skillful at using scannable print.	3.91
I find scannable print useful.	3.95	I find scannable print easy to use.	4.08
	3.65		3.91

Results showed that the public viewed the operation of scannable technologies as straightforward and easy. However, its usefulness did not measure as highly, suggesting that the public was indifferent to its utility as a key component in their daily lives.

Lastly, consumers were asked to make final comments and to indicate if they wanted to see scannable print become more widely available. A total of 66% of participants replied “Yes” (they would like to see it more widely available), while 28.2% replied “I don’t know” or that they were indifferent to it, and 5.8% replied “No”.

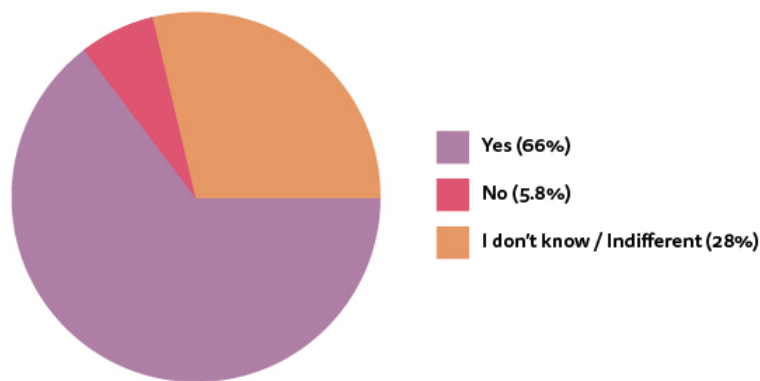


Figure 9. Results for Online Survey, Question 18

The final comments included a mix of opinions, but no responses directly criticized the idea of scannable print. Instead, consumers were either frustrated with its implementation and accessibility, or they did not express any strong opinions on the topic.

DISCUSSION

Using the mixed method research technique revealed two important takeaways that allowed for a better understanding of scannable print on packaging for both marketers and consumers alike.

1. SCANNABLE PRINT TECHNOLOGIES SHOULD BE APPLIED MORE THOUGHTFULLY FOR IMPROVED USEFULNESS

Thoughtfulness, in this case, refers to the product the technology promoted or was directly printed on, as well as its overall usefulness for the consumer.

As seen in the social media review, consumers were not interested in the scannable print technology as much as the product it was implemented on, or the rewards they would gain from taking the extra step to interact with the product.

For example, Coca-Cola's #WannaSprite campaign featured several different elements, including the commercials, Spotify playlists, and the scannable print on the cans. Although marketing efforts were clearly taken, the product itself was highlighted above any of these. Further, the scannable print technology available in this campaign was not mentioned in the top twenty-five results when "#WannaSprite" was searched on Twitter.

In contrast, there was far more mention of scannable print technology for the #JoyOfANewKind campaign. Cadbury made use of two different scannable technologies: quick-response codes on product packaging and augmented reality stations at shopping malls. Of the top twenty-five tweets, 40% (10 of 25 tweets) mentioned AR experiences while 0% mentioned experiences with the scannable QR code technology on the product packaging.

In light of this, it is compelling to consider the products which were used as the foundation for these campaigns. Coca-Cola's Sprite product reached retail shelves in 1961 and is now sold in nearly two hundred countries (Coca-Cola, n.d.). As one of the most popular carbonated drinks worldwide, it has almost become a symbol in pop culture. On the other hand, Cadbury has been in business since the 1800s, but their martian mascots have only been around since 2017 (Cadbury, 2018). As the #JoyOfANewKind campaign launched an entire year after the introduction of these characters,

consumers continued to be receptive to changes and additions made to the product. For this reason, consumers seemed to be more willing to engage with the activities and prizes available by scanning the packages and participating in the AR events. The product acted as an entertaining activity for children and adults alike, rather than just being a treat.

Looking beyond the product this technology was implemented on, the data gathered through the social media review showed that of the seventy-five tweets among the three different campaigns, only two tweets had something negative to say, and neither spoke poorly about the scannable print technology itself.

Over the years, scannable print technology has been refined to work well when placed in the correct type of environment. However, the results of the public online survey made it evident that the technology's usefulness lacked presence in consumer minds. For example, the results for ease of use were more agreeable than those for usefulness in the twelve statements provided to the participants (six for usefulness and six for ease of use). There are two possible reasons for the survey results that are a direct result of the qualitative question asked at the end of the survey: "How can the scannable print experience be improved / what does it do well?Additional thoughts?" Each participant had unique responses, but many reiterated the idea that its application should be considered more thoughtfully.

Currently, most scannable print applications, especially QR codes, are used with the simple intention of redirecting the user to a company website or an application on the App/Play store on their smartphone device. However, many users viewed the technology as pointless because they are accustomed to typing their intended digital destination into a web browser. One participant stated, "I think it can enhance user experience, but I'm more of the type to take note of an advertisement and... check it out on the website later as opposed to scan it right there." Given that this respondent was between 19 and 29 years old, it is unlikely that they had trouble operating the technology; more likely, the benefits of scanning the print were simply not useful enough to induce interaction. To combat this, several participants shared ideas they believed would have made this technology worth the time it required the users to expend. For example, it may be used on perishable items to indicate shelf life, or in a classroom setting to interact with students beyond printed powerpoint slides.

By these reactions, it is clear that consumers require sufficient reasons to engage with this technology.

Innovative ideas are essential for success, and while change may be daunting for many businesses, scannable technology may offer the improvements they seek to benefit their brand as a whole.

Interactivity with consumers may easily be the difference between them picking up the product off the shelf or making the decision to purchase the product.

2. SCANNABLE TECHNOLOGIES SHOULD BE UNIFIED FOR IMPROVED EASE OF USE

Research revealed that users were also deterred from scannable print technology because the technology was required to be used sporadically, and applications are often proprietary. One participant stated “[It] is oftentimes attached to a specific app or program, making it difficult to use and be accessible for all. It would be great to see more incorporation of scannable print into day to day technology.” Another participant expressed that scannable print should “...be recognized by all cameras.” As the world becomes increasingly dependent on technology, these suggestions do not seem unrealistic. If technology becomes completely integrated into the daily lives of consumers, it should become as accessible as possible. Otherwise, the added effort required to interact with something that has previously shown to provide minimal advantages would likely not be worthwhile to consumers.

An example of scannable print that proved to be worth consumers’ time was Tesco’s virtual stores, which were set up in South Korea in 2011 and consisted of “a display of products on walls of metro stations and bus stops” (Petit de Meurville et al., 2015). Scanning displays with their smartphones, consumers were able to shop as if they would at a grocery store, pay online, and even schedule the product delivery, which, “created a new market based on a country’s lifestyle” (Petit de Meurville et al., 2015). These virtual stores effectively resulted in over 900,000 app downloads within a year, which increased Tesco’s online sales immensely, and prompted many more users to register on their app (Petit de Meurville et al., 2015). While the experience required slightly more effort from individuals because they had to download the unique smartphone application, the benefits enjoyed by the consumers outweighed the effort. As a result, Tesco was able to strategically use this relatively simple piece of technology (QR codes) by understanding the needs of their target demographic in order to entirely improve their brand image and loyalty in South Korea.



Figure 10. Tesco's Hybrid Store

Participants also suggested that scannable technology should “allow data-less users to store the URL for later access,” and that “[it] reduces the effectiveness of print by requiring an additional device and internet connection.” As previously mentioned, many companies took the easy route and simply had their scannable print redirect consumers to their company website or an application download. However, this quickly became inaccessible without an internet connection. Perhaps creating uses for the technologies that do not require an internet connection, or providing a feature that allows the consumer to save the link for a later time

would prove useful to many users. The creation of a unified experience for the consumer, regardless of the company they tried to contact, may be key to better integration of scannable print in Western culture.

CONCLUSION

Through analysis of the available literature on scannable print technologies as well as the mixed method research results, it is clear that scannable print has not yet reached its potential in Western cultures. There are many ways to improve its usefulness and generate a better sense of the technology in consumer minds. Companies are encouraged to develop creative approaches to integrate scannable print technologies in their product packaging to create an engaging and interactive experience with the consumer. This may improve brand image and brand loyalty towards the product, or even the brand itself.

Scannable print, especially the use of QR codes, has slightly plateaued since its surge in recent years. However, it requires further research and development in the marketplace. Companies such as Digimarc and Blippar continue to work to create new experiences for consumers, such as the popularity of augmented reality within social media applications, and camouflaged scannable codes on print packages. As the world becomes increasingly more digital, companies should embrace this reality by incorporating scannable print technologies into their products and service offerings.

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APPENDIX

Survey (Questions and Results)

Section A

Age?

0-12	13-18	19-29	30-39	40-49	50+
0%	2.7%	4.2%	8.3%	85.8%	0%

What forms of scannable print have you interacted with?

Quick-Response (QR) Codes	Augmented Reality (AR)	NFC Tags	Other
90.8%	74.2%	83.3%	-

Where have you seen scannable print?

Advertisement	Packaging	Book	Smartphone Application	In-store Display	Other
82.5%	73.3%	37.5%	87.5%	83.3%	Tickets for events (0.8%) Payment app (0.8%) Presentations (0.8%) Library, public transit (0.8%)

How often do you interact with scannable print?

Every time I see it	Once a week	Once a month	Rarely	Never	Other
15%	23.3%	11.7%	42.2%	1.7%	A few times per week as a payment option (4%)

Section B: Technology Acceptance Model

Statement	(5) Strongly agree	(4) Agree	(3) Neutral	(2) Disagree	(1) Strongly disagree
Using scannable print enables me to accomplish my tasks more quickly.	26	57	30	5	2
Using scannable print improves my performance.	7	40	63	8	2
Using scannable print increases my productivity.	9	41	59	8	3
Using scannable print enhances my effectiveness.	11	46	53	8	2

Results continued on next page...

Statement	(5) Strongly agree	(4) Agree	(3) Neutral	(2) Disagree	(1) Strongly disagree
Using scannable print makes life easier.	26	63	25	5	1
I find scannable print useful.	27	65	24	3	1
Learning to operate scannable print is easy for me.	43	64	11	2	0
I find it easy to get scannable print to do what I want it to do.	16	56	36	11	1
My interaction with scannable print is clear and understandable.	28	66	22	3	1
I find scannable print to be flexible to interact with.	20	53	34	10	2
It is easy for me to become skillful at using scannable print.	26	65	22	6	1
I find scannable print easy to use.	34	66	16	4	0

Section C: In the Future...

Yes - 66% No - 5.8% I don't know / Indifferent - 28%

How can the scannable print experience be improved / what does it do well?	Do you want to see scannable print more widely available?
QR codes need to be easier to scan - first time I used one I had to make the effort to download the app and then finally scan it	Yes
It is clear how to use it	Yes
Makes tasks easier and quicker, however, I'm often lazy to begin using it and therefore just stick to more traditional methods or for go it completely	Yes
More advertisement and requirement for use, you have to download and have it then more likely to use it	Yes
Assist to achieve paperless	Yes
Tap on debit has been a life saver! When I forget my debit card, I don't have to worry about going without anything	Yes
Common instructions for all scannable prints	Yes
Makes things faster, saves time	Yes
More easily accessible on phone cameras	Yes
Integrate it more products or ads and such that it becomes normal to use, also teach people how to use it	Indifferent
Providing informations	I don't know

Results continued on next page...

How can the scannable print experience be improved / what does it do well?	Do you want to see scannable print more widely available?
Through my experience, scannable print is very good at capturing, or sensing, prints; and they do so in a quick and efficient manner. However, on rare occasions lighting can become an issue. Maybe looking into having more flash options can be a solution for certain applications.	Yes
Should be more widely used	Yes
Find an easier way to access the application that requires the scannable print	I don't know
It's convenient when it's an option and the idea of scannable print is being shared on varieties of platforms like stores, online, and access to places.	Yes
Have a website next to the print to explain how to use it, for those who need it	Yes
Sometimes it has difficulty scanning depending on how easy it is to read.	Yes
It creates convenience	Yes
It's fast and does not waste time.	Yes
It is often glitchy. The ability to scan a QR code from the iPhone camera is a good addition.	Yes
Made to make users want to use it more often	Yes
It saves a lot of time for users	Yes
It could be improved if it were more widely used than it is now. It's fast and easy to use.	Yes
A method in which you can store what you have scanned or get a list of this	I don't know
I like when it's used in classroom settings (ie. instead of the prof printing out slides with a link that you have to type in yourself, you can scan a printed code). Other than for that purpose, I don't find myself interacting with scannable print.	No
I think scannable print reduces the effectiveness of print by requiring an additional device and an internet connection. Ex. QR code that just makes regular information unreadable without a phone. I think if there is a fulfilling digital experience available it should be able to work on its own without requiring a printed piece.	No
More security, esp with NFC payments	I don't know
I think that scannable printing is beneficial because it's simple, convenient, and an engaging way to lead users to additional information on any given topic.	Yes
Be recognized by all cameras	Yes
Have a welcome screen, it's boring	I don't know
Shifting the trend to more AR content, most of the scannable print content I have interacted with only redirects you to a website.	Yes
Integration into 1st party smartphone camera applications would make it quicker and easier to access versus a separate or 3rd party application	I don't know
Make it usable even if the phone's old!	I don't know
It does consistency well - the fact that it will never change or disappear because you hit a random button by accident is comforting. However, I think it can be improved by increasing public awareness about how to use them. For example, helping older people understand how to utilize it would be beneficial if they'd like more information on their prescribed medication but the packaging/printing company cannot fit anymore copy on the package. My parents are in their 60s and have no idea how to work QR codes	Yes
It has potential if more companies implement the technology. Such as with iPhones, NFC tags can only be read without an app with Xs and newer which can still be a barrier for companies atm.	Yes

Results continued on next page...

How can the scannable print experience be improved / what does it do well?	Do you want to see scannable print more widely available?
There might be security concerns for scannable print with fraud information	Yes
More available places with this kind of technology	Yes
It allows to save time when applicable, especially with services in relation to consumerism. An example would be by sharing information and paying through NFC technology. It allows for an infinite variety of information to be easily accessed through QR codes found in posters, pages in books, websites, etc.	Yes
It's hard to figure out how to initially use it or get it work at first	No
The experience can be improved by unifying the different ways codes can be accessed. QR codes and NFC tags are great at reducing steps to access information, however, AR is often times attached to a specific app or program, making it difficult to use and be accessible for all. It would be great to see more incorporation of scannable print into day to day technology. (It's nice phones can scan QR codes without additional apps... when it decides to work)	Yes
It provides fast, easy access to information.	I don't know
One streamlined system for every brand and way to use in OS.	I don't know
Advantage: From my experiences with scannable print tech, it makes it easier to access and open and use things within applications (ie. snapchat/instagram codes, mobile coupons) and websites.	I don't know
If my shelf life products had scannable print to tell me the expiry date based on when I purchased it, I could use it up in time.	Yes
It's good at providing more information for those who are interested in products	I don't know
Easier to access	No
Easier to actually scan the code and quickly	Yes
To have more devices that have scannable print	I don't know
Very convenient, but don't trust how secure it is	I don't know
More research/development to enhance information security when using scannable print	Yes
Not all scannable print function is known to older people. Maybe they should learn about it somehow	Yes
Making it accessible and create on any platform	Yes
Less reliance on wifi when used by employees in stores	Yes
I think it can enhance user experience but I'm more of the type to take note of an advertisement and go home to check it out on the website later as opposed to scan right there	I don't know
I think there should be more information about scannable print that is widely available	Yes
It can be a direct link to the virtual world without too much direction	I don't know
It's convenient	Yes
It works well because you just need to open up your camera and boom, the information you need shows up	Yes
Scannable print allows users to access additional features/information quickly. I feel that scannable print works better in some situations than others, due to convenience - for instance, I use scannable print to instantly add someone on social media, but would rarely use it when I see it in an ad(unless I was very interested in learning more).	Y - I like having the option and it gives users the opportunity to interact more with the material.

Results continued on next page...

How can the scannable print experience be improved / what does it do well?	Do you want to see scannable print more widely available?
I don't like having additional apps on my phone, so whenever I see a QR code I don't scan it because I don't want to download an app to scan it. Maybe the the default camera app should have it built in for functionality. The wallet app is really good because you can add things like boarding passes and points cards making a wallet less needed and making it easier to keep organized and not have a huge wallet to keep all these different cards in	Yes
It saves time	Yes
It streamlines the process.	I don't know
It is more convenient than carrying hard copy products or writing things down. It can be better improved for having user friendly tutorials that may help with the older population.	Yes
The type of scannable print/QR codes or whatever is more consistent - and the applications to use/access them would be consistent as well/built into phone. I do not want to have to download an extra app.	Yes
More implementation can be improved	Yes
Finger print	I don't know
Initial awareness that it is available and accessible	Yes
Scannable print enables users to interact with the subject and media for a better understanding/display of visuals. Though, sometimes I find scannable print a bit distracting.	I don't know
It is very easy to use. I feel to improve it needs to be utilized and pushed more frequently to consumers and add an extra benefit that gives it a clear advantage of just googling the info.	Yes
I think scannable print it great, but it needs to be easier to create, particularly AR. If people are going to interact with it, they need to understand it, and employ it in their daily lives. I think about things like HP Reveal that was widely used in schools and education, but was recently shuttered. Now there is no affordable replacement for schools and students	I don't know
Some codes don't always work	Yes
It makes users lazier, forgoing security for slight convenience; not necessarily making their lives any better	No
QR codes need to be easier to scan - first time I used on i had to make the effort to download the app and then finally scan it.	Indifferent
Built in apps in native phone software. Clear patterns of usage so I know what it is that scanning the code will accomplish.	Yes
Instant translation from one language to another.	Yes
Easily accessible to those with new smartphones	I don't know
It's good at making a lot of things easier. Great for doing transactions or getting information. Could probably have some secured targeted notification applications as well	Yes
If it is easier to scan QR codes, if there is a built-in scanner application from your phone instead of needing a separate app (ie. Wechat, Snapchat), or if it was built into more apps (ie. Internet browsers) then it'd be much easier to scan	Yes
Scan even if a piece is missing	No
It does extremely well to connect devices, and also for quick access to URLs.	Yes
Anyone with a smartphone can access it easily	I don't know

Results continued on next page...

How can the scannable print experience be improved / what does it do well?	Do you want to see scannable print more widely available?
I mostly see it on the subway but have no reception down there. So making it more accessible.	Yes
Scannable print experience has its advantages of being simple to use, using the user's mobile device to utilize the scanning option, and creates a big step towards how we interact with the physical environments.	Yes
Not sure how to increase adoption even though it's quick.	I don't know
Making it more standardized so that those who are less inclined find it easier to adapt.	Yes
Can post instructions for the older folks or those who aren't familiar with it so they can be involved too.	Yes
Allow data-less users to store the URL for later access.	Yes
Make it accessible for all	Yes
Mainly for the QR code, a lot of individuals to this day are still unsure of what it is, it's purpose & how to use it.	Yes
Better functionality and faster scanning	Yes
I only really use the NFC tag which allows me to pay through my phone. It makes it quicker for me to be able to tap and go and not have to pull out my cards. However, not all stores accept it yet so I still have to carry my cards.	Yes
Makes things faster for people with smartphones. However people who are not somewhat tech savvy may have issues and waste time on their part.	No
Hope it can be more integrated in North America as it is in Asian countries in payment and ordering	Yes
Be more available	Yes
Shouldn't rely on apps to open content. Opening in a web browser makes it more accessible for all devices.	Yes
Technical difficulties, sometimes have to have network connections. Seniors might not know how to use it.	Yes and no. Cannot be inclusive to all users. Should always have alternative ways
Do it from photos app without having to download QR code	I don't know
Not enough experience with scannable print to say	Yes
It makes it convenient for people to use. You are able to get multiple things done using scannable print.	Yes
No Comment	Yes (x8) I don't know(x6) Indifferent (x1)
Unsure	Yes (x4) I don't know(x2)



02

WHAT IMPACT DO THE
ACCESSIBILITY FEATURES OF
COLOUR AND CONTRAST, TEXT-
TO-SPEECH, AND MAGNIFICATION
IN EPUBLICATIONS HAVE ON
UNDERGRADUATE STUDENTS'
ABILITY TO RETAIN INFORMATION?

SAMANTHA STANTE



ABSTRACT

The purpose of this research study was to discover if ePublications with the accessibility features of contrast, text-to-speech, and magnification benefited undergraduate students in the retention of information from required readings. Participants of this research study consisted of twenty Ryerson University undergraduate students from all four years of study.

To conduct this research, two documents were created that were to be read by participants of the study. The first ePublication testing document was a PDF without accessibility features, whereas the second ePublication document was in the format of an .iBook. The second document incorporated the three accessibility features under examination throughout this study: colour and contrast, text-to-speech, and magnification. Each document that was read had a corresponding ten-question multiple choice test administered through Google Forms. All participants were given four options for each question. Both assessments required the participant to answer all ten questions to the best of their abilities based on their reading comprehension, to test their information retention on either document. The third assessment of this research was an opinion questionnaire formatted as a Google Form, which participants were asked to answer after the completion of the previous two tests.

All data, both from the testing documents and the opinion form, were analyzed using Microsoft Excel, 2018 version. It was recorded that the average score on the multiple-choice test was 82% after students read the accessible document. In contrast, the average of the multiple-choice test was 59.5% after the students read the non-accessible document. The T-Test results demonstrated that the probability of the non-accessible and accessible reading and testing results was 0.00139, equivalent to 0.14%. As a result, accessibility features in ePublications should be implemented within the documents students receive as a required course reading.

INTRODUCTION

The study was conducted in association with Ryerson University as part of the curriculum for the Graphic Communications Management undergraduate program. The study took place between February and April of 2020 in Toronto, Ontario. Although there is an abundance of studies that aim to understand how accessibility features in ePublication documents benefit those with disabilities, there is an overall lack of research conducted to understand the effect of accessible documents on those without a known disability. The purpose of this study was to identify if accessible documents are proven to aid undergraduate students, which would in turn persuade publishers to implement these features into their publications. The study contributed to the debate about accessibility and whether it should be made more readily available in electronic publications through the evaluation of accessibility features within ePublications for undergraduate university students.

The main issues this study addressed were those in regards to how accessibility features were not presented in the ePublications that Ontario University undergraduate students were required to read for their studies. University professors provided students with online readings in the format of PDF documents that did not offer accessibility features.

The purpose of this research study was to discover if ePublications with the accessibility features of contrast, text-to-speech, and magnification benefited undergraduate students in their retention of information from the required readings. This research highlighted and critically analyzed the importance of the aforementioned accessibility features in relation to why they should be made available to all undergraduate students.

RESEARCH QUESTION

What impact do the accessibility features of colour and contrast, text-to-speech, and magnification in ePublications have on undergraduate students' ability to retain information?

METHODOLOGY

Through the use of the primary research testing, the study determined the importance of colour and contrast, text-to-speech, and magnification within ePublications. To answer the research question, two

research tests were conducted that determined the accuracy of information retained by the study participants. The participants were presented with two ePublications and asked to answer a questionnaire that tested what they had read. Participants of this research study consisted of twenty Ryerson University undergraduate students from all four years of study. For the research test, one of the ePublication testing documents was a PDF without accessibility features, while the other document was in the format of an .iBook that incorporated the three accessibility features under examination: colour and contrast, text-to-speech, and magnification. The test that the participants were asked to fill out after reading consisted of a ten-question multiple-choice Google Form.

After participants were tested, they were asked to fill out a short survey with questions pertaining to which ePublication they felt most aided them in retaining the information. A second primary research method of a survey was presented to participants as a Google Form that enhanced the testing of research documents to determine if the proposed accessibility features were necessary for information retention. In the comparison of the test results and survey results, it was found that the two research methods presented the effects of how students believed the accessibility features had in fact benefited them in retaining information, rather than how the features assisted them.

RESULTS

It was recorded that after students read the accessible document, the average score on the multiple-choice test was 82%. After students read the non-accessible document, the average of the multiple-choice test was 59.5%. As a result, students that read documents with the accessibility features of text-to-speech, colour and contrast, and magnification, scored an average of 22.5% higher on the test than when using the non-accessible document. After the results from the opinion survey were reviewed, it was found that students enjoyed reading the accessible document more than the non-accessible document. In fact, 90% of students stated that if their required course readings were presented with the accessibility features, as they were in the second testing document, they would be more likely to complete their readings.

The T-Test exemplified that the probability of the two situations, the non-accessible and accessible reading and testing results, was 0.00139, which can be interpreted as 0.14%. Therefore, there was a significant difference in the data collected in association with the non-accessible and accessible documents after the analysis of their respective tests. This information supported the theory that accessible documents did not just help those with disabilities, but also assisted the broader public in general; in this case, undergraduate students.

LITERATURE REVIEW

STUDENT PERCEPTIONS ON FUTURE COMPONENTS OF ELECTRONIC TEXTBOOK DESIGN

Authors Kimberly Anne Sheen and Yan Luximon (2017) addressed the question of which accessibility components students thought were necessary for future electronic textbooks based on their academic reading requirements. Sheen and Luximon (2017) further researched this question through the discussion of whether electronic textbooks should move away from the one-size-fits-all approach that has dominated the industry. One of the key concepts demonstrated was that changes in the user interface affected one's reading experience and performance, which was proven through research. For this reason, accessibility features should be taken into account in the design process of electronic textbooks (Sheen & Luximon, 2017). Furthermore, Sheen and Luximon (2017) stated that the majority of textbook publishers continued to produce simple digital representations of existing texts. Textbook publishers should take full advantage of the transition from print to digital documents to accommodate students with their ability to read electronic documents in order to excel within the learning environment.

The study took an innovative approach to answer the research question through the use of a questionnaire. The ten-item questionnaire was the main method for analyzing student perceptions on seventeen possible components of future electronic textbooks; this included which features they found beneficial, a ranking of the individual features' importance, and whether they would make use of the proposed components. The questionnaire was sent by email to the entire population of an English-Language university in Hong Kong. Of the 705 students who responded, 79.4% of questionnaires were deemed valid, and an analysis was conducted on 560 valid questionnaires (Sheen & Luximon, 2017). Sheen and Luximon stated that the accessible components generally reported to be desired by the participants of this study varied from one respondent to the next. The students did not have an established method to engage with the material. For this reason, many support methods may be employed to assist them. It was observed that students believed that future electronic textbooks should have included text, highlighting tools, bookmarks, multimedia, translation tools, dictionaries, and encyclopedias to enable the successful use of electronic textbooks. It was also found that many demographic categories had significant associations with student perception of which components should be included in their textbooks. The most significant category that required specific design is

academic discipline.

An advantage of the questionnaire research methodology was that it was short, concise, ignored the use of open-ended questions, and left room for students to leave comments. This was an advantage because students may not have wanted to participate in a long study, as they might not have been available throughout the whole duration. For this reason, the researchers considered this possibility and altered their study to benefit their research population. As the questionnaire was sent by email, the researchers were able to reach a diverse student population that included undergraduate, graduate, and doctoral students (Sheen & Luximon, 2017). However, the email questionnaire method may have also been a disadvantage to the researchers as they did not know if the respondents were truthful in their answers. Another disadvantage of the research method was that out of the 30,000 students, only 705 responded. As a result, the study was not able to generalize the findings to the entire student body.

EVALUATING E-BOOK PLATFORMS: LESSONS FROM THE E-BOOK ACCESSIBILITY AUDIT

The issue that McNaught, MacMullen, Smith, and Dobson (2018) addressed was how it was often difficult to find information from the publisher on accessibility in e-books. A key concept of the article indicated that accessibility in e-books was no longer just a luxury, but was in fact a necessity. They continued to state that the change in higher education in England where higher education institutions (HEI's) could no longer make do with inaccessible resources; purchasing accessible content was no longer an aspirational goal, but a legal necessity (McNaught et al., 2018). Another perception the authors defined was that in modern workflows, it was not difficult to provide accessible content, and it also could have new marketing opportunities.

This research used the established framework of a crowdsourced research project designed by library and accessibility specialists, called E-book Accessibility Audit Project Group, to draw attention to the opportunities in accessibility. This method of a crowdsourced e-book audit of 44 e-book platforms was taken on by 33 UK universities, and they used an audit questionnaire during 2016 (McNaught et al., 2018). It was concluded that since accessibility varied between format types, guiding students to the best formats, EPUB and HTML, led them to benefit from improved accessibility. The surveyed data strongly suggested that participating library teams had a higher degree of empathy for disabled users, more confidence in advising them, and more determination to get better accessibility information from suppliers (McNaught et al., 2018). It can be noted that this made the library teams powerful advocates for accessible products, or as the authors stated, the "secret solutions," referring to accessibility features in e-books (McNaught et al., 2018).

An important conclusion of this research was that the platform dramatically affected the accessibility of a publisher's content and made it significantly more important for publishers to work with suitable vendors to circulate their publications. A strength of the study was that the researchers had a large scale of 78 testers, which allowed them to audit 280 e-books across a wide range of platforms (McNaught et al., 2018). However, a downside to crowdsourcing was sample choices and tester reliability.

E-BOOK READING HINDERS ASPECTS OF LONG-TEXT COMPREHENSION FOR ADULTS WITH DYSLEXIA

The main problems that the authors investigated in long-text reading were (a) the different aspects of reading comprehension skills among university students with dyslexia and (b) the impact of e-book reading on reading comprehension in this population (Cavalli et al., 2019). A key concept that the author identified was how reading e-books was accompanied by a reduction of manual activities that created less tactile or kinesthetic feedback. The decrease sometimes gave the effect of feeling lost in their navigation of digital text, which affected the capacity of readers to memorize the chronology of the story or their ability to understand the context of the text fully.

The researchers proceeded with an innovative method of testing thirty university students who identified as adults with dyslexia and matched them with thirty skilled readers. Both groups read the same text presented from a printed book and e-book, using the platform Amazon Kindle. The reading comprehension questions, which were asked and answered verbally, were all open-ended and based around literal and inferential processes, location of events within a story, and reconstruction of the plot (Cavalli et al., 2019). Results showed that with printed books, the adults with dyslexia performed similarly to the skilled readers. However, the results of the e-book comprehension test suggested that the adults with dyslexia were outperformed by skilled readers. This signified that reading from an e-book hindered only some aspects of reading comprehension for adults with dyslexia. During the inferential comprehension tasks, the dyslexic readers performed similarly to the control readers on both reading print and e-book formats. The study demonstrated that when adults with dyslexia read a printed book, they performed as well or even better than non-impaired readers in reading comprehension (Cavalli et al., 2019). The authors concluded that digital reading might not always be advantageous to people with dyslexia. They also discussed that in contrast to their results, digital devices provided readers with useful tools that were not used in their research experiment. These tools greatly benefit people with disabilities, including having a navigation bar so that readers can go straight to a section the researcher asks about.

DOES USE OF TEXT-TO-SPEECH AND RELATED READ-ALOUD TOOLS IMPROVE READING COMPREHENSION FOR STUDENTS WITH READING DISABILITIES? A META-ANALYSIS

Authors Wood, Moxley, Tighe, and Wagner (2018) addressed the question of how effective text-to-speech was at improving reading comprehension for students with disabilities in their research paper. A key theory presented was that when material was presented verbally, in addition to presenting it in a print form, it removed the need to decode reading material and had the potential to help students with reading disabilities in their comprehension of written texts. The article also reviewed the concept that research on text-to-speech technologies to support comprehension had been characterized by contradictory results. For example, some studies reported an improved reading while other studies did not (Wood et al., 2018).

The authors conducted a meta-analysis on the effects of text-to-speech technology and related read-aloud tools on reading comprehension for students with reading difficulties (Wood et al., 2018). The research used established frameworks, and the work they assessed had to meet the following four criteria: (1) reading comprehension must be measured at sentence, paragraph, or passage level, and (2) only studies in which the effect size could be calculated for students with dyslexia, reading disabilities, or learning disabilities were included. Furthermore, students could have more than one disability, but had to have a reading disability. The third (3) criterion was that all studies must have included a condition with oral presentation of the reading material, including one of the following: (a) human recorded audio, human readers, or (b) a variety of technology like synthesized text-to-speech or reading pens. The fourth (4) criterion was that the studies must be reported in English (Wood et al., 2018). The results of the average effect size of the use of text-to-speech on measures of reading comprehension section of the meta-analysis revealed that the effects of text-to-speech and related read-aloud tools indicated that verbal presentation of text for students with disabilities helped their reading comprehension test scores. The results suggested that text-to-speech technologies may have assisted students with reading comprehension. However, more studies are needed to further explore the effectiveness of moderating variables of text-to-speech and read-aloud tools for improving reading comprehension.

A limitation of the authors' research was that they used a relatively small sample size of studies, as the sample size only consisted of twenty-two studies. Another limitation was that the sampled studies were diverse and tested at different intensities instead of a narrow and focused sample, such as a cohort of post-secondary students.

THE ACADEMIC E-BOOK ECOSYSTEM REINVIGORATED: A PERSPECTIVE FROM THE USA

Watkinson's article addressed the proactive philanthropic support of infrastructure development in new forms of long-form digital publishing that went "beyond the eBook" (2018). The key themes that this article addressed were: (a) an emphasis on shared values throughout development, (b) a focus on building an ecosystem of interoperable platforms and tools, and (c) engagement with the challenges faced by new-form digital publications, which included preservation, discovery, and accessibility (Watkinson, 2018). Watkinson (2018) stated that new platforms found that designing for accessibility was a challenge, especially when fulfilling legal responsibilities. He further explained this by affirming that publishers of enhanced eBooks understood that designing platforms and content with accessibility in mind also catalyzes good digital design (Watkinson, 2018). A concern was raised about the amount of additional labour required for accessibility in multimedia publications, and the challenge it imposed on authors and publishers. For example, audio and video files require extra labour to caption or transcribe. Another example was that the images needed alternative text, and if a model or graph was not able to be transcribed, there was a further requirement of an explanation as to why the medium might not have been fully accessible.

AN OVERVIEW OF CONTENT ACCESSIBILITY ISSUES EXPERIENCED BY EDUCATIONAL PUBLISHERS

Frederick Bowes' (2018) research emphasized the educational publishing segment and the impact on students with disabilities from the rapid shift of an analogue society to the digital world. The key theme was how the traditional analogue model rapidly transformed into a digital environment that provided educational content via new technologies, which allowed the delivery of configurable personal learning experiences, and how these experiences are analyzed (Bowes, 2018). Bowes (2018) mentioned that in the new multifaceted digital learning paradigm, students with disabilities could have only been successful if all parts of the new learning experience were fully accessible to them. Market pressure was also mentioned towards the publisher with references to how most institutions were awakened to the reality that they must have paid attention to the accessibility of their digital course offerings with regards to legalities under the ADA (Americans with Disabilities Act). The author further expanded on his analysis by stating that text-based content, enhancements, linked content, and contributed/uploaded content are the four categories that should have been addressed by the publisher, from the perspective that all content in a learning experience needs to be accessible to ensure that students with disabilities encountering these elements can benefit effectively (Bowes, 2018).

Bowes (2018) discovered that the four most consequential accessibility problems that plagued the accommodations model created an opportunity to successfully convert materials from print to digital and add accessible features. These problems were: (a) the quality of source content and resources available to execute the conversion, (b) costly component of converting, and (c) security of content being pirated (Bowes, 2018). The article concludes that publishers need to ensure that their text/words, platforms, and learning experiences conform with all appropriate standards and ultimately measure up to the broader requirement – that students with disabilities must receive all the educational benefits provided by the technology in an equally effective and equally integrated manner.

Accessibility features in e-publications was a significantly more important topic that many professionals attributed to the progression of education. Kimberly Anne Sheen and Yan Luximon's (2017) research dived into the student perspective aspect of this topic and reported which accessibility features students believed to be essential to their learning. The results of their research study were compared to the authors and researchers Wood, Moxley, Tighe, and Wagner (2018), whose study answered the question of the effectiveness of text-to-speech in improving reading comprehension for students with disabilities. The students in Sheen and Luximon's (2017) research enjoyed the use of text-to-speech features and indicated that this tool was highly supportive to students in the study. The students in the following study, who had disabilities, also found that the text-to-speech accessibility feature assisted them while reading. The two aforementioned studies demonstrated that offering this accessibility feature, even if they chose not to use it, helped students, regardless of whether they had a disability. The thesis further contributed to the discussion on the effectiveness of text-to-speech through its ability to aid students to retain information and their insight on the use of accessible features.

The topic of how digital publications and print publications differed in effectiveness for those with disabilities was another sub-topic in the broader scope of accessibility of e-publications. Cavalli, Colé, Brêthes, Lefevre, Lascombe, and Velay's (2019) research about e-books hindering characteristics of long-text comprehension for adults with dyslexia, investigated the different aspects of reading comprehension skills among university students with dyslexia and the impact of e-book reading on reading comprehension. The thesis extended the aforementioned research study by using short-text reading samples, which were tested for information retention instead of comprehension. The results of this study indicated that digital reading for students with dyslexia was not as effective in reading comprehension as when it was in the format of print documents. For the purpose of the thesis project, students did not have to specify if they had a reading or learning disability. Instead of solely focusing on one disability, the thesis project opened up the debate on how accessibility features in e-publications supported students despite their disabilities. In contrast, Bowes (2018) research signified the

educational publishing segment and how the transition from an analogue to a digital world impacted students with disabilities. This research related to that of Cavalli, Colé, Brèthes, Lefevre, Lascombe, and Velay's (2019) in the sense that the comparison made was between print and digital publications. The comparison brought to light the topic of which was more suitable for educational purposes and how students adjusted to the change into digital publications.

Research regarding how accessibility features in e-publications affected readers was important not only to those reading, but to those who produced these publications. Watkinson's (2018) findings demonstrated how crucial it was for publishers of enhanced e-books to understand designing platforms in combination with good digital design. The e-publication needed to be accessible; it also needed to serve the purpose of being read on screen, which was formatted much differently than in print mediums. This research provided the perception of the publisher's responsibility within the implementation of accessibility features. Concerning Watkinson's (2018) work, McNaught, MacMullen, Smith, and Dobson (2018) also took the subject of the publisher in the accessibility of e-publications topic in relation to how it was often difficult to find information from the publisher on accessibility in e-books. They pointed out a key vision that accessibility in e-books was a necessity and was no longer just an asset. In comparison to Watkinson's (2018) paper, it was debated that publishers should have been required to implement accessibility features into their e-publications as it was an essential component to the document. Throughout the thesis project, the researcher contributed to this debate about how accessibility should have been made more readily available from publishers of electronic publications through the evaluation of accessibility features within ePublications for undergraduate university students.

METHODOLOGY

PERSPECTIVE

The method in which the researcher conducted the study took the form of two testing documents and one opinion survey. First, participants were asked to read one PDF document that was not accessible, and then answer a ten-question multiple choice test to record their information retention. Then, participants were asked to read the second document, in the format of an iBook, which included the magnification of text, colour and contrast, and text-to-speech. Participants were provided with these accessibility features in the second document, but it was left to their discretion if they wanted to use them as it was not a requirement. After reading the second document, a second ten-question multiple choice test was to be filled out by participants. Once participants of the study completed both tests, they were then asked to fill out an opinion questionnaire that focused on how the participant felt towards both documents. For example, if they thought one document helped them retain more information than the other, or if they used the accessibility features and if these features were helpful or distracting.

RESEARCH DESIGN

To enable students to sign up for in-person research appointments, the researcher created a Google Document sign-up sheet with research openings within the timeframe of two weeks, between February 23 to March 1, 2020. Each research appointment was limited to thirty minutes, as students were more willing to give their time if it was limited and not extensive. The Google Document was shared on the Graphic Communications Management Facebook page, and participants required a Ryerson University email to sign up for the study. The appointments were held at the Ryerson Library or the Ryerson Student Learning Centre (SLC). This ensured that all appointments were accessible for students to attend between classes. For both locations, quiet study rooms were booked to provide students with an undistruptive environment.

RESEARCH QUESTIONS

1. What impact do the accessibility features of colour and contrast, text-to-speech, and magnification in ePublications have on undergraduate students' ability to retain information?
2. If required readings for undergraduate university students were provided from professors in

the form of accessible e-publications, would students be more motivated to read these documents?

3. Does having the ability to change the colour of text and background help students while reading in different light settings (i.e. library, dimmed study area, well-lit classroom, etc.)

HYPOTHESIS

Students will realize the difference between the two documents and prefer the accessible document as opposed to the standard document. The accessible e-publication will aid the students to retain more information than the non-accessible document.

SUBJECTS, PARTICIPANTS, AND SAMPLE

The participants of the study were Ryerson University Undergraduate students from all four years of study in the Graphic Communications Management program. The researcher did not collect the demographics of age, gender, or year of study due to the ethical requirements of the Ryerson Ethics Board. However, the study ensured that all participants were enrolled at Ryerson University for their undergraduate studies. Although age data was not collected, it can be estimated that the average age of participants was 20.7 years old according to Ryerson University's 2018-2019 statistics of the Graphic Communications Management student enrolment data (University Planning Office, 2019).

The research study sample consisted of twenty students that were tested over two weeks, or fourteen days. This student sample size was established due to the time constraint of the research period and the allotted time given to each student to complete this research test. It was required for students to use a single laptop provided by the researcher to complete the research test. This ensured that all participants had access to the iBooks application and prevented students from viewing the test documents throughout their completion of the multiple-choice questions. As a result, only one student completed the research test at a time. For this reason, it was mandatory to meet with students at their chosen time slot in order for them to be tested using the researcher's selected laptop.

INSTRUMENTS AND MEASURES OF DATA COLLECTION

The first testing document was presented in the form of a three-page PDF. The content of the document consisted of the article *Halifax* by L.D. McCann, cited from The Canadian Encyclopedia (McCann, 2019).

This PDF was first created and formatted in Adobe Illustrator CC 2018 and then exported as a PDF to be viewed by students. The format of this document consisted of two-columns of text, captioned photographs, and text set in the standard serif typeface of Times New Roman.

The second testing document was presented in the form of a reflowable document that used the Apple application iBooks. The content of the document was the article *Winnipeg* by Alan F.J. Artibise, cited from The Canadian Encyclopedia (Artibise, 2019). This accessible iBook was constructed in Adobe Illustrator CC 2018 and incorporated the features of text magnification, contrast of text and background colour, and text-to-speech capabilities. The format of this document included captioned photos and the sans-serif font of Arial. Participants were able to change the magnification and leading of this text to their set preference. The four colour and contrast options for the text were black text on a white background, black text on a pastel-yellow background, white text on a dark grey background, and white text on a black background. The text-to-speech ability was not created using a synthesized reader due to time constraints of this research. However, participants had the option to use the text-to-speech feature on Apple iBooks if they preferred the document to be read to them.

Each document that was read had a corresponding ten-question multiple choice test. This short test took the form of a Google Form, where participants were given four options per question. Both assessments required the participant to fill out the ten questions to the best of their abilities based on the article to test their information retention on either document. Each question resulted in one correct answer, and participants were able to review their scores after the entire research test was completed.

The third assessment of this research was an opinion questionnaire as a Google Form, that participants were asked to fill out after they completed the two previous tests. The form included fourteen multiple-choice questions where participants were asked how they felt towards both documents, if they thought one aided them to retain more information than the other, if they used the accessibility features, and if these features were helpful or distracting. Underneath each question was an “other” option, which the participants were able to select and input their own answer if they wanted to provide an explanation. The form also included a comment section if the participant had additional details about the research study they would like to share.

METHODS OF ANALYSIS

All data, both from the testing documents and the opinion form, were analyzed using Microsoft Excel 2018. The researcher created tables using Excel to format the data collected from both the testing documents and the opinion survey. To compare the results, the researcher used Microsoft Word 2018 to

generate four graphs for the collected raw data using the information inputted in the Excel tables. The visual graphs depicted in Figures 1 to 3 provided a visual representation of the research study. For this reason, one does not have to make assumptions about the data collected. A T-Test was also prepared on Microsoft Excel in order to analyze the test data (see Table 1).

VALIDITY AND RELIABILITY

The researcher chose the demographic of undergraduate university students as the research sample because they have been consistently required to read documents for their academic courses. For this reason, the researcher decided to test the student demographic to discover if the accessibility features in e-publications would have made a difference in how they felt about their readings and if they would be more inclined to read if they were provided with accessible documents instead of PDFs.

The research was conducted in-person and was supervised as the participant took the research test. It was suitable to use an in-person method of research to ensure that students did not look at the reading documents, or consult with others as they took the tests. Furthermore, supervision guaranteed honesty and reliability from participants' test scores.

In-person testing provided the limitation of a small sample size due to time restraints and flexibility with the participants' schedules. There were 44,400 undergraduate students enrolled at Ryerson University (University Planning Office, 2019). By comparing that to the sample size of the research that included twenty fourth-year undergraduate students in the Graphic Communications Management program, it posed as a drawback in the representation of the student population. However, in-person research ensured greater accuracy than a larger sample size for an online survey.

RESULTS AND DISCUSSION

DOCUMENT TEST RESULTS COMPARISON

The results of the research study found that after students read the accessible document, the average score on the multiple-choice test was 82%. However, the average of the multiple-choice test was 59.5% after students read the non-accessible document (see Figure 1). The results validated that when students read the accessible document, with features of text-to-speech, colour and contrast, and magnification, they scored an average of 22.5% higher on the test than when using the non-accessible document. With the data shown in Figure 1, it was evident that the accessibility features included in the reading document enabled students to perform better on the test. The results further indicated that the three accessibility features of this research study aided students in terms of information retention more than the non-accessible document. As a result, accessibility in e-publications and various accessibility features in digital readings should be implemented within the documents that students receive as required course readings. This is because of the evidence that it helps them to retain more information than when they are just reading a non-accessible PDF, as demonstrated through this research test.

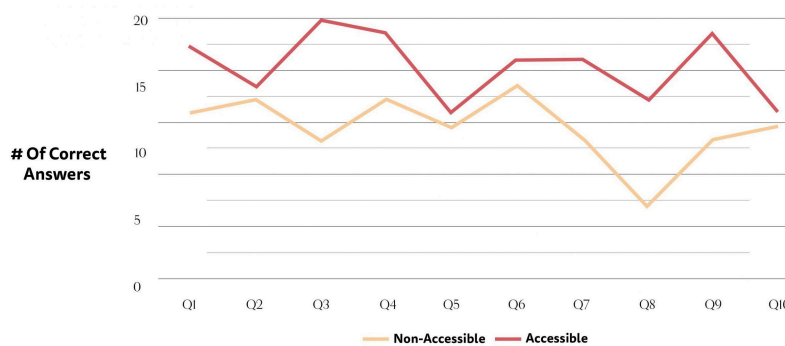


Figure 1. Document 1 and 2 Test Comparison

OPINION SURVEY RESULTS

Figure 2 presents that students preferred the accessible document over the non-accessible document, for they thought they had better readability, enjoyed reading more, and thought it helped them retain more information. The readability section of the opinion survey indicated that students felt that magnification and the ability to change the colour of text and background helped to format the

document to their preference. This was due to a variance in reading levels among participants. For this reason, the ability to change the document to the user's preference gave participants the freedom to alter the document in accordance with their reading capabilities. The PDF document was not able to be altered, which resulted in twelve participants stating that they had difficulties reading the two-column document because they had to scroll up at the end of a page to start the next column, which made it difficult to keep track of the sentence. The accessible document allowed text to reflow if the participant changed the size of the font. The same twelve participants were then able to flip from page to page without losing their spot.

Overall, students enjoyed reading the accessible document more than the non-accessible document. Figure 2 showed that out of the twenty participants, only one participant stated that they enjoyed the PDF document that was non-accessible (0.05%). Two participants indicated that they did not enjoy one document over the other (0.1%). This left seventeen participants who stated that they enjoyed reading the accessible document more than the non-accessible document (0.85%). These results displayed that undergraduate university students enjoyed reading documents with accessibility features over the PDF document without accessibility features.

In comparison to Figure 3, 90% of students stated that if their required course readings were presented with the accessibility features as they were in the second testing document, they would be more likely to complete their readings. Participants made comments that they enjoyed the ability to change the background and text colour, which could potentially be used at night when reading in darkness. One participant in particular stated that having the reading documents set to “night mode”, where the background is a soft yellow, helped them to read at night as opposed to the regular PDF that was formatted with black text on a white background.

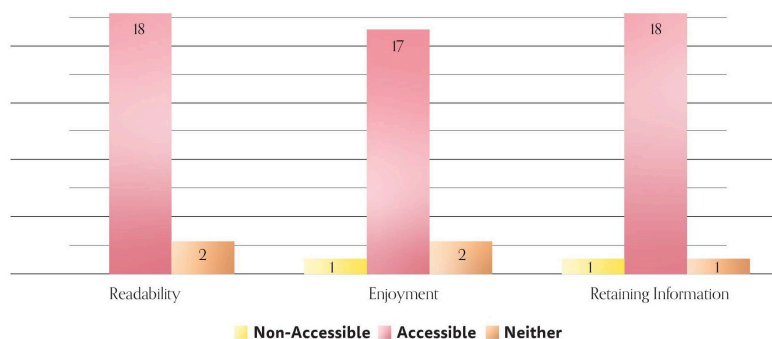


Figure 2. Opinion Survey: Document 1 and 2 Comparison

During the research study, there were six students who stated that they enjoyed reading the accessible

document because they were able to change the text size and have the paragraphs reflowed. Using the PDF document, the students stated that instead of having the accessible document features to increase text size and to keep the document static, they had to scroll into the document to increase the text size. This made it harder for these six students to flow through the document consistently because they were not able to read the entire paragraph on the screen and kept having to scroll up and down the page. Participants were given the opportunity to make comments about the study and the accessibility features chosen. As a result, six students pointed out that although they did not have a visual impairment, it was their preference to have the text enlarged. For this reason, the accessible document with the ability to increase the magnification of text without losing the overall format aided students to read in alignment with their needs.

Another section of the opinion survey that was completed by participants of the research test was about if they believed the accessible document helped them to retain more information than the non-accessible document. Eighteen students, or 90% of the participants, felt that the accessible document aided them in retaining more information than the non-accessible document. This statistical finding signified that students believed the accessible document better supported them in remembering information from the reading in contrast to the non-accessible document. The result of this section of the opinion survey correlated to the actual performance of the information retention of participants on the test that is shown in Figure 1.

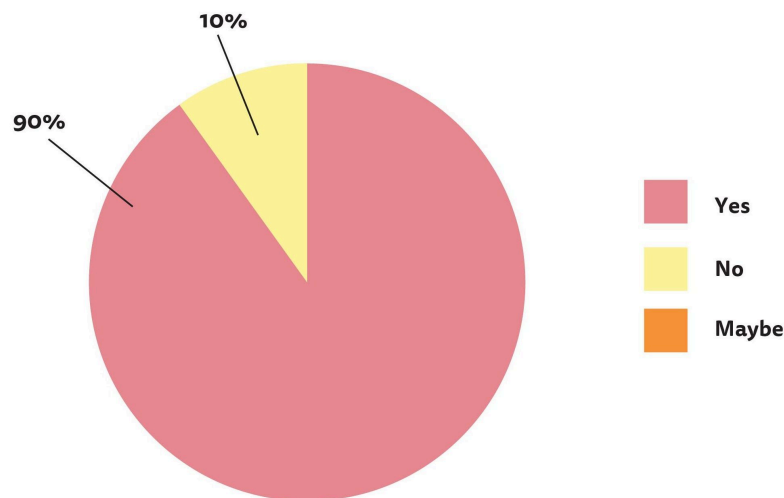


Figure 3. Would You Rather be More Inclined to Complete Readings if the Information was Presented as Accessible?

T-TEST RESULTS

A T-test was performed using the data collected from the research in Microsoft Excel (see Figure 3). Using this research study test, the T-test illustrated that the probability of the two situations, that of the non-accessible and accessible reading and testing results, were the same as 0.00139, which can be interpreted as 0.14%. The difference was accepted if the probability was less than 0.05 or 5% (Kenton, 2020). In the case of the data that had been collected comparing the results of the two documents, the T-test demonstrated that there was a significant difference in the data collected in association with the non-accessible and accessible documents after the analysis of their respective tests. This further proved that when students read the accessible documents, they performed better on the multiple-choice test.

Table 1. T-Test results created using Microsoft Excel

Test on Non-Accessible and Accessible Document Comparison		
Question	Non-Accessible	Accessible
1	13	18
2	14	15
3	11	20
4	14	18
5	13	14
6	15	16
7	12	16
8	6	14
9	10	18
10	11	14
Average	11.9	16.3
T-Test		0.001398633

Through the results of this study, it can be further discussed how the information supported the theory that accessible documents did not just help those with disabilities, but also assisted the public in

general. Since these results proved that accessible documents had a positive effect on the information retention of undergraduate students, the topic of how easy it was to have accessible documents made available by e-book or e-publication publishers arose. Robert Gordon, Manager of Audio Publishing and Distribution at the Canadian National Institute for the Blind (CNIB Lab), stated that when files have been written, whether in Microsoft Word or another software, the process to turn these non-accessible PDFs into e-publications that have accessibility features was very minimal (Gordon, 2020). Whether it was the addition of the ability for users to change the colour of the text and background, alter the magnification of text, or enhance the document so it can be listened to instead of read, it was just an extra step within the publishing workflow to generate accessibility features into these documents. Gordon (2020) further built upon this statement through his expression that these features were simple to create by running a Microsoft Word document through a speech generator in order to create synthesized text-to-speech.

In correlation to the research findings and results, students not only performed better on the test after reading the accessible document, but they also enjoyed and felt that these features aided them in retaining information. Participants also stated that they would be more inclined to complete course readings if they were presented in an accessible format. Gordon's (2020) statements about the implementation process of accessibility features promoted the notion that these documents should be formatted with accessibility features when published to be readable for all users.

To extend the idea that documents should be made accessible to everyone, Gordon (2020) gave the example of the electronic toothbrush. He explained that the electronic toothbrush was first designed to aid veterans who had been in World War II and needed assistance when brushing their teeth to support the circular motion of the brush (Gordon, 2020). It was found that not only did the electronic tooth aid those with a disability, but also the general public in achieving better usability. This example can connect with the implementation of accessibility features within e-publications. Not only do these features support those with disabilities, but the research study's findings demonstrate that it also helps general undergraduate students. Although these accessibility features were not initially designed for the average user and were made specifically for those with disabilities, we can interpret the findings to further Gordon's (2020) theory that accessibility features in e-publications extend from their intended user, and contribute benefits to the retention of information for the general public.

Furthering the concept that documents should be built accessible for everyone to use, the "curbcut" effect, a theory identified by Jutta Treviranus, describes that when accessibility is implemented within daily objects, it benefits the general public simultaneously, not only those who the features were intended for:

... frequently when these accessibility functions are made available to the general public it becomes clear that they benefit everyone... This is referred to as the 'digital curbcut.' Curbcuts were put into sidewalks to enable wheelchairs to get on and off sidewalks, yet they benefit people pushing strollers, shopping carts, or riding skateboards.

The statement by Treviranus extends this research study's main argument, and Gordon's (2020) theory, that when accessibility features are implemented, it benefits the public in general.

Another application of these accessibility features throughout e-publications is that they are portable. Gordon (2020) explained that the features within this study are able to be viewed on any electronic devices, such as laptops, smartphones, and tablets. A benefit of having these features readily available and portable means that the participants of the study were able to interact with these accessibility features outside of the classroom. As Ryerson University is located in Downtown Toronto, where this study took place, it is known as a "commuter school" where many students commute to school because of the high cost of living downtown (Ryerson University Planning Office, 2019). If students wanted to complete required course readings on their way to or from school during their commute, the accessibility features within this study aid students. For example, the text-to-speech option can be used with headphones to eliminate background noise. The ability to change the colour of text and background can be adjusted to the lighting of the atmosphere around the reader, and magnification can be used to reflow text in order to support the viewer's text preference (Gordon, 2020). As a result, e-publication accessibility features used outside of the tested information retention can be used to support students in learning outside of the classroom.

CONCLUSION

Using the data collected and analyzed from this study, the effects and benefits that the accessibility features tested have on those for whom the features were built for and students who did not identify as having a disability were evident. Future development of this theme can take form in similar research studies using different accessibility features than the three tests employed in this study. The results of future studies can be juxtaposed to the conclusions of this study to indicate which accessibility features best support the general public in information retention.

The limitations of this research study included time restraints, which resulted in using a small sample size as there were only two weeks for participants able to sign up for a testing appointment. As the results of this research study suggest that the tested accessibility features benefit those of the general public, a more in-depth and wide-spread test with a greater sample size can further ensure validity and an accurate representation of the research population. Furthermore, a longer time period to recruit participants would result in a greater number of student participants, which in correlation, would increase the accuracy of results yielded from the study.

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APPENDIX

Halifax

Article by: L. d. Mccann
Updated by: Elaine Young
Published Online: September 24, 2012
Last Edited: March 7, 2019

Halifax, Nova Scotia, incorporated as a city in 1841, population 403,111 (2016 c), 390,094 (2011 c). Halifax is the capital of Nova Scotia and the largest urban area in Atlantic Canada. On 1 April 1999 Halifax was amalgamated with neighbouring communities to form the Halifax Regional Municipality. Halifax Regional Municipality occupies a strategic and central location on the province's east coast and is one of the world's largest harbours. Sometimes called "Warden of the North" for its historic military role, today it is a major regional centre for Atlantic Canada's economy.

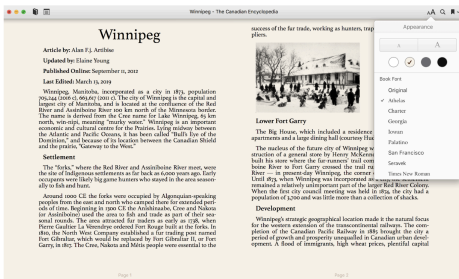
Settlement
Human settlement of present day Nova Scotia dates back to the end of the last Ice Age, approximately 13,000 years ago, when groups of hunter-gatherers moved into the area to hunt caribou. Oral tradition identifies these early settlers as the forerunners of the Mi'kmaq people, who occupied a territory stretching from the Gaspé Peninsula to Cape Breton Island, called Mi'kma'ki. The Mi'kmaq did not establish permanent settlements, but moved in seasonal rounds from coastal regions in the summer where they fished and hunted, to inland areas in the winter where they hunted game such as moose, caribou, muskrat and bear. One coastal area used by the Mi'kmaq was Joggins, later Anglicised as Chebucto, which meant "the haggard harbor". The Mi'kmaq were prosperous and greatly improved early Europeans.



Richard Short's engraving of Halifax shows St Paul's to the right, St Matthew's, the Protestant meeting house, and to the left-center the official residence of the governor (county Library and Archives Canada C-2482).

In 1746 the British government sponsored the first settlement plan in North America, focused on present-day Halifax. This settlement was undertaken for a number of reasons, including countering the Catholic presence throughout Acadia and the French military presence at Louisbourg, but more importantly exploiting the rich coal industry. In 1749 some 2,500 settlers, mostly poor and recruited mainly from England, arrived, led by Colonel Edward Cornwallis. Cornwallis selected Chebucto as the site of the new settlement because of its fine ice-free harbour, the second largest in the world. First named Chebucto, it was renamed Halifax shortly after in honour of George Duke, Earl of Halifax and Chief Lord of Trade and Plantations, who masterminded its settlement. The first settlers had free holding lots, but few houses were completed before winter. While some people stayed aboard ship and some others died, almost 1,000 departed for Boston and other US destinations. However, merchants, many trying to escape debt, indenture or hoping to profit from the money being invested in the colony, soon arrived from New England. A governor's residence, an Anglican church, wharves, modest defence facilities and wooden houses were all built within a year. To bolster the settlement's population, German, known as "Foreign Protestants," were recruited and given land just north of the town.

Relations between the Mi'kmaq and English were strained. The Mi'kmaq felt that the English had settled on their lands without their permission, and English officials initially refused to adopt the custom of giving presents in exchange for use of the land. Cornwallis wanted to bring the Mi'kmaq under his authority, but they refused. In retaliation Cornwallis set a bounty on Mi'kmaq scalps. The Mi'kmaq in turn declared war on the British in 1749. The French at Louisbourg encouraged this antagonism, and provided weapons and money for the Mi'kmaq war on the English. The Mi'kmaq attacked British settlements, and conducted a successful raid on Dartmouth in 1751. In August 1755 the British deported the Acadians, descendants of French settlers, who they saw as a potential threat. The deportation of the Acadian population and the British capture of Île Royale and its Saint-Jean effectively ended French influence in the region. The Mi'kmaq were left to oppose the British on their own, and the crisis signed a peace treaty with British officials in 1761. However, the American Revolution (1775-83) led the British to reinforce its military presence at Halifax and also brought an influx of Loyalist refugees. These factors tipped the balance of power against the Mi'kmaq in the region, who were quickly dispossessed of their remaining lands.



Appendix A: The accessible document that participants read, showcasing the option of using the accessibility drop-down menu, which allows for users to change the colour contrast of background and text, size of text, and text-to-speech.

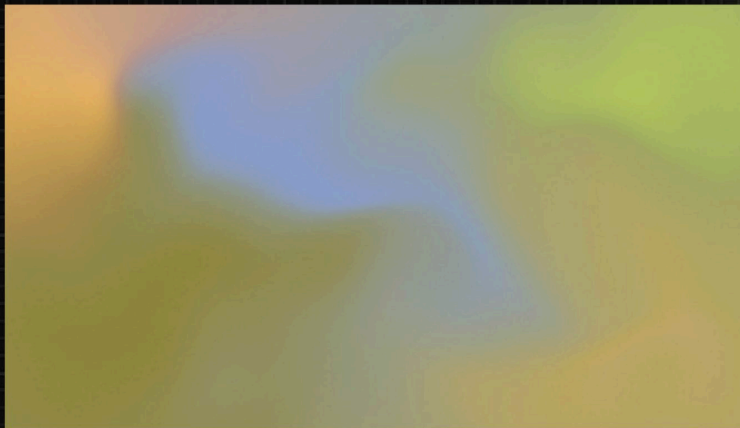
Appendix B: The non-accessible PDF that participants read for this research study.



03

THE VALUE OF DYNAMIC BRANDING IN THE MODERN MARKETING LANDSCAPE

LIZ THAN



ABSTRACT

Branding, broadly defined as the promotion of a company via an identifiable design, plays a vital role in marketing. The world, however, is fast-moving. Although brands must ensure consistency in the communication of brand values and priorities, they are no longer defined by a single set of typefaces and colours. In van Nes' book *Dynamic Identities: How to Create a Living Brand* (2012), she explains that the Internet, social media, and technological revolutions have allowed brands to behave like "living organisms." As a result, van Nes encourages brands to constantly adapt to their environment(s) in order to survive in the modern marketplace. In other words, consumer behaviours, preferences, and values have changed, and the ways in which brands interact with their customers has diversified. Most interactions today take place online, which gives brands the opportunity to adopt a variable brand identity and create an emotional connection with diverse populations of consumers. This form of visual identity reflects a company's existing values, but its organic nature allows it to evolve and adapt to changing social environments. This paper explored the history of visual branding identities, defined the concept of dynamic branding in contrast to static branding, and analyzed the viability of adopting dynamism. Case studies were presented to compare dynamic brands to static brands. To limit the scope, this paper examined examples in three service-related industries: tourism (City of Toronto vs. City of Melbourne), educational services (Emily Carr University of Art and Design vs. Ontario College of Art and Design University), and web services (Yahoo vs. Google). The information provided assists readers in understanding how dynamic branding can help brands effectively engage with today's consumers. Ultimately, as the world changes, so should design.

INTRODUCTION

For centuries, humans have needed and desired social identification as a way to communicate ownership. The branding of livestock, for example, was born out of necessity and allowed farmers to mark their property as early as 2700 BC (Khan & Mufti, 2007, p. 76). Branding, broadly defined as the promotion of a company, organization, or institution via an identifiable design, has since evolved and continues to play a vital role in recognition as well as marketing. The beginning of the digital era and the introduction of complex technologies have transformed the world, and nowadays, markets have become increasingly saturated. As a result, consumers are exposed to more information and brand choices than ever before. Whether people notice it or not, advertisements are all around us and they are fighting for our attention.

Several influential changes have occurred following the rise of modern technology—one of them being that humanity is producing vastly larger amounts of data (Airey, 2010, p. 5). According to a study conducted by an independent research organization based in Norway called SINTEF (2013), “in 2013, a full 90 percent of the data in the world had been generated during the previous two years.” In other words, as more and more information is visually branded and presented to consumers, logos become strikingly similar to one another (Airey, 2010, p. 5). Consequently, visual differentiation from competitors has become an increasingly complex challenge for designers. Moreover, Grzesiak (2015) found that younger audiences, acknowledged as representatives of Generations Y and Z, have different expectations and attitudes from their parents and grandparents: “they require a message to be as interactive as possible, as well as personalized, and they have much less trust in traditional forms of advertising” (p. 89) like television, radio, and press. Consumer behaviours, preferences, and values have changed, so brands must diversify how they interact with their customers in response. As such, there is a clear need for branding design to adapt to the modern context. Leaders in the graphic design community, such as those in the International Council of Design (Ico-D), recognized this as an issue and endorsed an important message: in the new world of technology, design must change. Brands can no longer be defined by a single set of typefaces and colours (Murdock, 2016, p. 1).

Dynamic branding, a concept characterized by flexibility and variability, is one of the ways in which brands can differentiate from competitors while achieving greater customer perception and loyalty. In van Nes’ book *Dynamic Identities: How to Create a Living Brand* (2012), she expanded on the methodology behind this concept:

Fifty years ago, a brand was just a single mark used for brand recognition, which set it apart from the rest. Now a brand has become a platform where like-minded people come together, and an experience that creates emotional attachment. Brands need to constantly adapt to their [...] environment in order to survive. Internet, social media and technical revolutions have given brands the opportunity to behave like living organisms (p. 6).

Essentially, a brand changes with every interaction; it is a living, breathing interaction between consumers and the world (Stratten & Stratten, 2017, p. 1). The organic nature of a dynamic brand identity allows a company to interact with its consumers in new ways while ensuring consistency in the communication of its values and priorities. Companies can use the flexibility of dynamic branding to create meaningful connections to consumers. Essentially, the manipulation of variable elements (i.e., logo, colour, typography, graphic elements, imagery and language) creates opportunities for personalization and customization—a growing trend that utilizes modern society’s wealth of data to bring companies and their customers closer together (Ferrara, 2014; Grzesiak, 2015; van Nes, 2012). This form of visual identity reflects the company’s existing values, but its organic nature allows it to adapt to changing environments—the brand, therefore, becomes a living organism.

Overall, given the shifts in consumer mentalities, this study sought to explore the value of dynamic branding in the modern marketing landscape. The research revealed how changing consumer behaviour impacts the evolution of traditional branding strategies and whether dynamic branding is a viable concept to adopt in contrast to said traditional methods. Real-life examples of brands that use dynamism were evaluated and contrasted to competitor brands that opted for static brand identities. Ultimately, dynamic or flexible branding is a relatively new concept in the design world that aims to redefine brand consistency for a modern context. The rise of dynamic branding as an area of study is representative of the requirement for design to evolve to meet changing needs.

For the purpose of this paper, “branding” refers to visual identity design, or the graphic or typographic mark (i.e., logo) that is used to represent an organization, and the “modern marketing landscape” refers to the evolution of branding from the beginning of the twenty-first century onwards—that is, the start of the digital era. It is important to note that the intention of this paper was not to prove whether one form of branding is better than the other but, rather, to highlight the benefits and implications of dynamism. Ultimately, the objective was to develop a pluralistic view of visual identity design and inform readers of a broader design landscape.

LITERATURE REVIEW

A variety of literary sources were consulted to develop a greater understanding of the history, importance and components of branding, as well as the difference between static and dynamic brand identities. A review of the literature showed a lack of empirical work in the area of flexible identities, and that the concept of dynamic branding as a whole is relatively unexplored. Nonetheless, a few studies have laid the foundation for this new subject field.

VISUAL IDENTITY SYSTEMS: A FUNDAMENTAL PART OF BRANDING

The History of Branding and the Rise of Technology Born out of the second wave of the industrial revolution (ca. 1870–1914), the graphic design profession undertook the challenge of helping commercial organizations find ways to visually communicate their personality and their reason for existence to consumers (Eskilson, 2012; Jury, 2012; Murdock, 2016). During the twentieth century, visual identity design, which plays a vital role in branding, followed the industrial model of production. Citing Wally Olins' (1978) work on corporate identity, Murdock (2016) explained that visual branding overwhelmingly depended on "the creation of a set of discrete yet wholly interdependent graphic devices [and] the production of a comprehensive manual that served to educate and instruct the client organization on how to use the graphic devices to project a carefully-crafted, consistent corporate image" (p. 1). In other words, the industrial era was characterized by a finite set of static elements with predefined guidelines (Felsing, 2010). However, in the post-industrial economy of the developed world, the traditional methods of branding have since changed.

Grzesiak (2015) noted that the contemporary world is experiencing decreasing effectiveness of traditional forms of brand communication through television, press, radio, and out-of-home (OOH) advertising (p. 89). Essentially, consumers are "embracing new forms of connection, communication and commerce" (Moving Brands, 2010, p. 14) as well as demanding interactivity. Social media, for instance, now "presents an advantageous platform for engaging consumers into [brands] and for building stronger and more meaningful [connections] with them" (Tuškej & Podnar, 2018, p. 4). Overall, as Grzesiak (2015) noted, technological advancements give "much greater opportunities to establish personal relationships with customers, which will be of great importance when ... Generation Z, depending on fully personalized messages, will dominate the market" (p. 98). In today's technology-driven world, it is

essential for brands to adjust their visual identities to meet modern needs and to pursue new ways to connect with their target audiences (Brasel & Hagtvedt, 2016; Cian et al., 2014; van Nes, 2012).

THE GOALS AND IMPORTANCE OF BRANDING IN THE MODERN CONTEXT

Kall (2015) summarized the goals of branding as follows: (1) to provide information about the brand's usefulness, (2) to develop a strong brand image by building awareness and (3) to stimulate consumer involvement in a relationship with the brand. With so many brands in the marketplace, marketers strive to find different, innovative means to engage consumers with their brands (Cian et al., 2014). Airey (2010) asserted that branding is important because "people often choose products [and services] based on their perceived value rather than their actual value" (p. 6). With the right branding strategies and materials, businesses can improve the perceived value of their offerings, establish valuable relationships with consumers, and nurture said relationships into lifelong bonds. Stratten & Stratten (2017) recognized that creating loyalty "by focusing on ways to create comfort, high perceived value, convenience and congruence for ... customers ... is the best defense against fast-paced change in the age of disruption" (p. 283). Furthermore, consumer-brand identification, defined as "the extent to which the consumer sees his or her own self-image as overlapping with the brand's image" (Tuškej & Podnar, 2018, p. 5), is also vital for brands to sustain long-term connections with their customers. Establishing parallels between brands and consumers develop relationships that can represent significant competitive advantages in saturated markets.

COMPONENTS OF VISUAL IDENTITY

As identified by van Nes (2012), reiterated by Jochum (2013), there are six basic components of visual identity: logo, colour, typography, graphic elements, imagery, and language – see Table 1.

Table 1. Definitions for the Six Components of a Visual Identity in a Branding Context

Component	Definition
Logo	The sign, symbol or trademark that is acknowledged as the center of the visual identity
Colour	The palette used to strategically ensure brand recognisability (also has the power of persuasion)
Typography	The palette used to strategically ensure brand recognisability (also has the power of persuasion)
Graphic Elements	Forms, shapes, lines and/or pictographs
Imagery	The pictures or photographs that communicate a brand's message, values and stories by simulating a mood or feeling
Language	Unique naming of services, products or product series (ex. Apple's "i" sub-brand line)

Note. Definitions paraphrased from Jochum (2013, 14-15).

According to van Nes (2012), each of these components work together to build and sharpen the identity of a brand and that “within these limitations, [there is] room for more freedom” (p. 7). In short, as shown in Figure 1, the six components of an identity and their connections create the visual identity system.

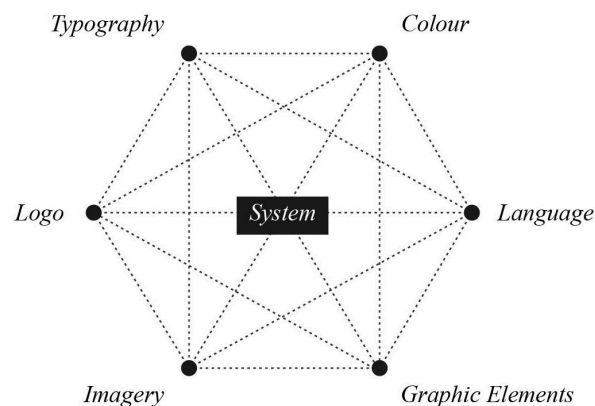


Figure 1. A recreation of van Nes’ (2012, p. 29) diagram outlining the six components of a visual design system and their connections to each other.

STATIC BRANDING IDENTITY DESIGN

Static visual identity design was “born out of and embraces the processes of the industrial revolution [and] maximizes the number of constants by fixing as many [variables] as possible” (Murdock, 2016, p. 51, 53). By eliminating variability in the visual identity system, a fixed identity is created—the supporting idea being that such a method creates a unified, strategic identity that appears consistent through a variety of format applications as well as through time. Strict brand guidelines ensure visual consistency: everything that a brand puts out looks the same and has an “unchangeable stamp” (Jochum, 2013, p. 8).



Figure 2. Examples of notable companies with static, or fixed, brand identities (Starbucks, 2011; Amazon, 2000; IBM, 1972; Microsoft, 2012; Twitter, 2012; Nintendo, 1983).

In reference to the six components of a visual identity, the principle of static branding design states that each component stays the same. Delahunty (2013) recognized that brand design, especially logos, should be timeless and “look [as] fresh today as they did twenty to thirty years ago” (p. 4). As noted by Lelis (2019), however, “recent studies show that much is happening within the rich field of brand design, hence opening opportunities for new questions and diverse research avenues” (p. 449). Market saturation, in particular, has increased the need to explore different modes of differentiation in visual identity design.

DYNAMIC BRANDING IDENTITY DESIGN

Delahunty (2013) explained that “as human beings living in today’s technological world our identity is constantly changing to adapt to our environment” (p. 1) and introduced the idea that a company, which is an organic entity, should then also adapt its identity to these elements of change. Brands must recognize that change plays a vital part in their business realities and that they have to behave as “living organisms” (van Nes, 2012, p. 6) as well as platforms for people to develop emotional attachments. Rather than approaching visual identity with an instruction manual that outlines a finite set of static elements, the dynamic approach “understands visual identity to be a flexible, living system generated by an infinitely

updatable database of elements with an algorithm that establishes constants and variables” (Murdock, 2016, p. 2). Dynamic branding, therefore, allows brands to “fit within different time-bound media, and ... to keep in line with market expectations” (Lelis, 2019, p. 446). Hewitt (2008) observed that “in a world where some brands are seen on screens more than in print, flexible identity is a logical development.”



Figure 3. Example of a prominent company with a dynamic brand identity: MTV (MTV, 1980).

Although dynamic visual identities embrace variability, consistency is preserved. In fact, “the dynamic aspect of brand identity entails being flexible to contextual changes while preserving a stable sense of self” (da Silveira et al., 2013, p. 35). Therefore, consumer-brand recognition is retained. Furthermore, there are several managerial implications that can be directly implemented, as well as studies that suggest the viability of dynamic branding. Tuškej & Podnar (2018), for instance, found that “consumer’s [sic]

identification with a corporate brand is stronger when the brand is perceived as more prestigious and humanlike” (p. 14) and urged brands to show their human character. In addition, Cian et al. (2014) observed that “a more dynamic logo can be more engaging and can enhance consumer attitudes” (p. 195).

Overall, “to be enduring, [a] brand identity [should] be dynamic and flexible so that [the] brand and consumers’ faces are supported within the changing environment” (da Silveira et al., 2013, p. 35). To truly stand the test of time, businesses must allow their brands to change so that they stay relevant in consumers’ minds. Based on the evidence presented in Murdock’s (2016) work, among various others, “it can be said that dynamic visual identity design is not a trend ... and that it can be especially effective as part of a broader strategy” (p. 18) to help companies grow and evolve.

METHODOLOGY

For the purpose of this paper, examples in three highly-competitive, service-related industries were compared: tourism, educational services, and web services. Each case study compared a brand with a static visual identity to a competitor brand with a dynamic visual identity and noted the following: background information about the company or brand, the agency responsible for the branding or rebranding, and the strategic rationale for launching the visual identity. Ultimately, the goal of these case studies was to examine and recognize the difference between static and dynamic brands. By comparing and contrasting these two types of identities, it pinpointed the limitations experienced by static brands, as well as traditional branding practices. Subsequently, in addition to solidifying the idea of dynamic branding, the opportunities that dynamic visual identities offer could then also be addressed.

This study combined the six components of a visual identity, a concept defined by van Nes (2012), with Jochum's (2013) "Flexibility Chart" methodology to analyze the degree of variability for each component (p. 10). In essence, the comparative analysis of the charts lead to a better understanding of the relationship between variable and static elements in different contexts, and how such relationships impact the visual identity as a whole. The radial chart, seen in Figure 4, identified components that were considered outliers in variability. The chart ranked each component on a scale of 0 to 3 – 0 being static and 3 being entirely flexible. Additionally, components recognized as static (0) were plotted with a filled bullet, while dynamic components were plotted with an outlined bullet.

Table 2. Explanation for each rank in the flexibility scale.

Rank	Definition
0	No variability (static, unchangeable)
1	Little variability
2	Moderate amount of variability
3	Full variability (dynamic, flexible)

While reviewing the chart, it is important to note that although variability is crucial to the degree of dynamism of a brand, "keeping a certain constant to maintain recognition" (van Nes, 2012, p. 7) is also vital. In other words, having at least one component remain static helps consumer-brand identification

and ensures that the visual identity does not stray too far from the original values of the brand. Nevertheless, as previously mentioned, there is room for freedom and playfulness within these limitations as countless component variations exist.

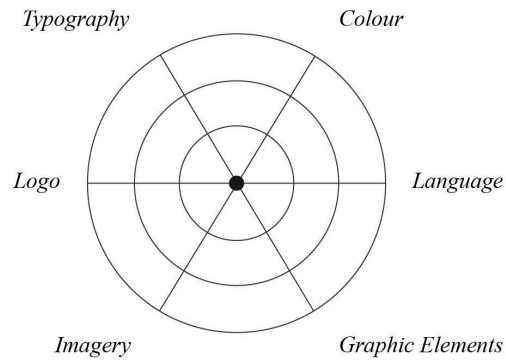


Figure 4. An example of a flexibility chart.

It was recognized that a flexibility analysis of static brands would result in the recreation of the original chart (Figure 4), where all of the components of a visual identity would be ranked with a flexibility of 0 on the scale. Therefore, the chart was only used to illustrate the variability of dynamic brands. The flexibility chart remained useful in this context because it showed how different companies use varying combinations of constant and variable elements to achieve a dynamic brand identity.

CASE STUDY RESULTS AND DISCUSSION

CASE STUDY 1: TOURISM

CITY OF TORONTO

The City of Toronto, located in Ontario, Canada, is a vibrant metropolis that boasts diversity through its multicultural population. In May 1998, to establish the newly amalgamated city, City Council introduced a corporate logo as the official mark of the city (City of Toronto, 2000). The static logo was developed as the mark for the merger between six previously separate municipalities (i.e., Etobicoke, Scarborough, York, East York, North York, and the City of Toronto) that came together to form the new, singular City of Toronto. An internal process was used to select the official logo and involved members of the Council, but the design is unattributable. According to Christopher Brands, the City's former Project Manager of Corporate Identity & Branding, the logo is a combination of several design ideas from different designers in the Greater Toronto Area (GTA) as well as the City's own design team (McGinn, 2014).



Figure 5. The City of Toronto logo colourized with the brand's predominant blue (City of Toronto, 1998).

A report published by the City of Toronto (2000) acknowledged the logo as a key identifier, and stated that the goal in establishing a corporate image was to “ensure that the City's brand appropriately represents Toronto as one of the largest and most successful cities in North America [as well as to reflect] the City's vibrancy and diversity.” Notably, there have been critiques of this logo design—namely by Richard Sommer, Dean of the John H. Daniels Faculty of Architecture, Landscape, and Design at the University of Toronto, who stated that the logo “takes a city that is richly diverse and reduces it to the seat of its politics” (McGinn, 2014). As such, in regards to tourism, the logo does little to bring worldwide attention to Toronto.

CITY OF MELBOURNE

The City of Melbourne, the coastal capital located in the state of Victoria in Australia, is progressive and multifaceted. Due to significant changes during previous decades, the City of Melbourne Council sought to develop a brand identity that was more representative of its citizens and environment, while also

having the ability to attract tourists. In 2009, working with a prominent design and branding consulting firm called Landor Associates, Melbourne aimed to “show off the [city’s] cool sophistication on the world stage, capture the passion of its people, and provide the city with a unified, and future-focused image” (Landor, 2010). The result was an impactful and adaptable visual identity system revolving around a core principle: a bold ‘M’ as the foundation of anything related to the initiatives, activities, services, and city events. The flexibility of this new design allows for endless possibilities as well as opportunities for people in the city to identify with the brand.



Figure 6. The City of Melbourne’s identity system and various iterations of its logo (City of Melbourne, 2009).

Landor (2010) explained that during the development of the new identity, “the diversity of Melbourne became a sacred concept” and acknowledged that it was important to allow the brand to flex, grow, and evolve along with its changing population. Essentially, building flexibility into the city’s brand identity, as illustrated in Figure 7, leaves room for creative interpretation and helps to assure the longevity of the visual brand. Recognizing Melbourne’s dynamic brand identity as successful, van Nes (2012) called it “a celebration of diversity and personal interpretation that is both future-proof and iconic” (p. 14)

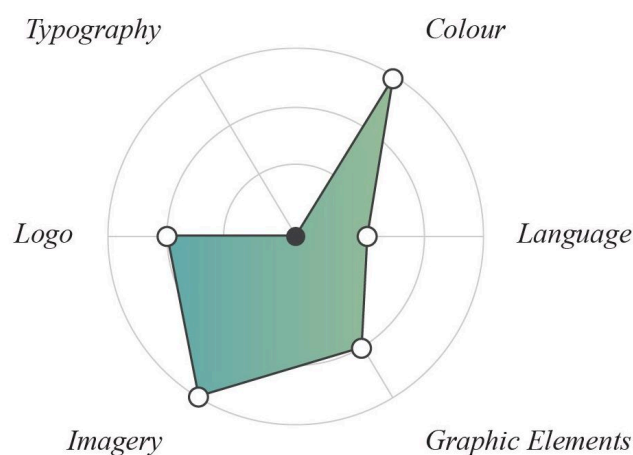


Figure 7. Flexibility chart for the City of Melbourne’s visual identity.

OBSERVATIONS AND ANALYSIS

From an economic perspective, city branding affects a destination's competitiveness and attractiveness in tourism. In fact, "the perception of the city affects its attractiveness to tourists and foreign investors, and also to potential foreign students or local residents" (Herget et al., 2015, p. 120). Additionally, city branding helps to unify a community of people and allows them to synonymously connect with a single identity. Dynamic branding, therefore, profits from a "unique and yet simple system of the visual identity, enabling different visual approaches of target groups" (Jochum, 2013, p. 33). In other words, the variability of dynamism allows for different people to connect with a singular, evolving visual identity, prompting increased engagement.

The City of Toronto's logo, however, has not experienced such benefits of city branding. As an extension of Sommer's critique of the logo, it can be said that the current static mark misrepresents the city's multiculturally diverse population as well as how the city wants to promote itself to the rest of the world. The current logo, which features iconography of City Hall, says nothing about the general public and therefore eliminates the potential for a range of people to connect with the mark. In fact, Torontonians have felt so negatively about the official logo that changing it was one of the top suggestions on how to improve Toronto (McGinn, 2014). Given that there is so little freedom built into the visual identity of the original design, the logo has been unable to grow and expand in its 22-year tenure. In essence, the City of Toronto's static logo has become outdated due to lack of flexibility, which has limited the mark's ability to evolve with the city as populations have grown and changed. In order for the City of Toronto to develop a mark that is representative of its modern, diverse identity and to market itself as a prominent competitor in tourism, the adoption of dynamic branding concepts appear to be beneficial.

In contrast, the City of Melbourne's dynamic logo (i.e., the 'M' concept) has been able to evolve and depict the changing vibrancy of its city. Melbourne's logo is representative of its identity and core values—this logo stands for something and it is impactful. Landor (2010) recognized that "for a city, the ... identity helps create positive, distinguishing associations for people" and that an effective logo "can provide an immediate visual trigger to a set of emotions or ideas that put a city in the best possible light." The agency, therefore, designed an open system that effectively anticipates change by incorporating different colours, forms and structures (see Figure 7). As shown in the flexibility chart in Figure 7, the static 'M' icon remains constant and helps to retain recognizability. Ultimately, Landor and the City of Melbourne resisted the traditional way of thinking about identity design and embraced the idea of adaptation, allowing the brand to indefinitely evolve as it encounters different influences.

Overall, in contrast to the City of Melbourne's dynamic logo, the City of Toronto's static logo

misrepresents its modern identity and core values. Lack of flexibility has limited the Toronto mark's ability to expand and adapt to today's environment, and therefore the ability for people to connect with the brand. The flexibility of Melbourne's logo, in comparison, allows people to create an emotional connection to the city as the brand evolves with its changing population and adapts to different contexts. In this case study, dynamic branding increases public perception of a city's attractiveness by offering opportunities to engage with diverse populations with effective variations constituted from a flexible visual identity.

CASE STUDY 2: EDUCATIONAL SERVICES

EMILY CARR UNIVERSITY OF ART AND DESIGN (ECUAD)

The Emily Carr University of Art and Design (ECUAD), founded in 1925 and located in Vancouver, British Columbia, is one of the only institutions in the world that is solely dedicated to the education of arts, media and design (ECUAD, n.d.). In 2017, to commemorate a new year and a new campus building, ECUAD worked with Camp Pacific, a Vancouver design agency, to launch a new visual identity.



Figure 8. ECUAD's logo (ECUAD, 2017).

The new static logo, shown in Figure 8, features vivid colours that curve around the university's name and subsequently serve as a motif on marketing collateral. According to a press release, the new identity was "inspired by the painting palette of the University's namesake, the artist Emily Carr, [and] the colours layer and overlap [to reference] the transformative and accretive process of learning" (Toronto, 2017). The multi-layered surfaces of the logo are said to

"depict the energy, progress and joy of expression attained through education" (Toronto, 2017) as well as the diversity of the University's faculties.

ONTARIO COLLEGE OF ART AND DESIGN UNIVERSITY (OCAD U)

At its 96th Annual Graduate Exhibition in 2011, the Ontario College of Art and Design University (OCAD U), located in downtown Toronto, Ontario, unveiled its new visual identity. The new logo, created in collaboration with Toronto-based studio Bruce Mau Design (BMD) and various OCAD U staff, students

and alumni, is dynamic and modular in design. Essentially, OCAD U “sought a new visual identity that would reflect the 135-year-old institution’s desire to move quickly into the future” (Bruce Mau Design, n.d.). As such, an interactive concept was built into the new identity system: each year, the school invites select graduating students to design a logo in the basic ‘window’ framework and uses these iterations on collateral in the following school year. Therefore, as the institution grows, “a library of identities will emerge, with records of ideas and aesthetics gathered over time” (Bruce Mau Design, n.d.).

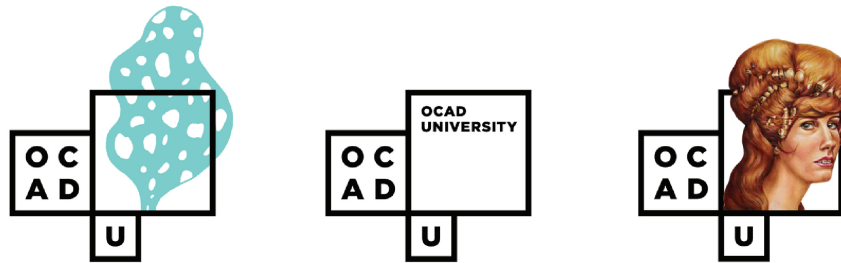


Figure 9. OCAD U’s identity system and various iterations of its logo using the basic ‘window’ framework (OCAD U, 2011).

As noted by Bruce Mau Design (n.d.), the dynamic visual identity that OCAD U boasts is representative of the school’s mission to be an “inclusive, vibrant institution built on creativity, risk and innovation.” The ‘window’ framework, modelled after the architecture of the school’s main building, is simple but leaves an abundance of room for freedom and creativity. Although seemingly static in nature, the changing backgrounds and illustrations create the impression of dynamism in visually engaging ways. As shown in Figure 10, OCAD U maintains consistency through fixed typography while simultaneously achieving a flexible visual identity through the manipulation of elements like imagery and colour.

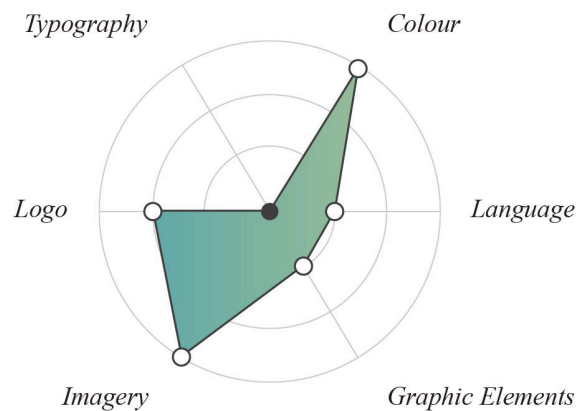


Figure 10. Flexibility chart for OCAD’s visual identity.

OBSERVATIONS AND ANALYSIS

In the modern marketing landscape, university branding has arisen as a key initiative as schools strive to meet and exceed their enrollment expectations. Universities and colleges have historically branded themselves to attract students, improve their rankings and name awareness, and to increase perceived academic quality (Bunzel, 2007; Joseph et al., 2012). As such, dynamic branding becomes important in a university branding context because students contribute to the evolving brand of their university. That is, if students distinguish themselves academically and make an impact in their respective fields, then the university brand is enhanced. In short, the organic nature of dynamic visual identities allows an institution's brand to evolve and expand as it matures.

Upon reviewing ECUAD's logo, it can be observed that the mark lacks the creativity that one would expect from a design school. The static logo, although used to emphasize the school's mission to encourage public support of art and design, shows little relation to the arts fields without explanation. All of the meaning and methodology behind the design of the visual identity by Camp Pacific is not effectively communicated to the general viewer. Not to mention, with this particular identity, ECUAD seems to conform to the visuals that a typical academic institution would possess. As expressed by Vit (2017), the co-founder of a notable graphic design firm called UnderConstruction, ECUAD "needs to put more art and design into [their logo] than university-ness." Additionally, the logo's lack of flexibility limits the institution's ability to evolve with its students and alumni. The reason for this, as expressed by Whisman (2009), is that because of their complex nature, traditional branding methods do not work for university branding purposes. As such, it is beneficial for a degree of variability to be built into the visual identity so that a sustainable, interesting brand is created.

Conversely, OCAD U uses dynamism to strategically showcase its creativity to the public and present an array of student work. In fact, dynamism makes OCAD U different and helps it to stand out regardless of any existing reputations in the educational sphere. Keeping true to professionalism associated with university-level education, OCAD U explores a structured format that incorporates creative whimsy-ness. Although there is more room for variability, as shown in the lack of flexible elements in Figure 10, recognizability is retained. In essence, there is enough variability that makes the visual identity stand out among competitors but not too much that familiarity and consistency are lost.

Overall, in contrast to OCAD U's dynamic 'window' framework, which serves as a platform to showcase student work, ECUAD's static logo is monotonous. In the context of university branding for arts-focused schools, dynamism is appropriate as it typically aligns their core values (i.e., to stand out, be imaginative and innovative, etc.). ECUAD's visual identity relies heavily on its academic status and not enough on the

diversity and creativity that it strives to communicate. In other words, ECUAD's logo, although colourful and able to be manipulated in interesting ways in marketing collateral, does not show the same diversity and creativity that OCAD U's logo does. In this case, dynamic branding concepts allow OCAD U to visualize their core values in an innovative manner while growing an impressive archive of logos. As well, OCAD U benefits from differentiating itself from other design schools through its flexibility and is able to garner attention from potential students, faculty, and donors. While ECUAD's logo appears institutional, dynamic branding allows OCAD U to showcase its personality while remaining professional—creating a memorable experience for a wide range of audiences.

CASE STUDY 3: WEB SERVICES

YAHOO

Established in 1994, Yahoo was one of the Internet's early pioneers. In 2019, in hopes of revitalizing its brand under new leadership, the web services provider collaborated with Pentagram, a New York based design studio, to design a refreshed identity. According to Pentagram (n.d.), "the identity reflects a new brand strategy for Yahoo that focuses on helping users find a more personalized, customized experience online." This new logo, although more flexible than its predecessors, is considered a static identity at its core.



Figure 11. Yahoo's reimagined logo uses the brand's signature purple colour as a key identifier (Yahoo, 2019).

Internally, the rebranding of Yahoo was called "Project Purple" (Pentagram, n.d.) and was established to mark the upcoming launch of the company's new products and enhancements. With this new identity, Yahoo presents itself with a sense of excitement to today's consumers.

GOOGLE

Google, one of the world's leading technology giants, was founded in 1998. Before the company was even incorporated, however, the concept of the Doodle was born, and Google has since changed their logo many times over the years (Google, n.d.a). Google Doodles are used to celebrate events of the past, birthdays and holidays, and have acquired interactive elements in the modern digital age. The identity formula—a predefined set of colours organized in a particular sequence and a vague form of the wordmark—still stands (van Nes, 2012, p. 8). Google has used its home page to display "countless

variations representing virtually every known fluid mark species” (Pearson, 2013). The demand for Doodles has risen in the U.S. and internationally, and creating Doodles is now the responsibility of a team of illustrators, called “doodlers,” and engineers (Google, n.d.a).



Figure 12. Example of Google Doodles, from left to right: International Women's Day 2020, Canadian Elections 2019, Mother's Day 2019 and Google's 20th Birthday in 2018 (Google Doodles, n.d.b).

The Google Doodle presents a unique case of dynamism: its placement is temporary, but it grants the company the same benefits as any other entities that use dynamic branding as part of their visual identity strategy. That is, through dynamic branding, Google is able to create meaningful connections with its users while promoting positive brand associations. As with dynamic brands, all Google Doodles have an element that remains constant, like typography, while new aspects are added. It is important to note that, unlike most other companies that may struggle with recognizability when adopting dynamism, Google “enjoys a homepage advantage, in that visitors to [its website] readily associate the fluid variants populating the same spot on its homepage with Google as the source” (Pearson, 2013).

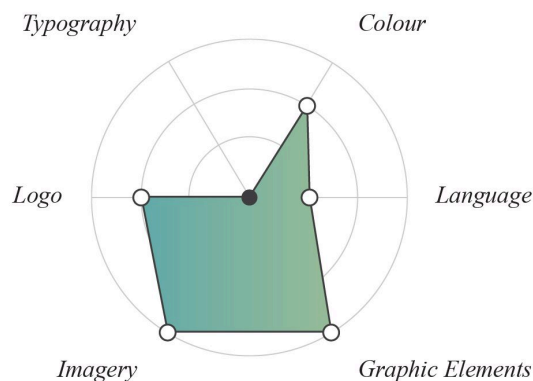


Figure 13. Flexibility chart for Google's visual identity based on its Doodles.

OBSERVATIONS AND ANALYSIS

As with every other industry in today's marketplace, the ability to adapt to changing environments has become increasingly important as technology advances. Additionally, the saturation of services made available online has made it essential for companies to adopt strategic branding approaches that can help them to stay relevant. For Internet-based companies in particular, interactivity has also

arisen as a critical factor in engaging with consumers. Pearson (2013) noted that “as [brand owners] strive to humanise their brands and keep them relevant, [they] are challenging trademark fundamentals by rejecting static source identifiers and adopting fluid marks that change frequently—sometimes constantly.” In the digital area, branding is vital in the creation and preservation of strong and meaningful consumer-brand relationships. As such, incorporating dynamism into visual identities presents a strategic way to maintain corporate integrity while captivating diverse audiences.

In the case of Yahoo, it appears that the company has struggled with developing and sustaining a visual identity that can effectively grow and expand with its operations. Since it was founded, Yahoo has rebranded seven times—with its current identity being the most recent redesign. It is important to note, however, that there are likely other factors impacting Yahoo’s instability, and the company’s consistent rebranding efforts show that it wants to stay relevant in consumers’ minds and to keep pace with the times. With that said, although Yahoo’s new static logo has contemporary appeal, it is indistinguishable from every other logo in the modern marketing landscape. The fixed identity lacks differentiation and is unable to stand out amongst other sans serif logos. As such, engagement becomes difficult and reduces the brand’s chance at creating valuable connections and relationships with its target consumers.

Google, on the other hand, has benefits from a first-mover advantage in the web services sector. The Doodle concept has been a decisive tool in Google’s branding strategy ever since it was first introduced. Variability of various visual elements (see Figure 13), along with positive associations with celebratory events, have allowed Google to showcase its creativity as a company while also allowing users to develop an emotional connection to the brand. Dynamic branding, as represented by the countless Doodles that have been released throughout the years, has opened up the opportunity for consumers to voluntarily engage with Google and has helped create meaningful, long-term consumer-brand relationships. Essentially, Google has benefited greatly from finding a way to uniquely interact with its users—keeping its services at the top of their minds at all times.

Overall, continual lack of flexibility in visual identity design has limited the Yahoo logo’s ability to grow with the brand. With rebranding being a constant in the company’s operations, staying relevant in consumers’ minds has been a challenge. As such, Yahoo has struggled to develop and sustain meaningful relationships with today’s web services users despite its modern rebrand. In contrast, as Google Doodles promote positive brand associations amongst users, Google boasts a significant competitive advantage. The flexibility of Google’s identity has allowed it to also reach and connect with a diverse range of audiences. In a web services context, dynamic branding prompts the development of valuable consumer-brand exchanges through unique differentiation, and, subsequently, relevancy in the marketplace is sustained.

LIMITATIONS

The case studies presented were merely a small analysis of a larger collection of brands that have adopted dynamic branding. There were numerous other cases of dynamism outlined in exploratory literature, but time and paper length constraints limited the scope of this study. For instance, this study only looked at service-based companies rather than product-based ones—the reasoning behind this being that the variability of identities in service industries retain recognizability (i.e., it would be more difficult for consumers to recognize a product that is constantly changing its logo). Furthermore, there were limitations to the flexibility chart used to visualize the variability of the components of a brand’s visual identity. The ranking scale, in particular, was relatively subjective (i.e., varies from person to person). As everyone has their own personal feelings, tastes and opinions, it is logical to think that different people would produce varying results. It is expected, however, that clarification of the extents of flexibility can be better defined once a deeper understanding of dynamic branding is established within the design community.

For the reasons provided, among others, there is room for further exploration regarding dynamic branding. It is vital for further analysis to continue considering the fact that there is very little published literature-based research on dynamic branding. It is important to emphasize that with more time and research devoted to dynamism in visual branding systems, the distinction between static and dynamic identities will become clearer—making it easier for companies to identify dynamic branding as a viable option to pursue.

CONCLUSION

In the modern marketing landscape, dynamic branding is a valuable concept to consider during the development or redevelopment of a visual identity. The case studies presented in this paper showed how dynamism, through the manipulation of different visual identity components, can be applied in various service industries. As observed in the tourism-focused case study, the City of Melbourne's dynamic brand was able to accurately represent the city's identity and core values, while also being adaptable enough to allow a diverse range of people to engage with the brand. Similarly, the educational services study showed that OCAD U's dynamic identity created a memorable experience for viewers. In OCAD U's case, dynamism was also strategically used as a tool to showcase the university's creativity, which helped to differentiate it from similar arts-focused institutions. Lastly, the web services study reiterated the importance of differentiation through flexibility, and the ability for dynamic branding to prompt the creation of meaningful consumer-brand relationships and to, ultimately, sustain relevancy in saturated markets. Overall, considering that the concept is relatively new and unique, dynamic branding is expected to continue to evolve as brands apply their own innovative ideas to the existing principles that form the foundation of a flexible visual identity. In short, the advantages, possibilities and opportunities associated with dynamic branding are endless.

As expressed by Delahunty (2013), "dynamic identities are adaptable to change while static approaches run the risk of not anticipating change quickly enough" (p. 46). In essence, change is inevitable; thus, flexibility should be built into the structure of visual identities to allow brands to adapt to new developments. When managing branding initiatives, it is important to consider that "to make big changes, to innovate, and to thrive during times of innovation, [brands] need to be willing to take risks" (Stratten & Stratten, 2017, p. 277). As the world changes, so should branding design.

KEY TAKEAWAYS

Given the information provided in this study, there are a few main takeaways. Firstly, it is important to recognize that dynamic branding is a valuable design method that allows brands to differentiate themselves from competitors while creating meaningful connections with their consumers (van Nes, 2012). Furthermore, although there are not as many dynamic brands as static at this point in time, the field of dynamic branding has a promising future and enormous potential for growth. Jochum (2013), who conducted multiple interviews with professionals in the design community, found that "the very

positive feedback about the topic shows that it has a strong relevance in the business reality of design and communication agencies” (p. 90). Constant technological improvements, as well as changing markets and consumer preferences, support the notion that a brand should be a living organism that has the ability to adjust to different contexts.

Furthermore, dynamic branding creates opportunities for freedom of creative expression. By applying variability to one or more of the components of a visual identity, a brand can effectively engage with different audiences while existing in varying contexts. It is important to remember, however, that to remain recognizable and consistent is to ensure that at least one component is constant. In the cases presented in this study, the dynamic brands of the City of Melbourne, OCAD U and Google all shared a constant element that aided in maintaining recognition: typography.

Lastly, it is crucial to note that dynamic branding should not be adopted solely for the sake of differentiation—it must complement and align with the company’s values, priorities, strategy and personality. In fact, not every identity has to be dynamic. If reliability is something that consumers look for in a company (e.g., an insurance company), then dynamic branding might not be the best option to pursue. Ultimately, a well-designed brand identity should be representative of the company’s message.

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04

HOW THE PERCEIVED MODERNITY OF A TYPEFACE AFFECTS VIEWERS' PREFERENCE FOR IT

JULIA FORRESTER



ABSTRACT

Typography as a means of visual communication has evolved significantly since it was first developed in the mid 15th century. Scholarship on the subject has established that typography can be both connotative and evocative, capable of resonating emotionally with its viewers. Given these typographic abilities, this study aimed to examine how the perceived modernity (or lack thereof) connoted by a typeface affects the viewers' preference for it. Specifically, it looked to determine whether those born around the turn of the 21st century, between 1998 and 2002, prefer typefaces that are contemporaneous to their lifetimes or those which were popular in a time predating them. In the context of this study, typeface modernity was defined as having a current or contemporary appearance or visual aesthetic, rather than referring to the Modern type classification.

To examine the potential correlation between perceived typeface modernity and preference, an online survey based upon a review of the literature on typographic expression and emotional resonance was conducted. Participants were asked to respond to two sets of questions: background questions regarding their age, gender, place of birth, and prior typographic knowledge, and questions pertaining to their perceived modernity and preference of ten (10) typeface samples. Analysis of the responses from participants born between 1998 and 2002 indicated some correlation between the perceived modernity of a typeface and viewers' preference for it. The results of this survey suggested that geometric sans serif typefaces are not only thought to have more modern personas than serif typefaces or sans serif typefaces from alternative classifications, but that young adults born around the turn of the 21st century tend to prefer these typefaces.

INTRODUCTION

Typography, as it is known today, developed alongside Gutenberg's moveable type press in the 1440s. The type used by Gutenberg was a blackletter face reminiscent of the handwritten style of script that was dominant at the time. This typeface was explicitly used by Gutenberg in his 42-line Bible to "[replicate] the feel of a handwritten book as closely as possible" so that the few people who could read at the time would be able to recognize the printed text (Seddon, 2015, p. 12). While perfectly legible to Gutenberg's 15th-century German audience, this same type would appear gothic and unfamiliar to present-day readers (see Figure 1).

Gutenberg's 42-line Bible

Figure 1. An example of a blackletter typeface (Goudy Text MT Std), similar to the one Gutenberg would have used to print his 42-line Bible.

While the immediate decades following the publication of Gutenberg's Bible saw a "flurry of innovation," typographic design remained relatively unchanged until the 1900s, save for the "widespread adoption of roman letterforms" (Seddon, 2015, pp. 12-13), which were influenced by the calligraphy of Italian Humanist writers (Hyndman, 2016). Following the transition to roman letters, serif typeface classifications evolved from 15th-century Humanist type to 19th-century Slab Serifs, with several iterations in between (see Figure 2) (Hyndman, 2016).



Figure 2. The development of serif typefaces, as illustrated in *Why Fonts Matter* (Hyndman, 2016, p. 24).

The beginning of the 20th century saw the proliferation of sans serif typefaces (Seddon, 2015), which had

first appeared in an 1816 specimen book by typefounder William Caslon IV (Carter et al., 2015). Like their serif counterparts, the classification of sans serif typefaces has also evolved, from Caslon's Grotesque faces to the Geometric style of the Bauhaus (see Figure 3) (Seddon, 2015; Hyndman, 2016).

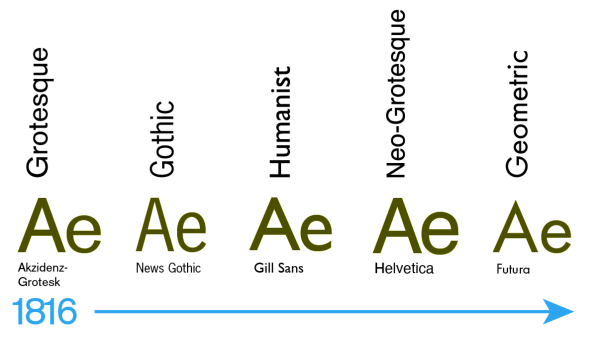


Figure 3. The development of sans serif typefaces, as classified by Tony Seddon in *The Evolution of Typography* and chronologically ordered by Sarah Hyndman in *Why Fonts Matter*.

Thought to be the logical derivations of the Modern serifs which predated them by the prominent 20th century typographer Jan Tschichold (Bedsole, 2018), these sans serif faces were seen as part of the “new typography” movement, whereby designers sought to rid printed language of clutter and decoration (i.e., serifs) (Luna, 2018), favouring utilitarian typefaces that would more clearly convey the message of the text they were meant to communicate. Tschichold (1995) stated that the goal of new typography was to “develop its visible form out of the functions of the text,” as it was “essential to give pure and direct expression to the contents of whatever is printed” (pp. 66-67). Only then, he argued, could designers “achieve a typography which expresses the spirit of modern man” (Tschichold, 1995, p. 67). Sans serif typefaces became a staple for the Modernist design of the 1950s, as they were still relatively neutral and new, “not [yet] steeped in the associations of history” (Hyndman, 2016, p. 52).

In her 1930 essay, “The Crystal Goblet: or Why Printing Should Be Invisible,” typographic scholar Beatrice Warde (2009) stated that “all good typography is modernist” and that good typography should be invisible, acting as an “unnoticed vehicle” for communicating ideas (pp. 40-41). Given that sans serif typefaces were considered both modern and relatively neutral at the time Warde’s essay was published, they perfectly exemplified the “good” typography she was describing, as they were able to transmit the text they were conveying clearly without reminding the reader of a bygone era. Warde’s essay is among the first to discuss the communicative abilities of typography and acts as a foundational piece of literature for the subsequent evolving scholarship on the rhetoric of typography. By further understanding the role of typography in the communication of written messages and its effects on

human behaviour, designers can make typographic choices to better attract and influence their intended audiences.

DEFINITIONS

- **Aesthetic Response** – “Pleasurable feelings” prompted by arousal that are “thought to be a function of connotations” (Harrison & Morris, 1967).
- **Arousal** – “Becoming aware of something, someone, or some idea, such that physiological measures rise in response to its perception” (Koch, 2011). Arousal can be stimulated by certain patterns or designs (Berlyne, 1960, as cited in Harrison & Morris, 1967, pp. 120-121), can prompt an aesthetic response, and is one of the “key facets of typographic preference,” along with connotation, congruence, and legibility (Harrison & Morris, 1967, p. 121).
- **Connotation** – The association one makes between the content of a message and the means by which it is transmitted; “the derivation of meaning of the visual design by comparison and metaphor” (Koch, 2011, p. 114). In reference to typography, connotation is often associated with the physical characteristics of a typeface (e.g. classification, size, weight) and/or the past experiences of those interacting with the type.
- **Modern** – Contemporary; pertaining to current design trends.
- **Perception** – “Awareness, whether conscious or preconscious” (Koch, 2011, p. 11). Conscious here refers to a person being fully aware of the interaction they are experiencing, while preconscious refers to the activation of certain biophysical or neurological systems without a person’s awareness (Koch, 2011).
- **Persona** – “The physical and affective characteristics assigned to letterforms” (Turner, 2018, p. 92); culturally created and socially situated identities attributed to typefaces (Turner, 2018).
- **Rhetoricity** – The rhetorical or persuasive ability of typography; the ability of a typeface to influence the behaviour of those who view it.
- **Typography** – A means of visual communication that provides written language with a physical form. Typography can also be considered visual language in and of itself (Baines & Haslam, 2005).

LITERATURE REVIEW

COVERAGE OF THE LITERATURE REVIEW

This study examined the aesthetic response (i.e., preference) to typography as it relates to the “modern” persona, focusing primarily on the perspective of the layperson rather than that of designers. As such, it needed to draw on studies and practices from a wide range of disciplines, from linguistics and communications to graphic and interaction design. While there has been much research conducted into the readability and legibility of typography, there has been considerably less done on the language of typography and its meaning to those who engage with it within the field of design itself. This literature review focused on the scholarship of the latter kind and drew upon studies of typographic rhetoric produced both within and outside of the design field, as relevant to the study put forth herewith.

TYPOGRAPHY AS AN EXPRESSION OF TEXT

Jan Tschichold pioneered the new typography movement in the 1920s. In his 1928 book, *Die Neue Typographie* (The New Typography), Tschichold stated that “the essence of the New Typography is clarity” and its “first objective is to develop its visible form out of the functions of the text,” unlike the “old typography” which came before it (Tschichold, 1928, p. 66-67). He argued that the “decoration” of traditional, serif typefaces should be cast aside in favour of newer, sans serif typefaces which were able to more clearly express the contents of printed text (Tschichold, 1995). This idea of clarity is reinforced by Warde’s aforementioned essay, “The Crystal Goblet,” in which she described how typography should function solely as a transparent vehicle for communicating the ideas of a printed text.

TYPOGRAPHY IS CONNOTATIVE

While designers of the new typography movement sought to design typefaces that lacked the historical and cultural connotations of those which predated them, they maintained a certain consensus about the “idea that typefaces have distinct personas” and thus “can never be entirely free of rhetorical impact” (Brumberger, 2003, p. 207). Brumberger, author of the journal series “The Rhetoric of Typography,” made the case that “the new typography had a stronger rhetorical emphasis” because it was intended to be “purpose-driven” (Brumberger, 2003). The inherent rhetoricity of typography is implied by Tschichold himself, who argued that “different typefaces have different personas, and that the character of the type

must match the character of the verbal text” (Brumberger, 2003, p. 207).

The idea that typefaces seemed to have inherent personas was intuitively accepted amongst designers, but it was not until the mid-20th century that quantitative research into the theory began to occur. Among the first contributions to this scholarship would be the experimental investigation of typeface connotation, conducted in 1964 by Tannenbaum et al. In this study, the researchers approached the connotative ability of typography from a semantic perspective, having three groups of people (typographic pros, semi-pros, and amateurs) rate four predetermined typefaces (two serifs and two sans serifs) using a set of semantic differential scales. Their findings suggested that there is a similarity in the judgements viewers make about typefaces and thus a degree of agreement in some of the basic elements of typographic language. They concluded that the characteristics of individual elements have inherent connotative associations, an onomatopoeia of sorts (Tannenbaum et al., 1964; Hyndman, 2016), that can be utilized as a means of communication between designers and their audiences.

Tannenbaum et al. (1964) used semantics, a linguistic study, to examine typefaces reinforced the idea that typography is intrinsically intertwined with language, not simply a conduit for written text. Baines & Haslam (2005) argued that by expressing features of oral language typically sacrificed to preserve the meaning of a text (e.g., accent, gender, age, volume, speed, rhythm, geography), typography can improve its description of language. Given the relationship between typography and language, Baines & Haslam (2005) made the case that the two be investigated alongside each other, rather than separately.

These aspects of language traditionally excluded from typographic design are also the aspects commonly used to describe the persona of a typeface, as Brumberger (2003) described in her study on the persona of typefaces and text. She hypothesized that “readers could ascribe persona to both the typeface and the text itself” based on their perception of it, informed by their prior experiences and the context of the type (Brumberger, 2003, p. 207). Her study confirmed that typefaces have distinct personas and that people consistently attribute particular personalities to text passages. Based on these findings, which confirm those of Tannenbaum et al. (1962), Brumberger (2003) concluded that “visual language is analogous to verbal language in carrying connotations” (p. 221) and that by understanding the connotations viewers ascribe to different typefaces, designers can be more mindful of the visual rhetoric of typography and make more effective decisions as they design. However, she pointed out that there is little consistency in how these personas are identified and argued that changes in typeface usage and preference over time could affect the personas readers ascribe to them (Brumberger, 2003). These limitations were not addressed in the research conducted within this paper, but should still be considered in future research.

The personas assigned to typefaces are determined by the individuals who interact with them and the cultural contexts in which they are utilized. In his defence of “bad” type, Nichols (2018) wrote that “typefaces are determined by the character of those who use and read them and the cultures in which they live” (p. 40), comparing type to a “Rorschach test for cultural beliefs” (p. 42). Like Warde (2009), Nichols (2018) discussed the idea of “good” (and “bad”) typography.

Where Warde (2009) described good typography as modern and transparent, Nichols (2018) presented the idea that type that reflects the values of society is considered “good.” Rather than a crystal goblet, Nichols (2018) proposed the idea of a mirrored one, suggesting that the “invisibility” for which researchers and designers once advocated is instead “a reflection of the cultural values of the majority [(e.g., modernity, masculinity, wealth)], while the brash insistence of a ‘bad’ type may reflect the same group’s cultural biases,” specifically against those belonging to social minorities (p. 43). If typefaces are a reflection of culture, and its characters or personas says as much about the reader as it does about the designer, Nichols (2018) argued that readers may be forced to identify with typefaces in a way that triggers a passionate or emotional response from them.

TYPOGRAPHY IS EVOCATIVE

Koch (2011) expanded upon the scholarship of typographic connotations by examining the emotional response of viewers to different typefaces. She argued that design is “visceral visual language,” driven by emotion (p. 5). According to Koch (2011), this “emotion negotiates vision,” thereby affecting viewers’ perceptions of typographic stimuli (p. 5). These perceptions are preconscious, meaning people “experience emotion about the [typographic] stimulus” they see “before they become consciously aware of the stimulus itself” (Koch, 2011, p. 5). To better understand how people react to designs, Koch studied subjects’ responses to different typographic designs and then compared their responses to pairs of typestyle designs so that she could map the connection between design and emotion. Through her study, Koch (2011) found that: (1) people responded to the typeface designs emotionally, (2) people agreed about which emotions they associated with each typeface, and (3) those emotions were associated with the formative design features of the typefaces. Koch’s results provide scientific backing for the long-held belief of designers that typography can have an emotional impact on those who view it. However, she also outlined limitations to her study that should be addressed in future scholarship, namely the inconsistency among type classification and characterization of physical attributes (e.g., size and weight) (Koch, 2011). These points highlighted by Koch remain an issue today, and as such, were also limitations of this paper’s study.

While Koch’s research investigated the emotional responses viewers can have towards typography, her

writing centred primarily around the designer. Ferarri Carlevari and Hyndman, however, focused on the layperson, rather than the designer, in their respective works. Building off of Koch's theory of evocative typographic design, Ferarri Carlevari (2015) looked to understand the impact that connotative values of typefaces may have in "creating or changing beliefs" of voters in the context of American presidential campaigns. He hypothesized that the connotative value of typefaces "may translate to a contextual emotional signification of the form of [said] typefaces" (p. 19) and found that the physical forms of letters did "shape how people connotatively perceive[d] the typefaces" (p. 37). Ferrari Carlevari (2015) noted, like Brumberger, that experience and the contexts in which people are used to seeing certain letter shapes may also affect viewers' perceptions. Like Ferrari Carlevari, Hyndman focused on the emotional response typography can have on the average person. However, in her book, *Why Fonts Matter*, Hyndman (2016) went further, actively inviting the reader to "consider [their] emotional response to type" so that they can be consciously aware of the influence typography can have over them. This influence provides the basis for the rhetoricity of typography, but also poses an ethical dilemma to designers, as they have to navigate how to communicate to and motivate their audience without manipulating them (Koch, 2011).

AESTHETIC RESPONSE TO TYPOGRAPHY

Harrison & Morris (1967) argued that the connotations of typography can arouse an aesthetic response to the typographic stimulus, causing viewers to like or dislike the stimulus, and, by extension, the message it conveys. The idea of viewers experiencing an aesthetic response to a typographic stimulus reflects the perception of "good" typography put forth by Warde and Nichols and is the basis for the research question the study of this paper aimed to answer. Harrison & Morris (1967) also cautioned though, that designers be mindful of the "connotative congruence" between typefaces and the text they communicate, as they can either (a) reinforce the connotation of a text (as argued by Tschichold in 1991), (b) "provide new and independent connotations," (c) offer little to no connotations (similar to Warde's crystal goblet analogy), or (d) "introduce conflicting connotations" (p. 120). While the latter option may seem counterintuitive, it may be used in some instances by designers to achieve a rhetorical effect and force readers to engage with the text (Harrison & Morris, 1967; Nichols, 2018).

IMPLICATIONS OF TYPOGRAPHIC RHETORIC

Given the ethical dilemma designers face due to the rhetorical abilities of typography, research into the implications of this rhetoricity has become increasingly important. Typography underpins life in the modern Western world, with people being constantly bombarded by typographic messages (Baines & Haslam, 2005). Designers must consequently shift towards what Brumberger (2003) calls intellectual

cognition so that they are able to consciously identify visual components of a design and understand their relationships not only to one another but also to the verbal rhetoric of the design. In doing so, designers will be able to create work that is more effective and memorable to their target audiences (Koch, 2011). Additionally, continuing research into the cultural connotations of typography will allow researchers to “engage with the subtle ways design contributes to issues of power and oppression through embedded and attributed meanings” (Turner, 2018, p. 96). Understanding the individual and cultural connotations of type and their impacts on readers and cultures remains an important focus for future scholarship on typographic rhetoric.

METHODOLOGY

To investigate whether the attribution of a persona to a typeface affects the aesthetic response viewers feel towards that typeface, an online survey was conducted. The survey looked specifically at the “modern” persona as it related to the typographic preference of viewers born between 1998 and 2002, and consisted of two sections (see Appendix B). The first section asked participants a series of questions to better understand their backgrounds (age, gender, nationality, prior knowledge of typography), as their perception may be influenced by their identity and past experiences. The second part of the survey asked participants to respond to ten (10) typeface samples, rating their perceived modernity of each sample as well as their preference for it. Although participants of all ages were able to complete the survey (which 93 did), only the responses of those born between 1998 and 2002 (of which there were 66) were considered, as the aim of this study was, in part, to determine whether those born around the turn of the 21st century would: (1) consider typefaces contemporaneous to their lives more modern, and (2) prefer those typefaces with which they are likely more familiar, given their popularity during their lifetimes.

The typefaces included in this study were chosen based on three criteria: (1) they are considered typographically significant (as deemed by Seddon in *The Evolution of Typography*), (2) they are among the most commonly featured on the website *Fonts In Use* (www.fontsinuse.com), a public typographic archive/database, and (3) they are considered emblematic of a decade of the past century (as determined by analyzing samples featuring typefaces included in *The Evolution of Typography* that have been uploaded to the *Fonts In Use* website and then comparing them against each other, using the four physical characteristics outlined by Koch’s study, to select a typeface representative of those popular within a given decade). Based on these criteria (see Appendix A for full selection criteria), the ten (10) typefaces chosen for inclusion in this study, along with their type classification, year of design, and the decade they represent, are shown in Table 1.

Table 1. *The ten (10) typefaces chosen for the inclusion in this study*

Typeface	Classification	Year Designed	Decade Represented
Cheltenham	Old Style Serif	1896	1920s
Kabel	Geometric Sans	1927-1929	1930s
Futura	Geometric Sans	1927-1930	1940s
Akzidenz-Grotesk	Grotesque Sans	1898	1950s
News Gothic	Gothic Sans	1908	1960s
ITC Avant Garde Gothic	Geometric Sans	1970	1970s
Univers	Neo-Grotesque Sans	1957	1980s
Gill Sans	Humanist Sans	1928-1930	1990s
Helvetica	Neo-Grotesque Sans	1957	2000s
Gotham	Geometric Sans	2000	2010s

For this study, the “regular” style of each typeface (e.g., Gill Sans Regular) was presented at a size of 30 points to minimize the number of physical characteristic variables that could otherwise contribute to the perception and preference of participants. However, as Koch (2011) noted in her study of emotional response to typographic design, there is not yet a standardization of typeface sizes and weights. Thus the samples shown within this study may not all appear to be a consistent size to viewers. It is consequently uncertain whether subtle differences in the physical characteristics of the typeface samples affected the responses participants had towards them.

The survey was made publicly available online for one week. As such, the participants of the survey were part of a voluntary response sample and thus were entirely representative of the 1998-2002 age demographic. This sampling method was used to select participants due to both the timeframe available within which to complete the study and physical distancing measures put into place during the course of the study.

RESULTS AND DISCUSSION

Of the 93 survey participants, 66 were born between 1998 and 2002, broken down by year as follows: 27 were born in 1998 (40.9%), 11 in 1999 (16.7%), 16 in 2000 (24.2%), 2 in 2001 (3%), and 10 in 2002 (15.2%). 56 of these 66 participants identified as female (84.8%), 9 as male (13.6%), and 1 as non-binary (1.5%). 57 of the participants (86.4%) were born and raised in North America, while 8 (12.1%) were raised but not born in North America (2 were born in Europe, 6 in Asia), and 1 (1.5%) was neither born nor raised in North America (born and raised in the Philippines). 35 participants (53%) rated themselves as having minimal prior knowledge of typography (21 rated themselves a 1 on a scale from 1-5; 14 rated themselves a 2), while 31 (47%) rated themselves as having moderate prior knowledge (22 rated themselves as a 3; 9 rated themselves as a 4). No participants in this age demographic rated themselves as having expert knowledge (a 5 on the scale used). See Appendix B for responses from all 93 survey participants.

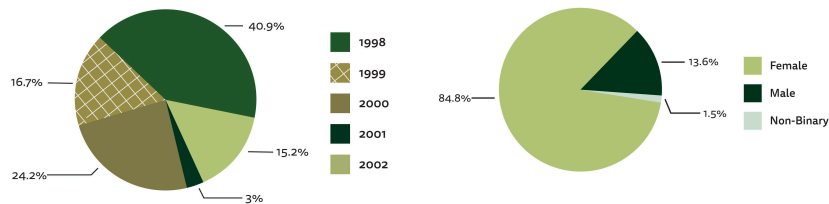


Figure 4a. The year of birth of survey participants.

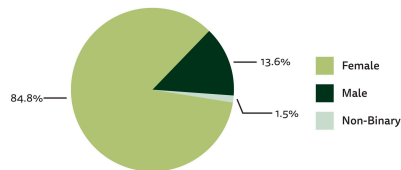


Figure 4b. The gender of survey participants.

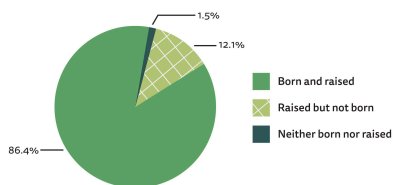


Figure 4c. The nationality of survey participants.

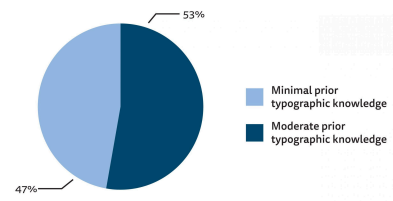


Figure 4d. The prior typographic knowledge of survey participants.

The results of the second section of the survey, which asked participants to respond to a series of ten (10) typeface samples, are graphed in Figures 5a and 5b (see Appendix B for full results). Gotham, the typeface designed most recently and chosen to represent the 2010s, was perceived as being the most modern sample and was the most preferred typeface. Cheltenham, the oldest typeface and the only

serif face included in the survey, was perhaps unsurprisingly rated the least modern of the ten samples. However, it was rated among the most preferred typeface samples, ranking fourth only behind Gotham, Futura, and ITC Avant Garde Gothic. As Cheltenham was the only serif typeface included in this survey, it can likely be considered an outlier in this dataset. Akzidenz-Grotesk, which was designed only two years after Cheltenham, is part of the Grotesque Sans classification, making it the oldest sans serif face and style included in the survey, was rated the least preferred typeface sample by participants born between 1998 and 2002.

The results of this study suggested that while there is some correlation between the perceived modernity of a typeface and viewers' preference of it, a typeface being perceived as having a more modern persona does not necessarily mean it will be more strongly preferred than typefaces which are perceived to be less modern. Interestingly, the four typefaces perceived to be the most modern (Gotham, ITC Avant Garde Gothic, Futura, and Kabel, respectively) were all Geometric Sans faces, the newest classification of sans serif typefaces, typified by the Bauhaus style of design of which Tschichold (1995) was an advocate. Perhaps because the geometric style of typography is culturally regarded as more modern and it is therefore considered to be "good" that individuals perceived these typefaces to be more modern and more preferable. The use of sans serif faces for digital purposes, which may be inherently thought of as modern, may also have influenced participants' perceptions. Additionally, it is possible that participants ascribed alternate personas to the typeface samples shown to them and that it was these other personas that affected their preference for each sample. Future studies into typographic preference in relation to the "modern" persona may include a larger range and number of typeface samples to see if the same results hold true in a broader context and may devise a way to better isolate the "modern" persona from others that may be ascribed to a typeface.

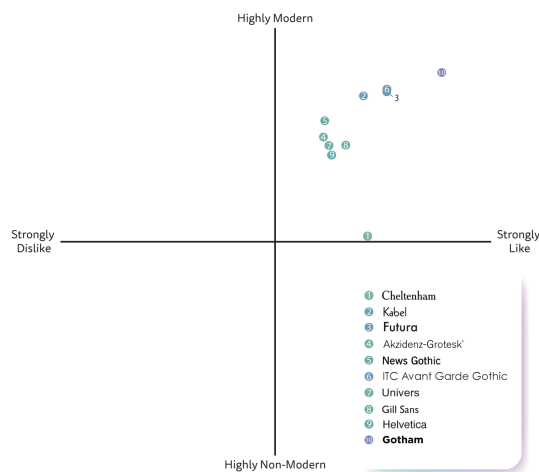


Figure 5a. The typeface preferences of those born between 1998-2002 as it relates to their perceived modernity of those typefaces.

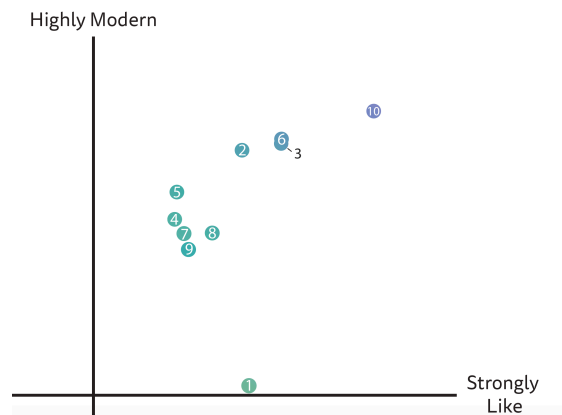


Figure 5b. A magnified view of the results shown in Figure 5a.

Further, the results of this survey showed that while the newest typeface, Gotham (designed in 2000), and the oldest typeface, Cheltenham (designed in 1896), were rated the most and least modern, respectively, there was little other correlation between the perceived modernity of a typeface and its actual age. Helvetica, the typeface chosen to represent the 2000s, was rated among the least modern and least preferred, despite its prevalence during the participants' lifetimes. As such, while it is possible to conclude that those born between 1998 and 2002 demonstrate some preference for typefaces that appear modern, they do not necessarily prefer the typefaces that are contemporaneous to their lives.

LIMITATIONS

Given the means by which this survey was distributed (i.e., via social media), those who responded to it comprised a voluntary response sample, and thus their responses may not have been representative of the entire target demographic of young adults born between 1998 and 2002. As well, it is likely that the majority of participants who rated themselves as having a moderate amount of prior typographic knowledge (either a 3 or 4 on a scale from 1-5) were students from the Graphic Communications Management program at Ryerson University and would have taken a mandatory second-year introduction to typography course. It may be the case that the teachings of said course influenced their perspectives of what a "modern" typeface looks like. It is suggested that a more diverse range of participants from the target demographic be included in further studies of the relationship between typeface preference and persona. Additionally, it is possible that more suitable, alternative means of

selecting typefaces for inclusion in future studies could merit different responses from participants. If more serif typefaces, for example, had been included, perhaps a more distinct contrast between the two type classifications would have been documented.

IMPLICATIONS

Should the results of this study hold true for future studies examining typographic preference as a function of persona, designers could utilize this knowledge to reinforce connotative meanings of text and thereby better reach and motivate young adults by incorporating geometric sans serif typefaces to either relay a message of modernity or arouse an aesthetic response in their target demographic. There is not enough data available from this survey to determine what those in the 1998-2002 cohort consider “bad” typography, but future research could be done to do so. This understanding of what “bad” typography means to those within this age demographic could allow designers to utilize this type as a rhetorical tool to force their desired audience to engage with the message they aim to communicate.

CONCLUSION

The primary aim of this research was to determine whether there is a correlation between the perceived modernity of a typeface and the viewer's preference for it. Based on the study conducted to examine this potential relationship, it can be concluded that there is some correlation between the perceived modernity of Geometric Sans typefaces specifically and the preference of those born between 1998 and 2002, but that this correlation may not be consistent among different type classifications. If future studies into this subject include a wider array of typographic samples and have a more diverse set of participants, this question of correlation may be better answered. Should these results be reinforced by future research, designers could use these findings to inform their design work to more effectively communicate with and motivate their target audiences, whether by reinforcing the connotation of their texts through typography or by contrasting them.

While they were chosen in the 1950s for their lack of historical associations, it is perhaps because of their ties to the Modernist design movement that sans serif typefaces, specifically those of the Geometric classification, remain favoured by designers for today's "modern" designs. When considered in connection to the present values of Western society, it is perhaps unsurprising then that participants in this study exhibited a preference for the four Geometric sans serif typefaces included in the survey and perceived these typefaces as having more modern personas. It would be interesting to determine whether these opinions will evolve as typography, technology, and cultural values do or whether future studies will find that designers and laypeople alike will continue to associate sans serif typefaces (specifically Geometric ones) with the Modernist movement and thus, they will always connote modernity to those who interact with them.

Typographic rhetoric is becoming increasingly central to typographic and design scholarship as it has evolved into a more significant aspect of the design practice. This study is but one contribution to the literature on this topic. However, it will hopefully serve to aid future research into the aesthetic response to type and typeface personas so that designers may target messages towards their intended audiences and that readers may become more visually and typographically literate.

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APPENDIX A – TYPEFACE SELECTION FOR SURVEY

Appendix A – Typeface Selection for Survey

(1) Typefaces featured in Tony Seddon's The Evolution of Typography, cross-referenced against typographic samples uploaded to the digital typography archive, Fonts in Use (fontsinuse.com).

Typeface Uses per Decade	Pre-1920s	1920s	1930s	1940s	1950s	1960s	1970s	1980s	1990s	2000s	2010s	Post-2019	No Date	Total Mentions of March 13)
Akkurat*	0	0	0	0	0	0	0	0	0	4	57	1	3	65
Akzidenz-Grotesk*	0	5	0	0	14	54	8	9	1	11	111	0	13	226
Akzidenz-Grotesk Condensed*	0	0	0	0	3	13	1	0	0	1	20	0	1	39
Albertus*	0	0	0	0	2	12	5	11	1	7	17	0	3	58
Amelia*	0	0	0	0	0	6	20	2	0	0	4	0	2	34
Americana	0	0	0	0	0	1	1	0	1	0	3	0	0	6
Antique Olive*	0	0	0	0	0	4	18	5	1	5	17	0	1	51
Archer*	0	0	0	0	0	0	0	0	0	3	32	0	2	37
Arnhem	0	0	0	0	0	0	0	0	0	3	17	0	0	20
Arnhem Fine	0	0	0	0	0	0	0	0	0	1	2	0	0	3
Base Nine & Base Twelve	0	0	0	0	0	0	0	0	0	0	6	0	1	7
Baskerville*	0	0	1	1	1	3	10	4	1	1	25	0	2	49
Bell	0	0	0	0	0	0	0	0	0	1	2	1	1	5
Bell Centennial	0	0	0	0	0	0	0	0	0	0	2	0	1	3
Bello	0	0	0	0	0	0	0	0	1	5	22	0	3	31
Bembo	0	0	1	0	0	2	1	5	1	1	6	0	1	18
Benton Sans*	0	0	0	0	0	0	0	0	0	8	53	1	12	74
Bickham Script	0	0	0	0	0	0	0	0	0	4	12	0	9	25
Bodoni*	0	0	7	6	9	18	9	6	3	6	22	0	4	90
Bookman*	0	1	0	1	0	8	21	5	0	1	3	0	1	41
Brioso	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Caledonia	0	0	0	1	5	4	4	0	0	0	2	0	0	16
Caslon	2	0	2	1	1	4	2	0	0	1	8	0	0	21
Caslon (Adobe)*	0	0	0	0	0	0	0	0	1	4	39	0	3	47
Centaur	0	0	0	1	0	0	1	1	1	2	2	0	0	8
Century*	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Century Expanded*	1	1	0	0	7	16	4	0	2	1	4	0	1	37
Century (ITC)	0	0	0	0	0	0	1	1	0	0	6	0	0	8
CenturySchoolbook	0	0	0	0	7	5	4	1	1	1	9	0	1	29

Results continued on next page...

Typeface Uses per Decade	Pre-1920s	1920s	1930s	1940s	1950s	1960s	1970s	1980s	1990s	2000s	2010s	Post-2019	No Date	Total Mentions (as of March 13)
Cheltenham*	4	3	3	1	1	10	2	1	0	1	9	0	0	35
Cheltenham (ITC)	0	0	0	0	1	0	3	1	1	1	6	0	3	16
Clarendon*	0	0	0	0	11	21	7	4	5	4	30	0	9	91
Cooper Black*	0	1	3	2	1	48	26	6	6	3	37	0	10	143
Copperplate Gothic*	1	0	0	3	4	9	1	1	2	2	14	1	3	41
DIN*	0	0	0	0	0	0	0	0	1	6	76	0	12	95
DTL Fleischmann	0	0	0	0	0	0	0	0	1	0	15	0	0	16
Eckmannschrift	5	0	0	0	0	4	3	2	0	1	3	0	5	23
Engravers	1	0	0	0	1	1	0	0	0	1	6	0	2	12
FF Dax (FF Daxline)	0	0	0	0	0	0	0	0	0	0	2	5	4	11
FF Meta	0	0	0	0	0	0	0	0	5	6	17	0	4	32
FF Scala	0	0	0	0	0	0	0	0	1	3	10	0	1	15
Folio*	0	0	0	0	0	17	22	3	1	1	6	0	2	52
Fournier	0	1	3	0	1	0	0	0	0	0	1	0	0	6
Franklin Gothic	0	0	4	3	10	48	22	16	9	5	41	0	4	162
Franklin Gothic (ITC) *	0	0	0	0	0	0	1	3	4	3	25	0	1	37
Freight	0	0	0	0	0	0	0	0	0	1	24	0	5	30
Frutiger	0	0	0	0	0	0	0	0	1	6	12	0	10	29
Futura*	1	3	16	31	41	52	127	41	17	30	252	0	35	646
Futura Black *	0	0	2	0	2	20	15	9	0	2	11	0	6	67
Futura Condensed*	0	0	1	2	6	9	5	5	2	3	23	0	2	58
Garamond	0	0	1	1	0	1	1	1	1	1	11	0	6	24
Garamond (Adobe)*	0	0	0	0	0	0	0	0	1	3	30	0	1	35
Garamond Premier	1	0	0	0	0	0	0	0	0	1	11	0	2	15
Gill Sans*	0	0	5	10	9	18	31	16	10	12	66	0	13	190
Giza	0	0	0	0	0	0	0	0	2	5	2	0	1	10
Gotham*	0	0	0	0	0	0	0	0	1	11	137	1	23	173
Goudy Old Style	0	1	1	0	3	1	9	3	0	1	9	0	0	28
Heron Serif	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HTF Didot	0	0	0	0	0	0	0	0	0	1	9	0	0	10
Interstate*	0	0	0	0	0	0	0	0	4	10	45	1	18	78
ITC Avant Garde Gothic*	0	0	0	0	0	3	64	19	5	7	51	1	11	161
ITC Bauhaus	0	0	0	0	0	0	2	2	4	0	4	0	2	14

Results continued on next page...

Typeface Uses per Decade	Pre-1920	1920s	1930s	1940s	1950s	1960s	1970s	1980s	1990s	2000s	2010s	Post-2019	No Date	Total Mentions as of March 13
ITC Galliard	0	0	0	0	0	0	0	0	1	1	5	0	0	7
ITC Officina Sans	0	0	0	0	0	0	0	0	0	2	2	0	0	4
ITC Tiffany	0	0	0	0	0	1	8	2	0	1	8	0	1	21
Janson	0	0	0	0	0	1	0	0	3	2	1	0	1	8
Jenson	0	0	0	0	0	0	0	0	1	0	2	0	0	3
Joanna	0	0	1	0	0	1	0	1	0	0	1	0	0	4
Kabel*	0	0	8	3	1	7	21	4	0	1	6	1	1	53
Kabel Black*	0	0	1	0	0	3	26	9	1	1	12	0	1	54
Knockout*	0	0	0	0	0	0	0	0	2	10	88	0	4	104
Lexicon	0	0	0	0	0	0	0	0	0	0	1	8	0	9
Mason	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Melior	0	0	0	0	0	8	1	2	0	1	2	0	3	17
Memphis	0	1	1	1	0	3	2	0	0	1	5	0	1	15
MinistryScript	0	0	0	0	0	0	0	0	0	0	1	0	0	1
Mistral	0	0	0	0	3	4	2	2	1	0	11	0	9	32
Modesto	0	0	0	0	0	0	0	0	0	0	1	0	0	1
Mrs Eaves	0	0	0	0	0	0	0	0	1	3	21	0	5	30
MVB Verdigris	0	0	0	0	0	0	0	0	0	2	2	0	0	4
Myriad	0	0	0	0	0	0	0	0	0	2	24	1	1	28
Neue Haas Grotesk/ Helvetica*	0	0	0	0	0	0	0	0	0	0	50	7	0	57
Helvetica*	0	0	0	0	0	63	197	65	18	23	136	3	42	547
Helvetica Condensed*	0	0	0	0	0	1	4	9	4	2	14	0	3	37
Helvetica Inserat	0	0	0	0	0	1	5	2	1	1	1	0	0	11
Helvetica Rounded	0	0	0	0	0	0	0	1	0	0	3	0	1	5
Helvetica Textbook	0	0	0	0	0	0	0	0	0	0	2	0	0	2
Neue Helvetica*	0	0	0	0	0	0	0	0	5	8	142	2	15	172
Neutraface*	0	0	0	0	0	0	0	0	0	5	60	0	4	69
News Gothic*	0	0	1	3	11	57	22	1	1	1	16	0	4	117
OCR-A	0	0	0	0	0	0	1	1	0	1	6	0	2	11
OCR-B	0	0	0	0	0	0	0	0	1	0	8	0	0	9
Optima*	0	0	0	0	0	10	17	12	3	4	19	2	13	80
Palatino*	0	0	0	0	2	4	8	5	1	4	13	0	1	38
Peignot	0	0	1	1	1	4	7	3	1	1	2	0	5	26
Perpetua	0	0	2	0	4	2	4	2	0	2	5	0	2	23

Results continued on next page...

(2) The percentage of typeface samples from each decade, as recorded on the Fonts in Use website, featuring the typefaces included in The Evolution of Typography.

Typeface	1920s	1930s	1940s	1950s	1960s	1970s	1980s	1990s	2000s	2010s
Akkurat	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.2%	2.3%
Akzidenz-Grotesk	27.8%	0.0%	0.0%	8.3%	8.3%	0.9%	2.6%	0.6%	3.4%	4.4%
Akzidenz-Grotesk Condensed	0.0%	0.0%	0.0%	1.8%	2.0%	0.1%	0.0%	0.0%	0.3%	0.8%
Albertus	0.0%	0.0%	0.0%	1.2%	1.8%	0.6%	3.2%	0.6%	2.2%	0.7%
Amelia	0.0%	0.0%	0.0%	0.0%	0.9%	2.2%	0.6%	0.0%	0.0%	0.2%
Americana	0.0%	0.0%	0.0%	0.0%	0.2%	0.1%	0.0%	0.6%	0.0%	0.1%
Antique Olive	0.0%	0.0%	0.0%	0.0%	0.6%	2.0%	1.5%	0.6%	1.5%	0.7%
Archer	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.9%	1.3%
Arnhem	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.9%	0.7%
Arnhem Fine	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.3%	0.1%
Base Nine & Base Twelve	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%
Baskerville	0.0%	1.4%	1.3%	0.6%	0.5%	1.1%	1.2%	0.6%	0.3%	1.0%
Bell	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.3%	0.1%
Bell Centennial	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%
Bello	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.6%	1.5%	0.9%
Bembo	0.0%	1.4%	0.0%	0.0%	0.3%	0.1%	1.5%	0.6%	0.3%	0.2%
Benton Sans	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.5%	2.1%
Bickham Script	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.2%	0.5%
Bodoni	0.0%	10.1%	7.8%	5.3%	2.8%	1.0%	1.7%	1.7%	1.9%	0.9%
Bookman	5.6%	0.0%	1.3%	0.0%	1.2%	2.3%	1.5%	0.0%	0.3%	0.1%
Brioso	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Caledonia	0.0%	0.0%	1.3%	3.0%	0.6%	0.4%	0.0%	0.0%	0.0%	0.1%
Caslon	0.0%	2.9%	1.3%	0.6%	0.6%	0.2%	0.0%	0.0%	0.3%	0.3%
Caslon (Adobe)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.6%	1.2%	1.5%
Centaur	0.0%	0.0%	1.3%	0.0%	0.0%	0.1%	0.3%	0.6%	0.6%	0.1%
Century	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Century (ITC)	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.3%	0.0%	0.0%	0.2%
Century Expanded	5.6%	0.0%	0.0%	4.1%	2.5%	0.4%	0.0%	1.2%	0.3%	0.2%
Century Schoolbook	0.0%	0.0%	0.0%	4.1%	0.8%	0.4%	0.3%	0.6%	0.3%	0.4%
Cheltenham	16.7%	4.3%	1.3%	0.6%	1.5%	0.2%	0.3%	0.0%	0.3%	0.4%
Cheltenham (ITC)	0.0%	0.0%	0.0%	0.6%	0.0%	0.3%	0.3%	0.6%	0.3%	0.2%

Results continued on next page...

Typeface Uses per Decade	Pre-1920	1920s	1930s	1940s	1950s	1960s	1970s	1980s	1990s	2000s	2010s	Post-2019	No Date	(Total Mentions as of March 13)
Plantin*	0	1	1	0	2	1	1	0	0	3	26	0	2	37
PMN Caecilia	0	0	0	0	0	0	0	0	0	3	12	0	1	16
Rockwell*	0	0	0	2	1	0	7	3	0	0	15	0	4	32
Rotis (Semi Serif)	0	0	0	0	0	0	0	0	1	1	1	0	0	3
Sabon*	0	0	0	0	0	0	1	1	4	3	21	0	5	35
Scotch Roman (Modern/ Scotch)	7	0	1	1	0	0	0	0	0	0	0	0	0	9
Selva	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Serifa	0	0	0	0	0	0	1	0	0	0	7	0	1	9
Swift	0	0	0	0	0	0	0	1	0	3	9	0	1	14
Syntax	0	0	0	0	0	0	0	0	1	2	1	0	1	5
Template Gothic	0	0	0	0	0	0	0	0	3	0	0	0	0	3
The Sans (Thesis Family)	0	0	0	0	0	0	0	0	1	1	15	0	2	19
The Mix (Thesis Family)	0	0	0	0	0	0	0	0	1	0	1	0	1	3
The Serif (Thesis Family)	0	0	0	0	0	0	0	0	0	1	4	0	0	5
Times New Roman*	0	0	0	1	1	18	20	4	6	4	47	1	9	111
Trajaan	0	0	0	0	0	0	2	1	1	4	16	0	3	27
Transport	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Trump Mediaeval	0	0	0	1	0	5	1	0	0	0	2	0	0	9
Univers*	0	0	0	0	3	44	95	27	9	8	92	0	17	295
VAG Rounded	0	0	0	0	0	0	1	1	1	2	7	0	1	13
Verdana	0	0	0	0	0	0	1	0	0	5	8	0	4	18
Verlag*	0	0	0	0	0	0	0	0	0	2	33	0	4	39
Vitesse	0	0	0	0	0	0	0	0	0	0	9	0	1	10
Walbaum	0	0	2	0	0	1	1	0	0	1	6	0	1	12
Whitney	0	0	0	0	0	0	0	0	0	0	27	0	2	29
Wilhelm Klingspor Schrift (Gothic)	0	0	0	0	0	0	0	1	1	0	4	0	1	7
TOTAL RECORDS PER DECADE	23	18	69	77	169	651	907	343	173	324	2531	37	440	

Decade – Decades outside the scope of this study.

Typeface* – Typefaces featured in The Evolution of Typography that are also among the most commonly featured on the Fonts in Use website.

Typeface – Typefaces featured in The Evolution of Typography that are not among the most commonly featured on the Fonts in Use website.

Typeface – Typefaces from type families featured in The Evolution of Typography that are among the most commonly featured on the Fonts in Use website.

Typeface	1920s	1930s	1940s	1950s	1960s	1970s	1980s	1990s	2000s	2010s
Clarendon	0.0%	0.0%	0.0%	6.5%	3.2%	0.8%	1.2%	2.9%	1.2%	1.2%
Cooper Black	5.6%	4.3%	2.6%	0.6%	7.4%	2.9%	1.7%	3.5%	0.9%	1.5%
Copperplate Gothic	0.0%	0.0%	3.9%	2.4%	1.4%	0.1%	0.3%	1.2%	0.6%	0.6%
DIN	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.6%	1.9%	3.0%
DTL Fleischmann	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.6%	0.0%	0.6%
Eckmannschrift	0.0%	0.0%	0.0%	0.0%	0.6%	0.3%	0.6%	0.0%	0.3%	0.1%
Engravers	0.0%	0.0%	0.0%	0.6%	0.2%	0.0%	0.0%	0.0%	0.3%	0.2%
FF Dax (FF Daxline)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%
FF Meta	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.9%	1.9%	0.7%
FF Scala	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.6%	0.9%	0.4%
Folio	0.0%	0.0%	0.0%	0.0%	2.6%	2.4%	0.9%	0.6%	0.3%	0.2%
Fournier	5.6%	4.3%	0.0%	0.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Franklin Gothic	0.0%	5.8%	3.9%	5.9%	7.4%	2.4%	4.7%	5.2%	1.5%	1.6%
Franklin Gothic (ITC)	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.9%	2.3%	0.9%	1.0%
Freight	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.3%	0.9%
Frutiger	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.6%	1.9%	0.5%
Futura Black	0.0%	2.9%	0.0%	1.2%	3.1%	1.7%	2.6%	0.0%	0.6%	0.4%
Futura	16.7%	23.2%	40.3%	24.3%	8.0%	14.0%	12.0%	9.8%	9.3%	10.0%
Futura Condensed	0.0%	1.4%	2.6%	3.6%	1.4%	0.6%	1.5%	1.2%	0.9%	0.9%
Garamond	0.0%	1.4%	1.3%	0.0%	0.2%	0.1%	0.3%	0.6%	0.3%	0.4%
Garamond (Adobe)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.6%	0.9%	1.2%
Garamond Premier	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.3%	0.4%
Gill Sans	0.0%	7.2%	13.0%	5.3%	2.8%	3.4%	4.7%	5.8%	3.7%	2.6%
Giza	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.2%	1.5%	0.1%
Gotham	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.6%	3.4%	5.4%
Goudy Old Style	5.6%	1.4%	0.0%	1.8%	0.2%	1.0%	0.9%	0.0%	0.3%	0.4%
Helvetica	0.0%	0.0%	0.0%	0.0%	9.7%	21.7%	19.0%	10.4%	7.1%	5.4%
Helvetica Condensed	0.0%	0.0%	0.0%	0.0%	0.2%	0.4%	2.6%	2.3%	0.6%	0.6%
Helvetica Inserat	0.0%	0.0%	0.0%	0.0%	0.2%	0.6%	0.6%	0.6%	0.3%	0.0%
Helvetica Rounded	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.3%	0.0%	0.0%	0.1%
Heron Serif	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Helvetica Textbook	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%
HTF Didot	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.3%	0.4%
Interstate	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.3%	3.1%	1.8%
ITC Avant Garde Gothic	0.0%	0.0%	0.0%	0.0%	0.5%	7.1%	5.5%	2.9%	2.2%	2.0%
ITC Bauhaus	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%	0.6%	2.3%	0.0%	0.2%
ITC Galliard	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.6%	0.3%	0.2%

Results continued on next page...

Typeface	1920s	1930s	1940s	1950s	1960s	1970s	1980s	1990s	2000s	2010s
ITC Officina Sans	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.6%	0.1%
ITC Tiffany	0.0%	0.0%	0.0%	0.0%	0.2%	0.9%	0.6%	0.0%	0.3%	0.3%
Janson	0.0%	0.0%	0.0%	0.0%	0.2%	0.0%	0.0%	1.7%	0.6%	0.0%
Jenson	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.6%	0.0%	0.1%
Joanna	0.0%	1.4%	0.0%	0.0%	0.2%	0.0%	0.3%	0.0%	0.0%	0.0%
Kabel	0.0%	11.6%	3.9%	0.6%	1.1%	2.3%	1.2%	0.0%	0.3%	0.2%
Kabel Black	0.0%	1.4%	0.0%	0.0%	0.5%	2.9%	2.6%	0.6%	0.3%	0.5%
Knockout	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.2%	3.1%	3.5%
Lexicon	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Mason	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Melior	0.0%	0.0%	0.0%	0.0%	1.2%	0.1%	0.6%	0.0%	0.3%	0.1%
Memphis	5.6%	1.4%	1.3%	0.0%	0.5%	0.2%	0.0%	0.0%	0.3%	0.2%
MinistryScript	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Mistral	0.0%	0.0%	0.0%	1.8%	0.6%	0.2%	0.6%	0.6%	0.0%	0.4%
Modesto	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Mrs Eaves	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.6%	0.9%	0.8%
MVB Verdigris	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.6%	0.1%
Myriad	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.6%	0.9%
Neue Haas Grotesk/ Helvetica	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.0%
Neue Helvetica	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.9%	2.5%	5.6%
Neutraface	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.5%	2.4%
News Gothic	0.0%	1.4%	3.9%	6.5%	8.8%	2.4%	0.3%	0.6%	0.3%	0.6%
OCR-A	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.3%	0.0%	0.3%	0.2%
OCR-B	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.6%	0.0%	0.3%
Optima	0.0%	0.0%	0.0%	0.0%	1.5%	1.9%	3.5%	1.7%	1.2%	0.8%
Palatino	0.0%	0.0%	0.0%	1.2%	0.6%	0.9%	1.5%	0.6%	1.2%	0.5%
Peignot	0.0%	1.4%	1.3%	0.6%	0.6%	0.8%	0.9%	0.6%	0.3%	0.1%
Perpetua	0.0%	2.9%	0.0%	2.4%	0.3%	0.4%	0.6%	0.0%	0.6%	0.2%
Plantin	5.6%	1.4%	0.0%	1.2%	0.2%	0.1%	0.0%	0.0%	0.9%	1.0%
PMN Caecilia	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.9%	0.5%
Rockwell	0.0%	0.0%	2.6%	0.6%	0.0%	0.8%	0.9%	0.0%	0.0%	0.6%
Rotis (Semi Serif)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.6%	0.3%	0.0%
Sabon	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.3%	2.3%	0.9%	0.8%
Scotch Roman (Modern/ Scotch)	0.0%	1.4%	1.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Selva	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Serifa	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.3%
Swift	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.3%	0.0%	0.9%	0.4%

Results continued on next page...

Typeface	1920s	1930s	1940s	1950s	1960s	1970s	1980s	1990s	2000s	2010s
Syntax	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.6%	0.6%	0.0%
Template Gothic	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.7%	0.0%	0.0%
The Mix (Thesis Family)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.6%	0.0%	0.0%
The Sans (Thesis Family)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.6%	0.3%	0.6%
The Serif (Thesis Family)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.3%	0.2%
Times New Roman	0.0%	0.0%	1.3%	0.6%	2.8%	2.2%	1.2%	3.5%	1.2%	1.9%
Trajan	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%	0.3%	0.6%	1.2%	0.6%
Transport	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Trump Mediaeval	0.0%	0.0%	1.3%	0.0%	0.8%	0.1%	0.0%	0.0%	0.0%	0.1%
Univers	0.0%	0.0%	0.0%	1.8%	6.8%	10.5%	7.9%	5.2%	2.5%	3.6%
VAG Rounded	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.3%	0.6%	0.6%	0.3%
Verdana	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	1.5%	0.3%
Verlag	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.6%	1.3%
Vitesse	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.4%
Walbaum	0.0%	2.9%	0.0%	0.0%	0.2%	0.1%	0.0%	0.0%	0.3%	0.2%
Whitney	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.1%
Wilhelm KlingsporSchrift (Gotisch)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.3%	0.6%	0.0%	0.2%
	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

#% – Typefaces which accounted for more than 5% of the samples uploaded for that decade on the Fonts in Use Website

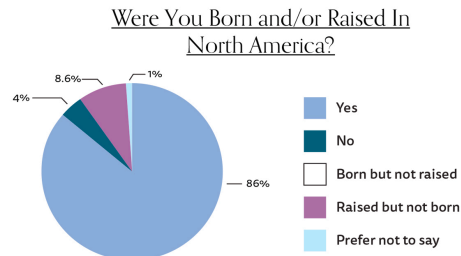
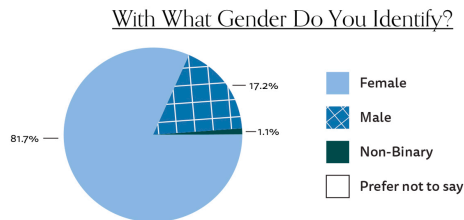
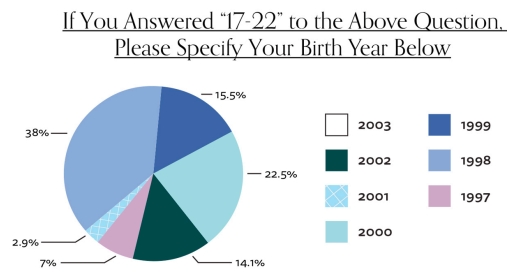
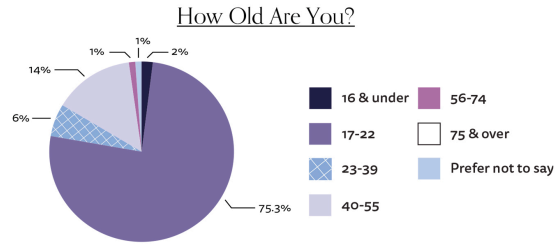
(3) The typefaces considered for inclusion in this survey, based on the selection criteria outlined in the Methodology.

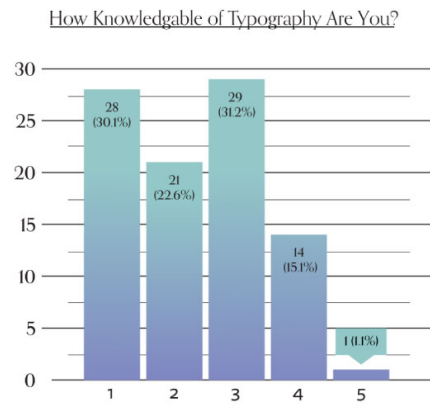
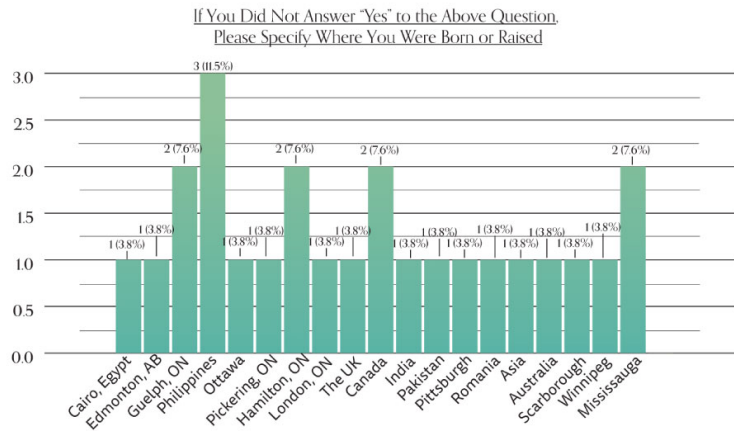
Decade	Typeface	% of Samples	Classification	Terminal (Serif) Construction	Character Width	Weight
1920s	Akzidenz-Grotesk	27.8%	Sans serif	Square	Regular	Regular
1920s	Futura	16.7%	Sans serif	Square	Regular	Regular
1920s	Cheltenham	16.7%	Serif	Square	Regular	Regular
1920s	Cooper Black	5.6%	Serif	Round	Regular	Bold
1920s	Fournier	5.6%	Serif	Square	Regular	Regular
1920s	Memphis	5.6%	Serif	Square	Regular	Regular
1920s	Goudy Old Style	5.6%	Serif	Square	Regular	Regular
1920s	Plantin	5.6%	Serif	Square	Regular	Regular

Results continued on next page...

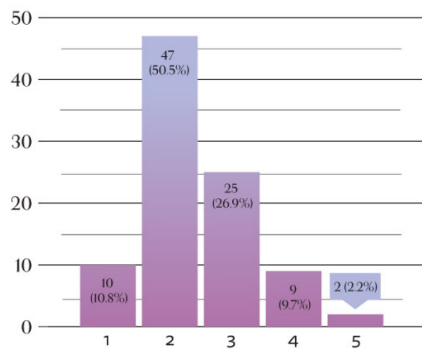
APPENDIX B – SURVEY QUESTIONS AND RESPONSES

(1) The Google Forms questionnaire used to execute the online survey, along with the responses given by all 93 respondents.

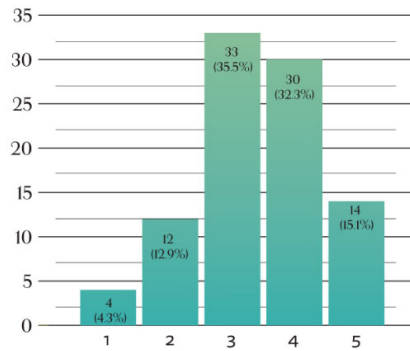




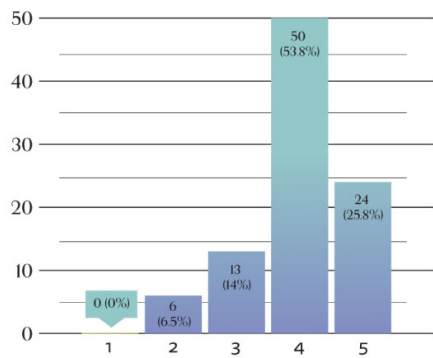
Please Rate How Modern Typeface Sample #1 Looks to You



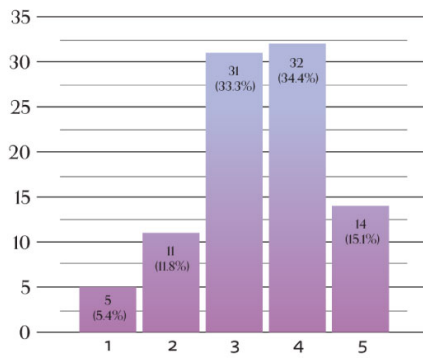
Please Rate Your Preference of Typeface Sample #1



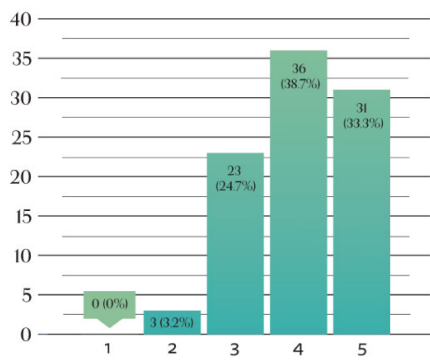
Please Rate How Modern Typeface Sample #2 Looks to You



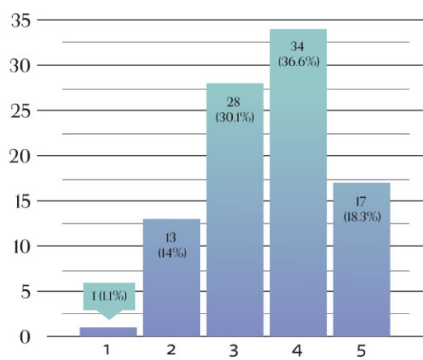
Please Rate Your Preference of Typeface Sample #2



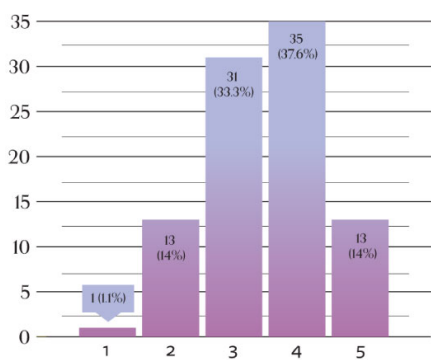
Please Rate How Modern Typeface Sample #3 Looks to You



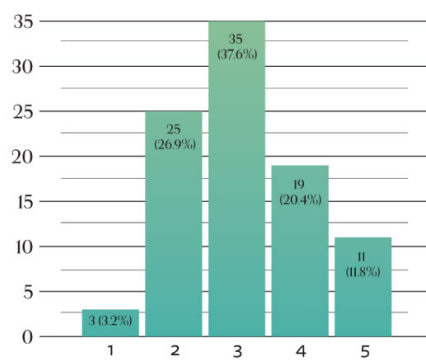
Please Rate Your Preference of Typeface Sample #3



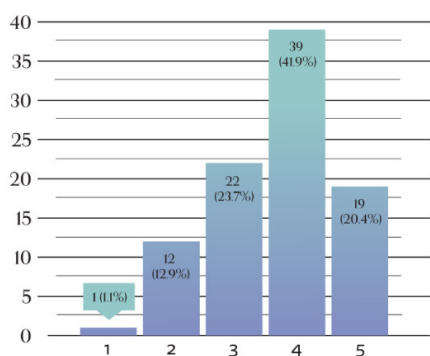
Please Rate How Modern Typeface Sample #4 Looks to You



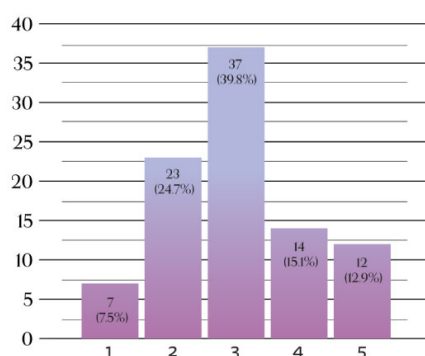
Please Rate Your Preference of Typeface Sample #4



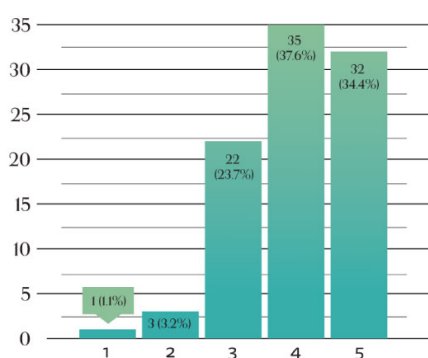
Please Rate How Modern Typeface Sample #5 Looks to You



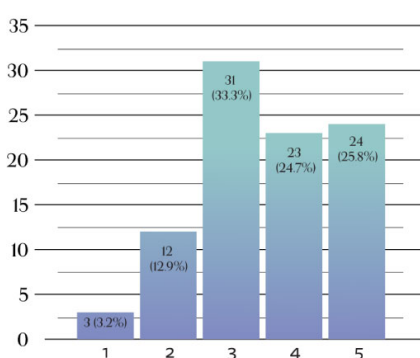
Please Rate Your Preference of Typeface Sample #5



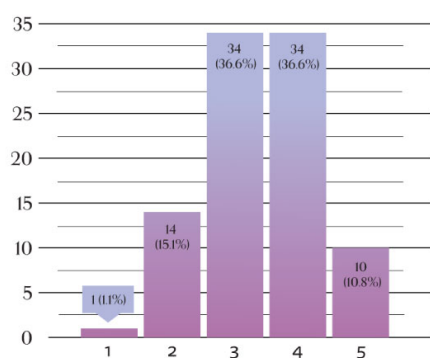
Please Rate How Modern Typeface Sample #6 Looks to You



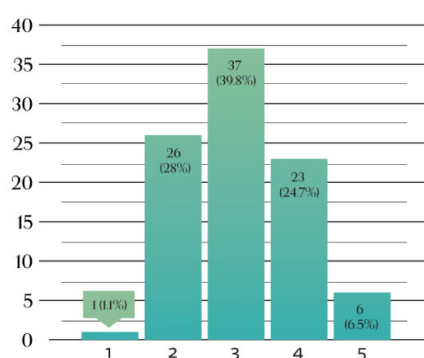
Please Rate Your Preference of Typeface Sample #6



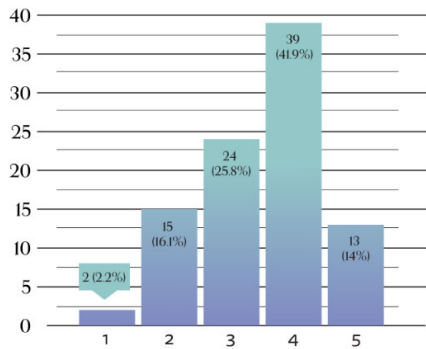
Please Rate How Modern Typeface Sample #7 Looks to You



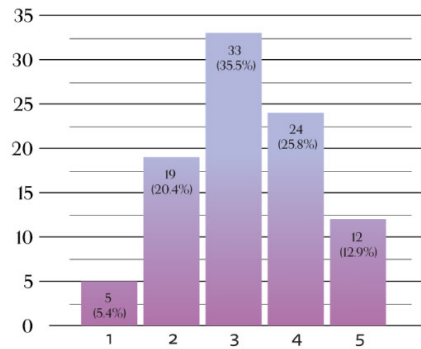
Please Rate Your Preference of Typeface Sample #7



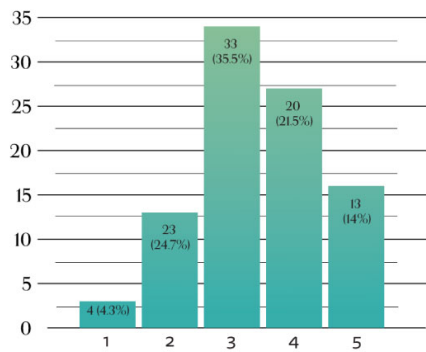
Please Rate How Modern Typeface Sample #8 Looks To You



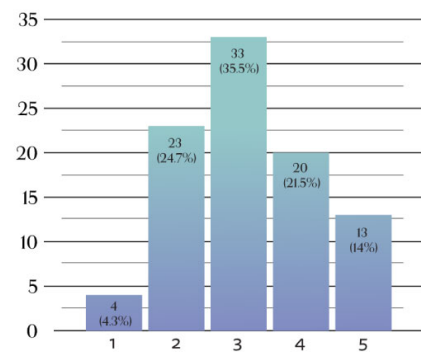
Please Rate Your Preference of Typeface Sample #8



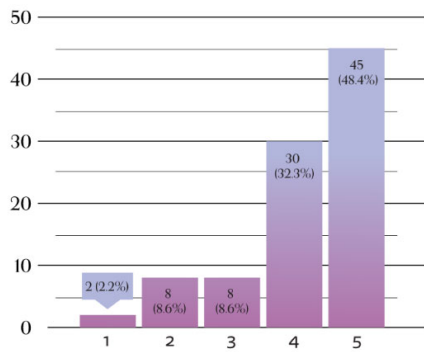
Please Rate How Modern Typeface Sample #9 Looks To You



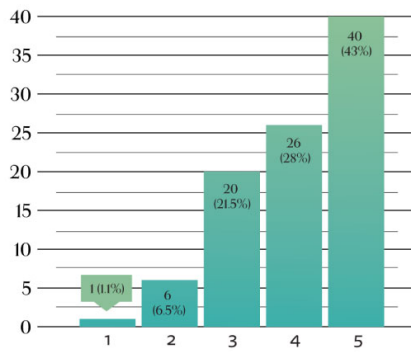
Please Rate Your Preference of Typeface Sample #9



Please Rate How Modern Typeface Sample #10 Looks To You



Please Rate Your Preference of Typeface Sample #10



(2) The survey responses of those born within the 1998-2002 range.

(a) Section 1 – Background questions

How old are you?	If you answered "17-22" to the above question, please specify your birth year below.	With what gender do you identify?	Were you born and/or raised in North America?	If you did not answer "Yes" to the above question, please specify where you were born or raised.	How knowledgeable of typography are you?
17 -22	1998	Female	Yes		3
17 -22	1998	Female	Yes	Guelph, Ontario, Canada	4
17 -22	1998	Male	Raised but not born	Born in the Philippines	3
17 -22	1998	Female	Yes		2
17 -22	1998	Female	Yes	Ottawa	3
17 -22	1998	Female	Yes		1
17 -22	1998	Female	Yes	Pickering, ON, Canada	3
17 -22	1998	Female	Yes		3
17 -22	1998	Female	Yes		2
17 -22	1998	Female	Yes		3
17 -22	1998	Female	Yes		4
17 -22	1998	Female	Yes		3
17 -22	1998	Female	Yes		4
17 -22	1998	Female	Yes	Hamilton, Ontario	1
17 -22	1998	Male	Yes		3
17 -22	1998	Female	Raised but not born	Born: UK raised: Canada	4
17 -22	1998	Male	Raised but not born	Philippines	1
17 -22	1998	Female	Yes		2
17 -22	1998	Female	Yes		3
17 -22	1998	Male	Yes		4
17 -22	1998	Male	Yes	London On	2
17 -22	1998	Female	Raised but not born	Born in India	2
17 -22	1998	Female	Yes		3
17 -22	1998	Female	Yes		1
17 -22	1998	Female	Yes		3
17 -22	1998	Male	Yes	Pittsburgh	3
17 -22	1998	Female	Yes	Guelph ON, Canada	3
17 -22	1999	Female	Yes	Canada	3
17 -22	1999	Female	Yes		4
17 -22	1999	Female	Raised but not born	Asia	3

Results continued on next page...

How old are you?	If you answered "17-22" to the above question, please specify your birth year below.	With what gender do you identify?	Were you born and/or raised in North America?	If you did not answer "Yes" to the above question, please specify where you were born or raised.	How knowledgeable of typography are you?
17 -22	1999	Female	Raised but not born	I was born in Romania (Europe)	2
17 -22	1999	Male	Yes	Winnipeg, Manitoba	4
17 -22	1999	Female	Yes		3
17 -22	1999	Female	No	philippines	3
17 -22	1999	Female	Yes		3
17 -22	1999	Female	Yes		4
17 -22	1999	Female	Yes		1
17 -22	1999	Female	Yes		3
17 -22	2000	Female	Yes		2
17 -22	2000	Female	Yes		3
17 -22	2000	Female	Yes	Canada	1
17 -22	2000	Female	Yes		1
17 -22	2000	Female	Yes		1
17 -22	2000	Female	Yes		2
17 -22	2000	Female	Yes		1
17 -22	2000	Male	Yes		2
17 -22	2000	Female	Yes		2
17 -22	2000	Female	Yes		1
17 -22	2000	Non-binary	Yes	Mississauga (close to toronto)	1
17 -22	2000	Female	Yes		2
17 -22	2000	Female	Raised but not born	Born in India	2
17 -22	2000	Female	Yes	Born in mississauga, raised all around the gta and niagara region	1
17 -22	2000	Female	Yes		1
17 -22	2000	Female	Raised but not born	born in Pakistan, immigrated to Canada when I was 3 and grew up here	1
17 -22	2001	Female	Yes		1
17 -22	2001	Female	Yes	Scarborough, Toronto	1
17 -22	2002	Female	Yes		1
17 -22	2002	Female	Yes		1
17 -22	2002	Female	Yes		2
17 -22	2002	Female	Yes		3

Results continued on next page...

How old are you?	If you answered "17-22" to the above question, please specify your birth year below.	With what gender do you identify?	Were you born and/or raised in North America?	If you did not answer "Yes" to the above question, please specify where you were born or raised.	How knowledgeable of typography are you?
17 -22	2002	Female	Yes		2
17 -22	2002	Male	Yes	Hamilton, Ontario, Canada	1
17 -22	2002	Female	Yes		1
17 -22	2002	Female	Yes		3
17 -22	2002	Female	Yes		1
17 -22	2002	Female	Yes		4

(b) Responses to typeface samples

Please Rate how modern Typeface Sample #1 looks to you.	Please rate your preference of Typeface Sample #1.	Please Rate how modern Typeface Sample #2 looks to you.	Please rate your preference of Typeface Sample #2.	Please Rate how modern Typeface Sample #3 looks to you.	Please rate your preference of Typeface Sample #3.	Please Rate how modern Typeface Sample #4 looks to you.	Please rate your preference of Typeface Sample #4.	Please Rate how modern Typeface Sample #5 looks to you.	Please rate your preference of Typeface Sample #5.	Please Rate how modern Typeface Sample #6 looks to you.	Please rate your preference of Typeface Sample #6.	Please Rate how modern Typeface Sample #7 looks to you.	Please rate your preference of Typeface Sample #7.	Please Rate how modern Typeface Sample #8 looks to you.	Please rate your preference of Typeface Sample #8.	Please Rate how modern Typeface Sample #9 looks to you.
1	2	4	5	5	5	3	3	4	3	3	2	5	4	3	2	5
2	2	3	2	3	3	4	4	4	3	4	2	5	5	4	3	5
2	3	5	4	5	5	5	5	4	4	5	4	4	4	3	4	5
4	4	5	5	5	5	5	5	5	4	5	5	4	4	4	4	4
3	4	4	4	4	4	2	3	2	2	4	5	2	3	3	3	2
3	3	4	2	4	1	4	1	4	1	5	3	3	2	3	4	2
3	4	5	2	4	3	3	2	4	3	4	3	3	3	3	2	3
2	4	4	3	3	3	4	3	3	4	3	4	4	2	3	2	4
2	3	4	4	5	5	4	2	4	2	5	5	3	2	4	5	3
2	3	4	3	4	4	4	5	4	1	4	4	4	3	4	5	4
3	5	5	5	5	4	5	5	3	4	5	5	3	3	3	3	4
1	5	5	5	5	5	5	4	3	3	4	3	3	2	5	5	3
2	5	3	1	3	3	3	4	3	3	3	2	3	4	2	2	3
4	3	5	5	4	2	3	3	2	3	5	5	3	4	4	4	4

Results continued on next page...

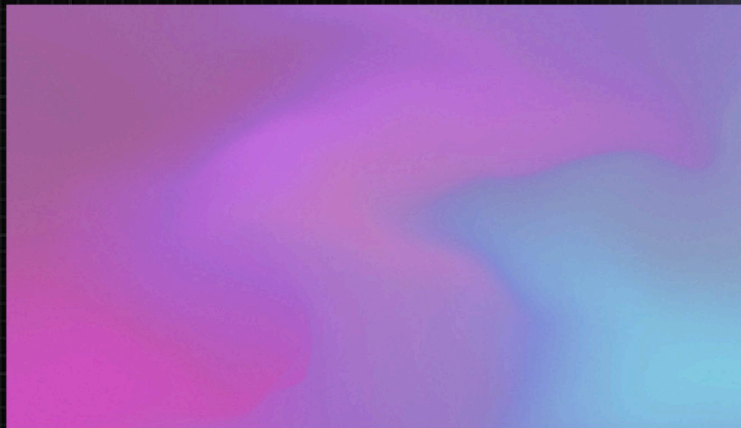
Please Rate how modern Typeface Sample #1 looks to you.	2	3	4	5	5	5	4	3	5	4	5	5	4	5
Please rate your preference of Typeface Sample #1.	2	3	4	4	4	3	2	3	3	3	3	3	2	3
Please Rate how modern Typeface Sample #2 looks to you.	3	5	4	4	4	5	2	3	3	4	5	4	2	3
Please rate your preference of Typeface Sample #2.	3	3	5	3	5	4	3	2	4	2	5	5	3	2
Please Rate how modern Typeface Sample #3 looks to you.	3	4	3	2	4	2	4	4	3	2	4	4	4	4
Please rate your preference of Typeface Sample #3.	2	4	5	4	5	4	4	3	4	2	5	4	4	5
Please Rate how modern Typeface Sample #4 looks to you.	2	5	3	4	4	2	3	3	2	2	4	2	3	2
Please rate your preference of Typeface Sample #4.	2	2	4	4	5	4	4	5	5	3	5	5	4	4
Please Rate how modern Typeface Sample #5 looks to you.	3	4	4	3	5	5	5	4	5	5	4	3	5	4
Please rate your preference of Typeface Sample #5.	3	3	4	2	3	3	4	2	4	2	4	2	5	3
Please Rate how modern Typeface Sample #6 looks to you.	3	3	4	5	4	5	3	3	3	3	4	5	3	3
Please rate your preference of Typeface Sample #6.	2	3	4	4	3	4	3	2	3	1	5	3	5	4
Please Rate how modern Typeface Sample #7 looks to you.	2	3	5	4	5	4	4	4	5	5	5	5	4	4
Please rate your preference of Typeface Sample #7.	2	2	4	4	5	5	5	5	4	4	5	5	4	4
Please Rate how modern Typeface Sample #8 looks to you.	3	3	4	3	5	4	3	2	4	2	5	5	3	3
Please rate your preference of Typeface Sample #8.	1	3	5	5	5	5	5	2	3	2	4	5	4	4
Please Rate how modern Typeface Sample #9 looks to you.	5	4	5	3	4	2	2	2	4	3	5	4	1	2
	2	3	4	3	4	3	4	3	4	3	4	4	4	3
	4	4	3	2	4	4	3	3	3	1	2	2	4	3
	2	3	5	4	4	4	3	3	3	3	3	3	2	3
	2	4	5	4	5	5	4	3	4	3	5	5	4	3
	2	1	4	4	5	5	3	3	5	5	5	5	3	3
	3	5	4	4	4	3	5	2	5	2	4	4	4	2
	2	1	3	3	4	4	3	3	4	4	5	5	3	3
	2	3	4	4	4	4	3	3	4	4	4	4	3	3

Results continued on next page...

05

PACKAGING LABELLING
DEVELOPMENTS. THE IMPACT
OF PACKAGING LABELLING ON
RECYCLING - IS THERE A BETTER WAY?

DONNA ABDELRAZIK



ABSTRACT

Waste from packaging and its impact on the environment have been gaining exposure as a result of the increase of media coverage, corporate and global ecological initiatives taking shape, and public sustainability concerns impacting purchasing decisions. In theory, municipal recycling programs are a positive solution to support a circular economy for packaging waste. Still, less than 10% of what Toronto, ON, Canada consumers place at the curb is recycled back into our packaging value chain. This study was initiated to understand what impact, if any, does package labelling have on recycling engagement (symbol vs colour vs text). Participants expressed their confusion around the current recycling label methodology and the differing municipality recycling processes across Canada. Uncertainties are contributing to errors and contamination in our blue bins. In this study, a single-use coffee cup container was designed and prototyped with four labelling alternatives. Survey respondents preferred the version with text and colour added to the recycling symbol to increase its understanding. Consumers have identified a need for transparency to minimize these inconsistencies. A better way forward for recycling engagement is to create:

- A harmonized system that is visually consistent
- An accessible design
- Cost supportive for print and operations
- With informative and intuitive labelling iconography

If we can connect experiential pre-conditioning to a universal visual alongside increased awareness, change is possible.

INTRODUCTION

In the Greater Toronto Area (GTA), the government, industry stewards, and taxpayers support more than a million dollars a day to transport waste and recycling around the city (Wilkins, 2017). The Ontario Stewardship Council runs the Blue Box program that collects printed paper and packaging, and the cost is divided amongst the municipalities. Ontario's Blue Box program was the world's first curbside recycling program that began in 1981 and has since "become the blueprint of over 150 countries around the world" ("The Story", n.d.). Although it is convenient for consumers to place all paper and packaging products into a single blue box, what real impact is this infrastructure having on our environmental stewardship and recycling success? Is there a better way to support proper consumer participation in recycling efforts? This study was initiated to understand what impact, if any, does package labelling have on recycling engagement (symbol vs colour vs text).

METHODOLOGY

A choice-based survey was conducted to learn the current recycling habits and consumers' opinions. One hundred seventy participants from across North America, Europe, Asia, and Australia provided their insights into their current recycling programs and offered feedback on improving participation. Due to COVID-19, on-line survey offering was the method of distribution; however, the initial scope included a focus group platform with prototype interaction to understand the labelling impacts on user-experience.

74% of those participating were women. The generational demographic was evenly split, with half of the respondents 41 years or older (52%) Gen X to Baby Boomers and the other half (48%) Gen Z to Millennial 18-40. This organically offered a platform to find cause-and-effect relationships between these demographics using design of experiments (DOE) to process affecting factors. Qualitative commentary and summative evaluation, quantitative techniques and statistical analysis were conducted to assess the data received and support conclusions on what packaging labelling alternatives might aid in consumer participation efforts.

PACKAGE MEDIUM TESTED

This study focused on a Single-Use Beverage Container containing both a multi-material paper-based cup that is not recyclable and a polypropylene polymer lid that is recyclable through a cradle-to-cradle life cycle. "Estimates suggest that Canadians use between 1.6 and 2 billion disposable coffee cups a year" (Wilkins, 2017).

A fictitious brand, Coffee Ogler, was designed and developed with 3D renderings for this study to ensure participants focused on the questions and not a recognized brand. As shown in Figure 1, four different labelling alternatives were created, including print debossing of the text to support accessible universal design.

Packaging Labelling Alternatives – Colour, Text, and Symbol



Figure 1. Coffee Ogler brand design and 3D rendering of four packaging labelling alternatives. Left to right, top to bottom: (1) black Mobius loop symbol, (2) traffic light colour Mobius loop symbol, (3) How2Recycle black text and symbol, (4) How2Recycle traffic light colour and symbol. Image created by Dorotea Bajic.

LITERATURE REVIEW

PACKAGING RECYCLING LABELLING METHODS IN CANADA

Optically, Canadian consumers see a supportive systemic effort of identification and collection with labelled receptacles, efficient waste removal processes with curbside pickups or drop off stations, and deposit system infrastructures for returnable packaging materials such as glass and aluminum. Additionally, Canadian consumers are familiar with the commonly used Mobius black loop symbol printed on the packaging, signifying that the container may be recyclable and placed in a blue box for recycling. Where confusion ensues, since not all municipalities support the same material recycling, it may be misleading or inaccurate as a blanket symbol, especially when it comes to the different resin code identifications, biodegradable alternatives, or multi-layered packaging materials. The province of Ontario has 444 municipalities alone. And for those cities, like Vancouver and Edmonton, whose blue box programs have consumers separate paper, cardboard, and containers, the risk of error increases. A study conducted at Queen's University identified that "when people think their stuff is being recycled, it clears their conscience, no matter what is happening beyond the blue box" (M. Hird, 2017).

What if there was acknowledgement and optical recognition of accurate recycling engagement, would that impact participation? The municipality of Essex-Windsor introduced the "gold star recycler program" in June of 2016 that rewards A+ packaging recyclers with gold recycling bins (ewswa.org). A representative of the Essex-Windsor solid waste authority will evaluate your recyclables and honour you with a limited-edition bin for compliance. Data is still being collected on this initiative.

There are municipal waste management Apps that are bringing recycling education into the digital age and attracting the Gen Z/Millennial demographic. Recycle Coach and Waste Wizard are two examples of available media tools that support local consumers in recycling protocols. With 50% of respondents surveyed in this research initiative making educated guesses about what bin they should use to dispose of their packaging waste, Apps like these could bring to fruition increased awareness and education to improve consumer knowledge and accuracy.

IS THERE A BETTER WAY?

SUEZ, ON-PACK RECYCLING LABEL (OPRL) & HOW 2 RECYCLE

Waste management company SUEZ proposes a new packaging 'eco-labelling' concept in the UK that consists of a "three-tier traffic light code with red, amber, and green versions of the Mobius recycling loop" (Dickinson, October 11, 2018). Additionally, they suggest labelling a numbering system corresponding with product categories (not the resin identification code system currently in circulation) that would then be printed on recycling bins. This combined colour and numbering system would provide visually enhanced recycling indication for consumers, making it clear in which bin it would be placed to minimize contamination and error. This system could "encourage consumers to think more deeply about their purchases" (Dickinson, 2018) and may cause producer shaming; therefore, affecting change at the design stage of corporate packaging development. Supermarket giant Tesco has also "set out goals to govern packaging and reduce plastic waste through a traffic light system" (Barrett, November 11, 2019). However, if their initiative is independent of SUEZ, will these efforts aid consumer recycling clarity or add confusion? See Figure 2, the proposed visual of the SUEZ system below:

SUEZ, Traffic-light Recycling System Proposal

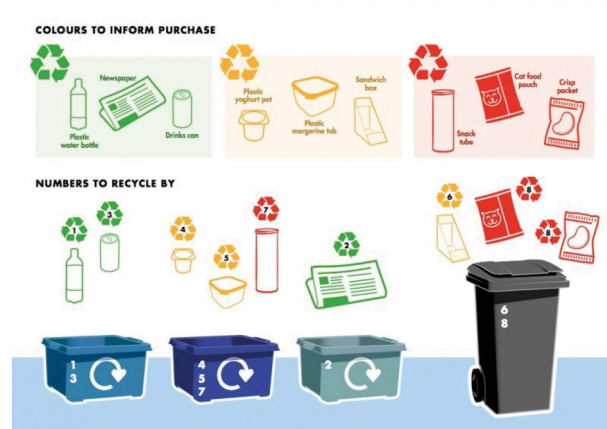


Figure 2. SUEZ, Traffic-light Recycling System Proposal for the UK. Retrieved from: <https://resource.co/article/traffic-light-labelling-could-improve-packaging-recycling-says-suez-12894>

Has this traffic-light proposal arrived too late? On-Pack Recycling Label (OPRL) is a packaging labelling system that was implemented in 2009 in the UK that is now in the circulation of more than "80% of supermarket products, with all national supermarkets being members of the scheme" (Dickinson, 2018). This labelling method adds text descriptors to inform consumers of a product's recyclability.

The OPRL European initiative is similar to the American brand coalition How2Recycle, which “provides a labelling system that follows the Federal Trade Commission Green Guides” and is led by major US consumer packaged goods brand owners (how2recycle.info). See below Figure 3 of the current OPRL packaging and How2Recycle labelling visuals.

OPRL (top) and How2Recycle (bottom) recycling symbol images



Figure 3. Visuals of the UK OPRL recycling text & symbols and the US How2Recycle version Retrieved from <https://www.oprl.org.uk/> & <https://how2recycle.info/labels>

In the 1990s, Japan introduced their recycling labelling version based on the resin identification system, updated with varying shapes and surrounding arrows to support visual differentiation at a glance. See Figure 4 graphic below the *risaikuru shikibetsu hyoji* – recycling identification symbols (Gordenker, Feb. 18, 2010).

Packaging Labelling Recycling Symbols in Japan

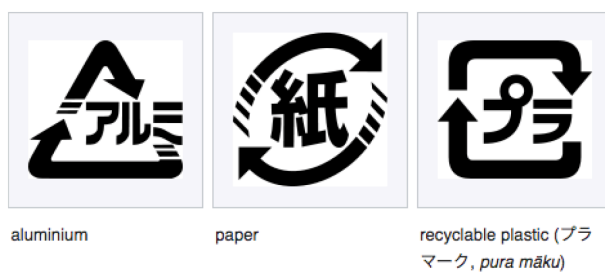


Figure 4. Visuals of recycling symbols in Japan. Images retrieved from <https://www.japantimes.co.jp/news/2010/02/18/reference/logo-for-recyclables/#.XuOeK55KhZo>

Each platform researched has a similar goal: reducing confusion and creating ease in recycling efforts for

the consumer. They are not unified in their representations, which may confuse consumers and waste management infrastructures when brands want to expand their global retail reach. A study done at the University of Zagreb on consumer interpretation of recycling symbols in Croatia corroborates the need for regulated, easily understood and reproducible eco symbols that can be globally popularized (Dolic, J. et al., 2015). A harmonized visual and system expectation is ideal for adoption, longevity, accuracy, and efficiency, similar to how the Mobius loop's passage has impacted the world.

When we consider the field of packaging user-experience, subconscious reactions to preconditioned visuals, like the Mobius loop, can create an emotional connection toward sustainability contributions. Additionally, information is power. Researchers from Penn State University and Boston College found that "people recycle more when they know what recyclable waste becomes" (Winterich et al., May 16, 2019). Therefore, if we can connect experiential pre-conditioning to a universal visual alongside increased awareness, the potential for change is possible.

THE PSYCHOLOGY AND MARKETING OF COLOUR, SHAPE, AND SYMBOLS

One of the current challenges with adding text versus colour in recycling labelling is in countries with multiple language guidelines. This increases packaging space requirements and makes for cluttered informational panels that may counter the intended effect. Additionally, offering various colour options for recycling symbols adds print costs to commodity volume single-use items. The cost-benefit analysis would be required to evaluate the impact of these additional process requirements. Colour blindness is another aspect to consider if adding a coloured system.

Research has shown that many products' success or failure can be directly linked to visual aspects of packaging design, and colour is the first element to "capture the shopper's attention on shelf" (Martinho et al., October 2015). When considering a traffic light system, red can be seen from the furthest distance. It has the longest wavelength on the visible spectrum and has been popularized for years as the colour of boldness and danger. Yellow is next on the visible spectrum to signify "caution," with green following a close second to represent "go" (Miller, 2016). It could be argued that green also denotes growth and nature (Roberge, D., 2019), quickly tying an emotional connection to a well understood and trusted colour choice.

Significant studies on the mind have explored visual perceptions. "People fix and perceive pictorial elements like icons and illustrations faster than words" (Tubik Studio, May 2016). Hence why the design

community often uses iconography to amplify informational meaning. Another critical finding is that “images are less vulnerable in combination with the background and surrounding elements while text is highly dependent on the aspect of readability” (Tubik Studio, May 2016). One respondent surveyed remarked, “The colour draws your attention to the label, the symbol tells you very quickly what the label is about, and the words give you detailed instructions so that you don’t have to memorize the meaning of the symbols.”

THE DEMOGRAPHICS OF OUR RECYCLING INFLUENCERS

Generation Z, born 1998 – 2015 (ages 4-24), is the generation to influence change. Gen Z comprises 25% of the population in Canada or 9 million strong, “they want to be shown, not told. While always connected to some form of technology and social media platform, they use mobile food service and dine out on average four times per week” (Gen Z, July 11, 2019).

Unlike millennials, born 1980 – 1994 (ages 26-40), “Gen Z doesn’t dine out because their lives are too busy for groceries and cooking, they are there because there’s something they’re craving” (Gen Z, July 11, 2019). They have consideration for food waste and are mindful if the take-out container is recyclable or compostable. The use of an App and interest in information for this demographic are fitting. Therefore, recycling tools and added visuals and text descriptors within a recycling label would be recognized as positive attributes by this group. One of the Gen Z Canadian survey participants remarks, “If labels started adopting the words, I think it would greatly improve general recycling efficiency.” Millennials feel better recycling, and Gen Z feels the need to recycle. Each generation is more critical of sustainability, and our societal infrastructure is playing catch up.

FINDINGS AND DISCUSSION

INTEREST IN PACKAGING SUSTAINABILITY

When asked, respondents shared their level of interest in packaging sustainability that ranged from moderately to extremely interested.

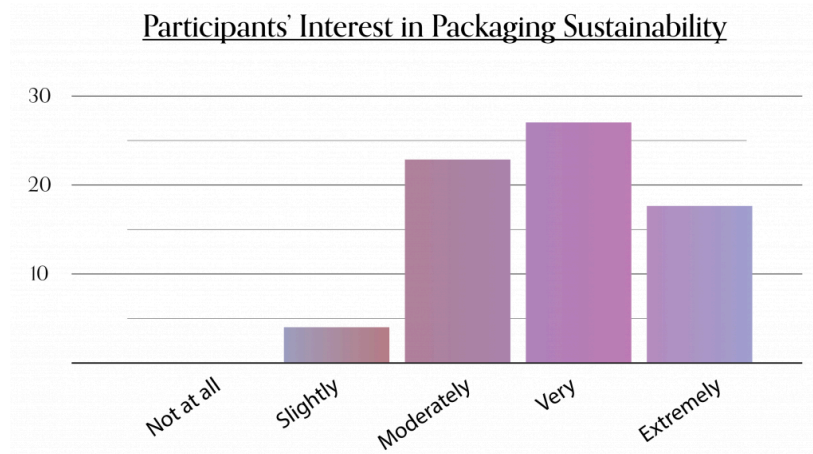


Figure 5. 70 respondents rated on interest in packaging sustainability. 94% were moderate to extremely interested in the subject.

By creating a scatterplot with the data using a quadratic polynomial of 2 with the same data, we can plot a predicted trendline using participant interest variables. The curve depicts an interest level of 4 (moderate) trend. See Figure 6 below.

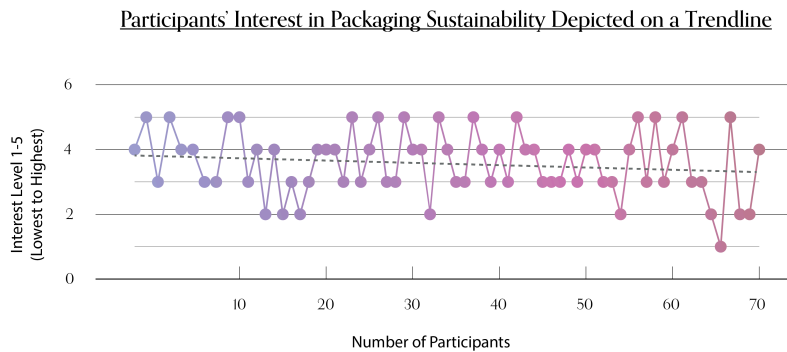


Figure 6. 70 respondents rated on interest in packaging sustainability. Quadratic Polynomial – order of 2 trendline.

PARTICIPATION AND UNDERSTANDING OF RECYCLING SYSTEM

98% participate in some form of recycling, with 77% of respondents supported by curbside bin pick up. When deciding what packaging item is recyclable, 50% of respondents make an educated guess on which bin to place their packaging in. They believe they have an average understanding of their local municipal recycling system.

See figure 7 below. 58% responded to an average understanding.

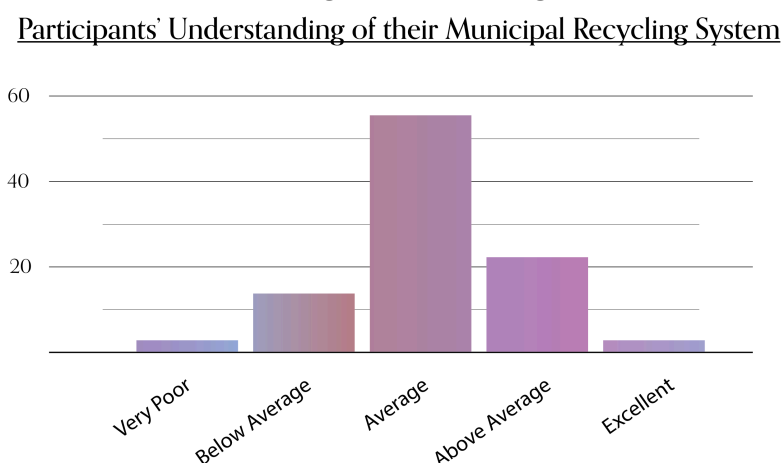


Figure 7. Response of 170 respondents asked about their understanding of their local municipal recycling system.

Curiously, participants were asked what their understanding of the Mobius loop symbol was, and 99% clearly knew that its message indicated the packaging was recyclable. This is a testament to global education efforts and established awareness this symbol has on consumer recognition. Participants were then shown a Mobius loop with the resin identification code number and acronym PP for polypropylene and asked if they knew what was meant by these two details. Interestingly, 66% of Canadians did not know or errored in their response, whereas, outside of Canada, there was an opposite finding. 64% of respondents outside of Canada knew and accurately understood the resin code identification details. If recycling efforts are to improve, education for Canadians on the resin code identification system is necessary to better recycling accuracy of polymer packaging materials.

PACKAGING LABELLING IMPACTS

Then how is it possible to increase recycling engagement with packaging labelling efforts? Respondents were given four visual recycling labelling options to rank in order of preference. They ranged from a black

symbol to a traffic light colour/symbol reference to the addition of text, symbol and colour to provide complete informational guidance. See below the visual shared and the corresponding results.

Versions 1-4 of Packaging Recycling Labelling Options



Figure 8.1. Packaging Labelling Options

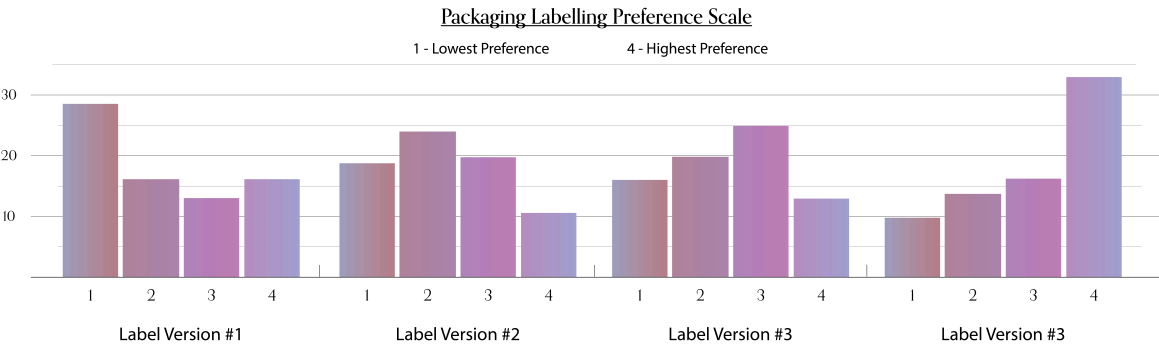


Figure 8.2. Response of 170 respondents rated on preference scale against packaging labelling.

Of the combined 170 respondents, the highest labelling preference was the full text, colour and symbol recycling image, and the least preferred was the one colour black Mobius loop. When isolating Gen X and Baby Boomers, they selected the colour graphic over text option. Presbyopia is a condition of farsightedness related to ageing and may be a contributing factor to the preference (nvision.com). One Baby Boomer respondent surveyed shared, “I think colour-coded symbols are easiest to understand, most people don’t want to take the time to read labels, and the print is often too small to read.”

As discovered, 76% of respondents said they would be influenced to participate in recycling if it was

easier to understand. We learned from the research that the resin code identification system is misunderstood by a significant percentage of the Canadian population (66%); therefore, there is an opportunity to improve for our interested demographics. Considerations include increased recycling App investment; and social media advertising to educate our tech-savvy Gen Z and Millennial demographics in the resin code identification system and municipal recycling protocols. The platforms could also seek feedback on improving or harmonizing the communities' packaging value chain recycling infrastructure. See Figure 9 below.

Interest in Recycling Participation if it was Easier to Understand

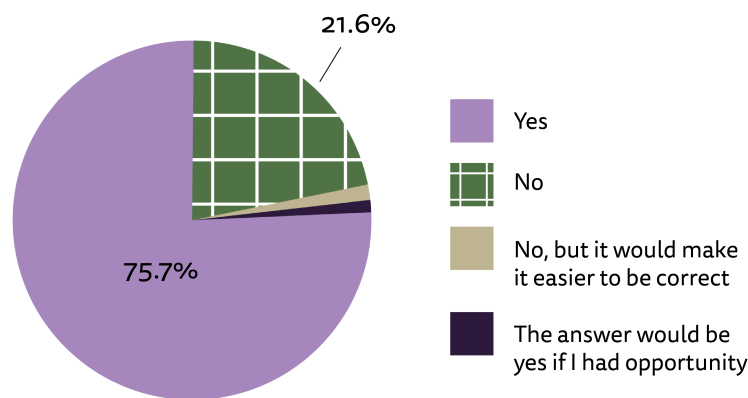


Figure 9. Response of 170 respondents asked about recycling participation.

When isolating the pure symbols from the options with text, 57% of participants agreed that colours were easier to understand in packaging labelling. However, when there is text included, the responses do not lean either way in preference in the inclusion of colour. This could be because they believe the text covers what the colours communicate and more, leading to their indifference. See Figure 10 below.

It is Easier to Understand Colour vs. Symbols on Packaging

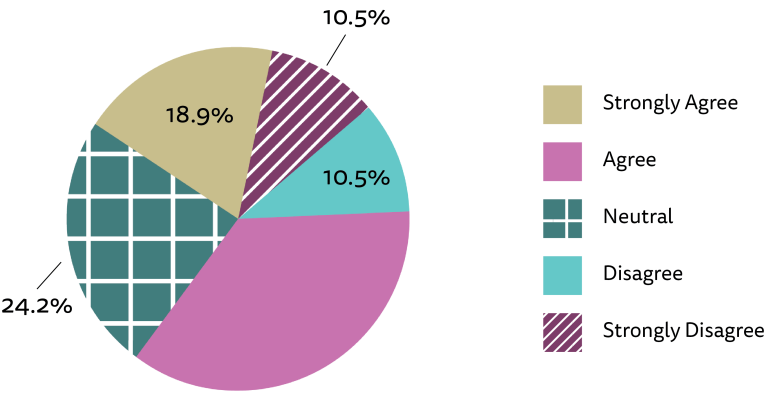


Figure 10. Response of 95 respondents asked if colour was easier to understand over symbols in packaging recycling labelling.

Consumers leaned more towards the text instructions in the survey. This could be because it provides more clarity to the current miseducation of the resin code identification system. The icons require further education to ensure that consumers will interpret the meaning. One respondent proposes “words would be of value for a transitional period until there could be reasonable confidence that the symbols are well understood.” See figure 11 below.

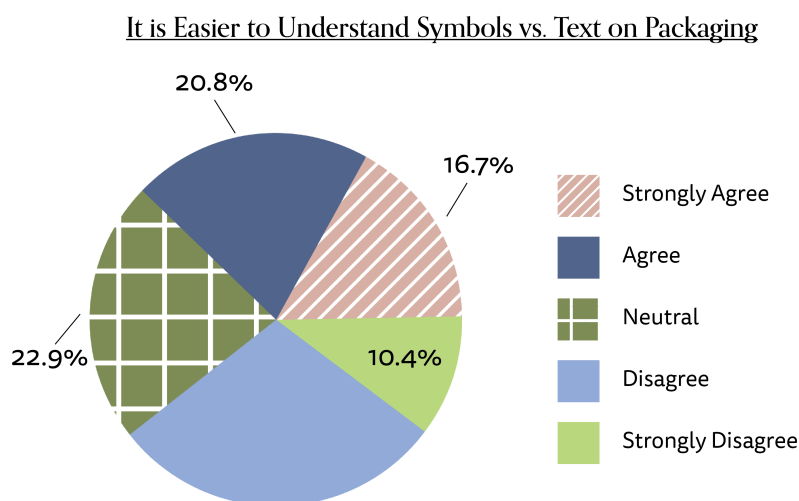


Figure 11. Response of 95 respondents asked if symbols were easier to understand over text in packaging recycling labelling.

CONCLUSIONS

Packaging labelling has the opportunity to impact engagement and compliance with the Gen Z demographic as they are passionately active to learn and “totally connected to the sum of human knowledge and information” (McArthur, July 2019). And there is a preference when adding colour and text to the recycling symbols. As discovered, packaging recycling labelling is not only not clearly understood by consumers but also not unified in representations worldwide. One Canadian respondent to the survey remarked that they wished there was more transparency, “it seems that nobody really knows what is recyclable and how the municipal recycling process works, so just having more clarity would reduce the amount of confusion and possibly motivate more people to participate in recycling efforts.”

There is a better way forward for recycling engagement to create a harmonized system that is visually consistent, with impactful, accessible, and informative labelling iconography. An overall thread throughout the research findings and survey feedback highlighted one significant theme:

AN INCONSISTENT SUSTAINABILITY INFRASTRUCTURE

Consumers are identifying a need for transparency. There is confusion around recycling labelling and varying municipality recycling processes in Canada contributing to the inaccurate disposal of packaging materials in recycling bins. Additionally, multiple labelling systems across the globe contribute to the uncertainty of recycling directions. According to a survey respondent, “symbols or coloured symbols are of value but only if the symbols and or colours are universally understood.” Recycling education, harmonizing infrastructures, and labelling clarity are elements that will influence consumer participation in packaging waste recycling.

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JOURNAL NOTES

THEME

2020 was a defining year for everyone, including our team here at RyeTAGA. The year was characterized by its unpredictable events, significant changes, and constant challenges, but it was a year that also promoted reflection, growth, and overcoming adversity. The conjuncture of instability, technology, and individual ability to adapt and overcome hardships sparked innovation and creativity for everyone and will leave a permanent mark in our team's history. When brainstorming ideas for this year's RyeTAGA journal, we knew the essential aspect was to have the design reflect upon current events. That is just one of the extraordinary things about design; we are able to identify what period in history the design was created, and how it is a reflection of the social and political events that have occurred.

While brainstorming ideas for this year's theme, our Creative Director sought to pick something that reflected current events. The first concept that was put together was inspired by the postal system and how dependent the world had become on it in 2020. We became increasingly aware of the process of shipping and fulfilling orders, a direct response to the rapid growth of the e-commerce market during COVID-19. We were fascinated with the postal system's ability and efficiency. Furthermore, along with the rise of e-commerce was the emergence of attention to packaging, and highlighting its importance more than ever before, especially in shipping. Expanding on these ideas, we considered the theme of e-commerce and technology, which exhibits the impact that COVID-19 had on all of our lives in both professional and personal settings. We realized that technology gave us more support in 2020 than packaging, and without it many businesses would not have survived. It became critical to society, and we were certain that we had to incorporate this into the design of the journal. All of these concepts that COVID-19 and the year of 2020 brought forth to us coincided well with the nature of the journal being digital this year.

PROCESS

Working with the new format, we stumbled across many unpredictable obstacles that challenged us to think creatively to adapt to the new medium and its limitations. Our first challenge was determining the presentation format of the journal. We wanted to choose a format that not only performed a seamless user experience across different screens and devices, but also allowed for working collaboratively virtually. However, our biggest priority for the journal was accessibility. Acknowledging that everyone has their requirements and personal preferences when it comes to reading digitally, we wanted to make sure this year's journal would be customizable in order to accommodate all reader's personal needs and devices. With the help of Dr. Richard Adams, we determined that the best digital publishing

software we could use is Pressbooks. Ryerson University first introduced Pressbooks in 2017, providing an open publishing infrastructure to the students and faculty across our university. One of the biggest advantages Pressbooks offers is the diverse options to customize the design of the online book, as well as its viewing formats for the reader. Pressbooks provides authors with the opportunity to design for web viewing, digital publications (i.e., ePub, interactive PDF), and for print (i.e., PDF). We confirmed that the online book could easily be exported as a PDF for print by designing for letter-sized paper, which is what is most convenient and accessible in many spaces. Furthermore, we also ensured that the publication could be accessed as an ePub, which allows readers to adjust various settings to their own viewing preferences.

The second major challenge that this new format presented us with was familiarizing ourselves with Pressbook's coding language, HTML/CSS. Coding was something that many of us were not familiar with, so given the strict time constraints, we had to learn along the way. After having completed the journal, however, we feel as though we have learned a lot about what is required to create books for digital publication.

Regardless of the theme and output format, the perpetual goal of any RyeTAGA journal is to ensure that it is accessible to as many people as possible. Like always, for the 2020-21 journal, accessibility remained at the forefront of any design ideas—especially because it was a digital platform. Specific features that enhance accessibility on digital mediums include making sure that the content is reflowable, that the web pages run smoothly on different devices and browsers, keeping media under 2 MB for web optimization, and incorporating alternative text to media. All of these factors went into consideration when designing this year's journal to ensure that readers have the best reading experience regardless of their reading format.

LEARNING OUTCOMES

Although there is a stronger consumer preference of printed copies when reading, it was a great learning experience for everyone on our team to learn more about the process of creating ePublications, especially as they emerge in relation to the print industry.

Ryerson University's School of Graphic Communications Management has a wide variety of courses available to students to provide them with a diverse portfolio of skills that are directly applicable to the future of the graphic communications industry. One such example is the eBook Production and Publishing course, taught by Dr. Adams, which also helped provide insight on techniques that were applicable to this year's journal. As a group of individuals who knew nothing about designing for web and coding with HTML, this experience provided us with the opportunity to familiarize ourselves with various publishing methods and learn the basics of HTML/CSS, which is something that we thoroughly

enjoyed learning about and are excited to learn more about through other courses such as Web and Cross Media.

It was also great to learn about the resources available to us from Ryerson University and be able to utilize those tools. As the market continues to grow for self-published eBooks and move to a more online platform, it was rewarding to gain hands-on experience with softwares that can publish eBooks. Overall, this experience has provided us with the foundation of new skills to further the relationship between print, technology, and design. It has made us more fascinated with the processes behind creating digital publications, and the intersection of digital media and print and how they work in unison to complement each other. We are excited to continue by the opportunity to expand on these technical skills, and look forward to the future of the graphic communications industry.



MEET THE TEAM

PRESIDENT

Afrāh
Idrees



After acting as the Marketing and Events Director for the team last year, I was honoured to take on the role of President for the 2020-2021 chapter. Through an entirely virtual method of collaboration, it has been quite a unique experience leading the team and guiding them through a tumultuous year, but it has been rewarding nonetheless. This year, the journal took on an ePublication format, and though a sometimes challenging shift, I am extremely proud of the work that has emerged. It has been wonderful to watch our journal come to life and the level of dedication presented by my team members is truly inspiring. As I wrap up the last year of my undergraduate degree, I look forward to seeing the future of RyeTAGA and how the student group continues to succeed in its operations.

EDITORIAL DIRECTOR

**Tiffany
Ramiro**

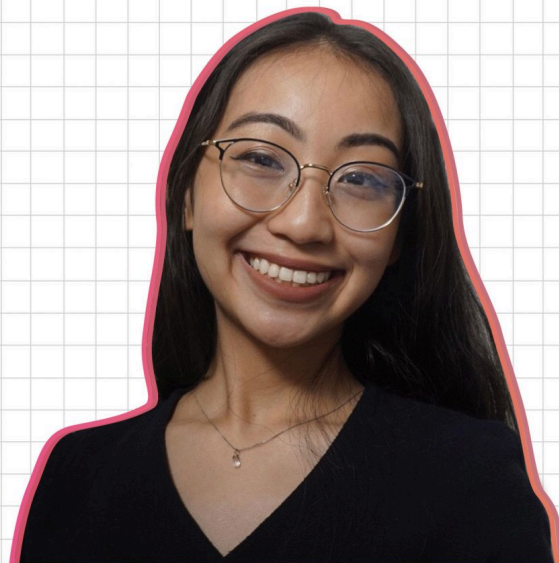


The opportunity to be a part of this year's RyeTAGA chapter has been both amazing and challenging. Being the 2020-2021 Editorial Director was rewarding in several ways, and I have both the Executive team and my Editorial team to thank for that. This role has allowed me to improve on my managerial, creative, and networking skills and gave me an experience that I am able to link towards my future, and I am extremely grateful for it. To be a part of putting together RyeTAGA's first ePublication is an honour. I am excited to finally be able to share the journal we were able to create completely remote, and present the exciting research we have curated. RyeTAGA and I are thankful for the authors for producing and conducting riveting research and allowing us to share it with others. I hope you enjoy our journal and content as much as we've enjoyed producing it for you!



CREATIVE DIRECTOR

Nancy Ly



After being a part of RyeTAGA last year as a Marketing Associate, I was both nervous and honoured to be taking on the responsibility of the Creative Director this year. With the shift from a printed publication to digital this year, I am extremely proud of everyone for coming together virtually to produce this year's journal. Over such a short period of time, we were able to research, learn, and explore a new medium that many of us were not already familiar with. I would also like to personally thank Dr. Richard Adams for continuously providing the team with his support throughout the journey of moving digital. Despite being completely remote this year, I am thankful for RyeTAGA for providing me with the opportunity to take what I've learned through academic projects and extra-curricular roles throughout the last three years and be able to apply it in this journal. I hope that you're able to enjoy RyeTAGA's first ever ePublication at the comfort of your own home and devices.



MARKETING DIRECTOR

**Esther
van Dijken**



Throughout my experience within the Ryerson community and personal freelance work, I have built up the knowledge and experience to take on the responsibilities and rewards of acting as the Marketing Director for RyeTAGA 2020-2021. The challenges posed this year offer opportunities for growth and expansion within our student group, and have led to the first-ever digital production of the RyeTAGA journal. I am honoured to be a part of a transformational year for RyeTAGA and look forward to broadening our reach into digital mediums. The skills developed during this school year will be influential for the future of the graphic communications industry, and I am very proud of the work that our team has produced this year. I hope that all of our readers and audiences will enjoy the final publication!



MULTIMEDIA DIRECTOR

**Haiying
Zhang**



In the past, I've worked with this student chapter as a Creative Associate and since then, I knew I wanted to be part of the team again to create some intriguing publications for the community. The role I've taken on as this year's Multimedia Director has spiked a few challenges for me as I am still learning and exploring the different techniques in Adobe After Effects and HTML; however, I am extremely proud to be in such a wonderful team this year as everyone holds great work ethics and is open to help whenever needed. With the dramatic shift to virtual learning in 2019, we have produced our first-ever digital journal, allowing it to be inclusive to everyone on and off-campus. The skills I have acquired in this role will be extremely supportive as the graphic communications industry is also shifting towards digital publications with the influence of technologies. I hope that you enjoy reading RyeTAGA's very first ePublication!



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