

**GAMIFICATION ON SOCIAL MEDIA: A STUDY ON
DUOLINGO'S USE OF GAMIFICATION ON
INSTAGRAM**

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ABSTRACT

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<p>Abstract</p> <p>Over the years, social media has been growing and changing exponentially. With that comes the importance of social media marketing and the need for user interaction and engagement. To keep up with the changes, marketers are forced to continuously keep adapting their (digital-) marketing strategies as well as their overall marketing efforts. Research suggests that gamification can be used as a useful tool to add- and build sustained value through interpersonal interactions.</p> <p>Existing research shows a limitation when it comes to linking gamification to theoretical principles, the connection is thin, and the empirical research is scarce. The existing studies have mainly been founded on similar, often motivation-related theories – with in particular the Self-Determination Theory, with some studies lacking a theoretical foundation entirely. Additionally, limitations were recognised in the existing research merely investigating the connection between few gamification mechanics and/or brand-related aspects, only covering a few aspects of gamification.</p> <p>Therefore, this thesis aims to contribute to the existing research by analysing how Duolingo, a language learning platform, uses different gamification elements in their social media.</p> <p>A qualitative content analysis is conducted with the data consisting of 353 Instagram posts from Duolingo, published between October 2012 and January 2021.</p> <p>The findings show the utilisation of multiple, frequently used gamification elements across different social media post types, as well as close relations between different gamification dimensions, i.e. the five different groups Performance/measurement, Ecological, Social, Personal, and Fictional, with each of these group including a number of different gamification elements, such as Acknowledgement, Chance, and Competition, among others.</p>	
<p>Keywords: Gamification, gamification elements, gamification dimensions, game-like elements, social media, Instagram, Duolingo</p>	
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1. INTRODUCTION

Social media and its importance are continuously growing, with that also comes the increasing importance of user engagement. As ultimately, the users are the core of these channels. With the increasing competition, more efficient tools and strategies are needed to deal with engagement- as well as attracting and sustaining users. One strategy to engage users is making use of gamification or game-like elements. Some studies point out that the use of gamification can help to not only increase one's engagement, but also enhance brand awareness and customer loyalty – however, there is still a lack of empirical evidence supporting this.

This introduction chapter provides background information and introductory knowledge regarding the research topic. Additionally, the research background and motivation of the study topic is presented. Next, the research objective is stated. Finally, the chapter closes with an outline of the structure of this thesis.

1.1 Research background and motivation

Due to the ongoing changes and developments from the ongoing growth of social media, online marketers keep being faced with various challenges. The importance and potential of social media has opened many doors for marketers to take advantage of. That being said, it is crucial to have an effective social media strategy in order to achieve one's marketing goals. Studies show that gamification is not only a useful tool for educational- and corporate purposes but could also be used as a valuable marketing tool which would help to achieve said goals. For instance, gamification could help brands to increase motivation and engagement, as well as it can help to establish stronger interpersonal connections through consumer interaction (Xi & Hamari, 2020). However, while many studies examine gamification and social media separately – e.g. analysing gamification in educational environments such as the study by Toda et al. (2019), or the effect and influence of social media, among others – seemingly little academic interest has been shown regarding the combination of the two. With that in mind, this thesis aims to contribute to the knowledge, and provide more insights about how gamification is used by businesses in social media, with in particular Instagram.

Although gamification has been around for quite some time, and in an academic context the topic has gained an increasing interest in recent years – e.g. gamification in relation to brand- engagement and equity (Xi & Hamari, 2020), in relation to intention of engagement and brand attitude (Yang, Asaad, & Dwivedi, 2017), in relation to consumer brand engagement (Vitkauskaitė & Gatautis, 2018) – there is yet to be a clear agreement in the definition of the concept. The popularised term comes from Deterding et al. (2011) who define gamification as

“using game design elements in non-game contexts” – for example in a classroom setting or a brand’s loyalty programme. The overall goal of gamification is to “support the user’s overall value creation through providing gameful experiences” (Huotari & Hamari, 2017). Game elements are seen as the core means for the implementation of gamification. These elements can be divided into game- dynamics, mechanics, and components. Traditionally, when using gamification elements, one or more of the elements are implemented in order to achieve the desired purpose(s). This study tries to create more knowledge regarding the gamification elements and find connections and relations between those elements.

1.2 Research objectives and research questions

The main purpose of this study was *to analyse and understand how businesses use gamification elements on social media*, thus in this research the focus was on Duolingo’s use of gamification on its Instagram rather than looking at how the Instagram users make use of gamification. The study was conducted as a qualitative content analysis, whereby the focus was on identifying and analysing gamification- dimensions and elements in the collected data, as well as analysing these through different social media post types.

As the literature review in the next chapter will show, most studies merely investigate the connection between few gamification mechanics and brand-related aspects, thus only covering a small section related to gamification. Thus, this thesis aims to contribute to the existing research by focusing on various gamification elements from the different gamification dimensions as per the gamification taxonomy from Toda et al (2019), e.g. gamification elements such as Competition, Puzzle, Storytelling, Time pressure, and others – in relation to different post types, such as emotional brand posts, functional brand posts, and brand community posts, among others. The content analysis addresses the research question: *How does Duolingo use gamification elements in its social media engagement?* whereby the focus lies on the utilisation of gamification and its various gamification elements.

Prior to conducting the content analysis, it was of importance to review the existing gamification-related studies, to understand Duolingo’s social media- and communication strategy, as well as to find out whether gamification elements are in fact present in Duolingo’s social media content on Instagram. Different gamification elements are incorporated in a social media context, but this thesis focuses on how these elements are embedded in the social media posts. Given a personal interest in social media and the utilisation of gamification strategies, the focus of this research lies on Duolingo’s use of gamification elements in their social media posts in relation to different (social media-) post types. The choice for Duolingo in particular, comes from a personal, ongoing interest in learning new languages while personally also using these kind of language apps. As Duolingo is one of the most popular language learning

platforms which utilises gamification extensively, the question arose as to whether Duolingo would also make use of gamification in their social media content, and if so, how?

1.3 Content analysis

According to Holsti, Weber, and Krippendorff (1969; 1990; 2018), content analysis can be defined as a qualitative, systematic, and replicable research technique which identifies and summarises any form of content through counting and categorisation based on explicit rules of coding. As per Hsieh and Shannon (2005), a qualitative content analysis is “the subjective interpretation of the content of text data through the systematic classification process of coding and identifying themes and patterns” (Hsieh & Shannon, 2005). As Duolingo’s social accounts contain a lot of data, through content analysis these big volumes of data can be systematically analysed with relative ease.

For this research, a content analysis was chosen as the appropriate research technique as it allows to examine trends, patterns, and correlations, to then consequently draw realistic conclusions. Additionally, the method of content analysis has the advantage of analysing communication and social interaction without the necessity of direct involvement of participants, and due to the present ongoing global pandemic, said necessary involvement could have potentially been challenging. Furthermore, as this method follows a systematic technique, it should be possible to easily be reproduced by other researchers, thus generating findings with a higher reliability.

The first Instagram post by Duolingo was chosen as the start date for the data collection and the end data stems from the original data collection (see Chapter 3.3). This data was manually collected in an Excel sheet and further coded and analysed with the qualitative data analysis software QDA Miner. Additional calculations as a result from the analysis were also done in Excel.

1.4 Research structure

This thesis consists of five main chapters. First, the introduction chapter describes background information and motivation of the study topic, the research objective, purpose of the study, and the general overview of main points of this thesis. Second, to gain a more thorough understanding of the existing academic work on the topic, a literature review is conducted. The literature review chapter summarises the existing studies, addresses gaps in the literature, as well as different theories and concepts are defined and analysed. The third chapter

focuses on the research methodology that has been applied to this study. In the research methodology chapter, the methods of data collection and data analysis are presented. Additionally, an outline of the coding process is given, followed by the challenges and limitations to this research approach. Fourth, following the research methodology chapter, the Findings chapter outlines the findings in relation to the research objective. The findings are discussed, followed by the concluding chapter which includes the theoretical contributions, the research limitations, as well as the future research suggestions.

2. LITERATURE REVIEW

2.1 The consumption of (social-) media today

Our generation are so-called digital natives – having grown up with digital technologies, with a new attitude towards content consumption and perception, the role of marketing has been changing drastically. These changes not only take place due to the occurring crises, economic recessions, inflation, and shortages, but also due to the ongoing technological developments, changing market dynamics, and trends. Said changes force marketers to continuously adapt their strategic decision making as well as their overall marketing efforts. Traditional marketing has made way for digital marketing, with it creating significant opportunities for the economy and businesses (Bala & Verma, 2018).

Social media in particular has opened the door for companies and brands to engage with potential consumers about their offered products and services, consequently creating new marketing opportunities. Besides, the internet is the most powerful tool when it comes down to marketing. If marketing managers fail to utilise the internet to the best of their advantage and do not plan their business marketing strategy accordingly, they will be at a great disadvantage (Bala & Verma, 2018; Yannopoulos, 2011).

With the ongoing technological changes, patterns of (social-) media consumption keep evolving. Henry Jenkins introduced the theory of convergence culture, whereby the relationships and experiences with so-called ‘new media’ is recognised. Convergence refers to the converging technological environment, the changes in technology, and the flow of content that is distributed across multiple platforms and audiences (Brieger, 2013). Examples of ‘new media’ include smartphones, as well as the continuously evolving social media platforms.

These convergent devices- and new media such as smartphones, social websites and networks have emerged and developed rapidly to challenge our notions of what media is and how it impacts us. This ‘new generation’ of social media can be divided into three broad categories: (1) search engines, (2) content providers, and (3) social networks. As social media is constantly changing and adapting their functions and features to the demand and need of the users, the boundaries between them keep shifting too (Webster, 2010). To date, social media channels and networks have unleashed giant streams of user generated content, and more importantly, they have affected the way we obtain, perceive, and consume information. Moreover, due to the rapid adoption and development of the smartphone; the significant growth of the (mobile-) web, and the increased use of social media altogether, gamification has acquired a more prominent role in today’s day and age (Kim B. , 2015).

2.2 Conceptualising gamification

When it comes down to human engagement as well as human-computer interaction (HCI), *Gamification* is gradually becoming a well-established and notable technique. Its widespread adoption in the world of digital media brings along a growing discussion around the concept. Gamification first emerged back in 2008, with getting more popularised in 2010 (Deterding, Khaled, Nacke, & Dixon, 2011). HCI has previously explored the underlying ideas regarding the concept of gamification – describing it as playful interaction design (Deterding et al., 2011). For further research, it is important to distinguish the different definitions and interpretations – both applied definitions, as well as academic definitions – concerning games, gamification, and gamification elements.

2.2.1 Defining games

For over a century, games have been a topic of study with great academic interest. It is an ever-growing, continuously evolving topic – with different views as to how games are played and defined (Mäyrä, Stenros, Paavilainen, & Kultima, 2017). So, what exactly is a game? Today's definition comes from Johan Huizinga and Friedrich Georg Jünger: “a game is any activity which is executed only for pleasure and without conscious purpose” (Kramer, 2000). Adding onto the aforementioned, Roger Caillois (1967) describes games as “fictional, unpredictable, an unproductive activity with limits relating to time and space, without any obligation” (Esposito, 2005). Other definitions include games being a natural phenomenon, or even an art form. The individual who plays the game leaves their reality behind and dives into the game. Kramer also mentions that games consist of different components, with each having their different rules; think of chess, card games, boardgames, as well as video games. Although more specifically, video games can be defined as a game, which is playable through the use of an audio-visual device (e.g., a computer or a game console), which can be based on-, but is not limited to a story (Esposito, 2005).

2.2.2 Defining gamification

With an increasing interest found in different fields, such as health and wellness, mobile services, and academia, the term gamification can be interpreted in different ways. Among researchers, there seems to be no clear agreement on the definition of gamification, nor is there an agreement on the exact difference between gamification and game-based learning. According to Kapp (2012), gamification is a method which uses game-based mechanics and aesthetics in non-game environments in order to motivate and engage users, consequently creating motivating, meaningful experiences. With game-based learning referring to the use of games, aimed toward teaching a certain skill or focusing on a specific learning outcome, enhancing the overall learning experience (Cózar-Gutiérrez & Sáez-López, 2016).

Definitions of gamification vary according to person, per industry, and within academia (Landers, Auer, Callmus, & Armstrong, 2018). Some researchers define gamification as the use of game- design, elements, features, mechanics, aesthetics, and structure in a non-game environment or context (Deterding, 2011; Kapp, 2012; Koivisto & Hamari, 2014). As per Simoes, Redondo, and Vilas (2012), gamification is the utilisation of game mechanics and dynamics in non-game applications, with a focus on the social aspect of gamification, for instance, cooperation. Huotari and Hamari (2012), emphasis the role of gamification in involving emotional experiences similar to those of games – describing the term as a process of providing playful experiences that reinforce the overall value creation for the customers or users. Dichev and Dicheva (2017), highlight how gamification is a developing approach for increasing both motivation as well as engagement, through the incorporation of game design elements in an educational setting. When looking at diverse actors utilising gamification, companies and services selling gamification systems and/or services, define gamification as a tool to convince executives into investing in the added value of gamification (Llagostera, 2012).

Cunningham and Zichermann (2011) define gamification as “the process of game-thinking and game mechanics to engage users and solve problems.” Supporting this definition, Folmar (2015) defines gamification as “the use of game-thinking and game mechanics to meet non-game ends.” These definitions underline the idea of the necessity of game-thinking when using gamification in educational context – “gamification is not just making a game, which imparts a lesson; it is applying game-thinking to how we impart that lesson and continuing to develop it based on the feedback from players” (Folmar, 2015). As per Alsawaier (2018), “gamification is not when the learning process is changed into a game, but rather when a design layer of game elements is added in order to enhance learning, increase engagement, and encourage positive behaviour”. These game elements are often seen as the positive characteristics of a game, loosely described as “fun”, with the positive effect of engaging the players in the activity.

Other definitions are more focused on motivation and engagement, for instance, the definition of Hamari, Koivisto, and Sarsa (2014), focuses on the so-called motivation affordances, with a change in behaviour as an outcome. However, as per Seaborn & Fels (2015), the motivational effects of gamification need a better, clear theoretical foundation to answer- and explain the question as to how gamification motivates, as this has not yet been answered adequately. Additionally, according to Kietzmann et al., gamification can be analysed with the focus participation and connection. Player participation describes the extent of user involvement, be it active or passive; and player connection entails the type of environmental relationship uniting the user with the experience (Kietzmann, Robson, Plangger, & Pitt, 2014).

Overall, the popularised definition stems from Deterding et al. (2011), defining the term gamification as “the use of game design elements in non-game contexts.” According to Kapp (2012), gamification can be classified into two

broad types of activities, namely, structural gamification and content gamification. Structural gamification entails applying game elements to enhance and improve the learner's journey through the educational content, without making any changes to the content material itself. For instance, the learner can obtain points for completing the course. Whereas content gamification is the utilisation of game-like elements that are integrated within the course itself, adding context to make the course feel more game-like (Kapp, 2012). For example, adding quests or making the questions time-based.

Gamification mainly aims to extend the engagement to certain objects or purposes, which then can result in valuable profits for the user if this engagement is directed toward the components of the effective context and not just toward the gamification aspects (Hammedi, Poncin, & Leclercq, 2019). This highlights that, when utilising gamification, it should not be designed and produced with the sole focus on the end goal, but rather with the focus on the entire process of engagement toward the object and/or purpose (Hamari, 2015; Lucassen & Jansen, 2014; Hammedi, Poncin, & Leclercq, 2019).

Users can initiate- and experience engagement with various (focal) objects through the gamification process. Each of these users can reveal- and experience different levels of engagement with said objects. However, these levels may be interconnected. Hammedi et al. point out that the negative effects as a result of losing a game or contest through the engagement with an activity would be reduced for those who possess a higher level of engagement with the related community (Hammedi, Poncin, & Leclercq, 2019).

2.2.3 Defining gamification elements

Traditionally, gamification includes one or more of the following elements: (1) catching the user's interest and sparking their *curiosity*, (2) engaging the users in a *challenging* way, (3) allowing the user to *fantasise*, (4) providing the user with a sense of *control* (Young & Summers, 2016).

Considering the interpretations and definitions, game elements are the core means for implementing gamification, therefore it is important to identify these and their interconnections. The utilised game elements can be divided into game dynamics, game mechanics, and game components. *Game dynamics* covers the largest part of gamification, examples include emotions e.g., curiosity, competitiveness, happiness; narrative/storyline; progression through growth and improvement; relationships e.g., through social interaction and status; and constraints. *Game mechanics* refer to the basic processes of a gamified system that drive and maintain the user engagement, for instance, through exploring, collecting, competing, collaborating, challenging, and developing (Vitkauskaitė & Gatautis, 2018).

In research related to gamification, game design, as well as player types (i.e. the classification of player behaviours and motivations), a distinction is commonly made between three main categories of game mechanics and game-design related gaming motivation, namely, achievement-, immersion-, and social interaction-related dimensions. These dimensions also seem to have an

instinctive connection with intrinsic need satisfaction, relating to the Self-Determination Theory (Xi & Hamari, 2020). According to Lucassen and Jansen (2014), elements that allow the users to flaunt their processes, e.g., score- or leader boards, badges, and achievements, are expected to be more effective for certain goals in comparison to the more personal mechanisms, e.g., rewards (Lucassen & Jansen, 2014). *Game components* are the more specific elements which allow the gamification of an activity, such as rewards, badges, points, levels, leader boards, and feedback (Vitkauskaitė & Gatautis, 2018). Various combination of these game elements can be used to gamify an activity.

Gamification taxonomy

Literature states that there is still no clear consensus on the definition of gamification (Huotari & Hamari, 2017). Even so, the paper of Toda et al. (2019) contributes a detailed taxonomy which can be used to evaluate the overall gamification design. The gamification taxonomy standardises game elements, with mainly those employed by gamification in education and educational games. According to their findings, Objective, Level and Progression were recognised as the crucial elements of gamification, stating how a lack of objectives and sense of progression would decrease the user's motivation and engagement. Other findings in the paper suggest that most frameworks do not really consider Narrative and Storytelling as essential game elements (Toda, et al., 2019).

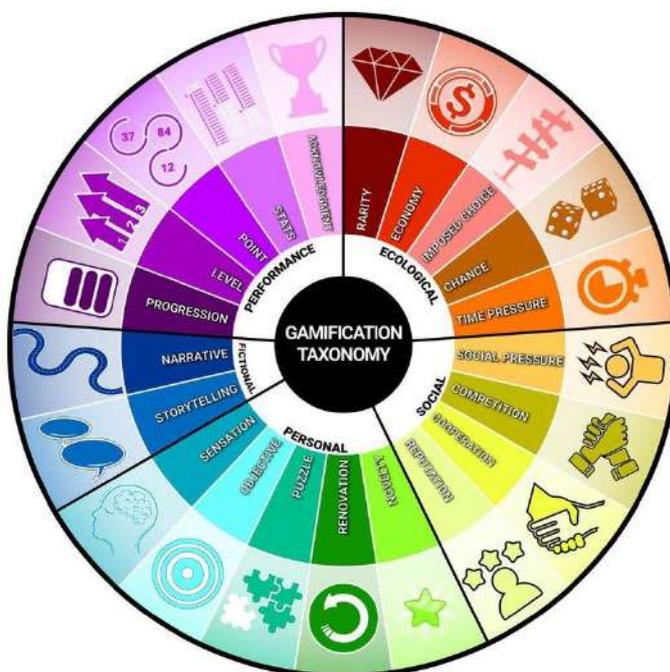


FIGURE 1 Gamification taxonomy from Toda et al. (2019), displaying the gamification dimensions in the inner circle and the gamification elements in the outer circle

The gamification elements of the first dimension, Performance/measurement, are related to extrinsic feedback provided by the environment. These elements include Acknowledgement, Level, Progression, Point, and Stats. Acknowledgement refers to extrinsic feedback praising specific actions or tasks from the user, e.g. badges or achievements which reward said actions. Level refers to either skill level or character level – an extrinsic hierarchical layer which allows the user to advance further in the environment. Progression provides the extrinsic guidance through, for instance, progress bars, steps, or maps, which provide the user with the knowledge of knowing where- and how far they are. Point is a basic way to provide extrinsic feedback through for instance, scores, skill points, or experience points. Lastly, Stats is also known as information and data, related to the visual information the environment provides, e.g. overall stats in the form of a dashboard. Without the dimension of performance/measurement, the user can feel disoriented due to the lack of feedback (Toda, et al., 2019).

The gamification elements of the second dimension, Ecological, are either intrinsic and/or extrinsic concepts related to the environment. Elements included in the Ecological dimension are Chance, Imposed Choice, Economy, Rarity, and Time Pressure. Firstly, Chance is also known as luck, randomness, fortune, an intrinsic concept with the user having the probability of getting something special. Imposed Choice refers to judgment, paths, or simply choice, an extrinsic concept whereby the user has to make explicit decisions in order to advance. Economy includes transactions, exchanges, or market. An extrinsic concept related to any kind of transaction taking place in the environment, e.g. exchanging experience points for special items to have a certain advantage within the environment. Rarity refers to a limited-, exclusive item or collection. An extrinsic limited resource in the environment that can help to motivate and encourage the learner to reach a certain goal. Lastly, Time Pressure, an extrinsic concept which can be visualised as a countdown timer or clock for instance, used to pressure the user's actions. The lack of this dimension indicates a lack of user interactions and thus, making the environment feel dull (Toda, et al., 2019).

The third dimension, Social, is related to the user's interactions with the environment. This dimension includes Competition, Cooperation, Reputation, and Social Pressure. Firstly, Competition, an intrinsic concept tied to a challenge whereby users face each other but have a common goal, e.g. leader boards, contests, scoreboards. Cooperation, or teamwork, co-op, groups, is the intrinsic concept whereby the users have to collaborate to achieve their common goal. Reputation, also known as status or classification, is related to titles that the user can obtain within the environment. These titles do not necessarily reflect the learners' skills, but rather represent a social status. Lastly, Social Pressure or peer pressure or guild missions, is an intrinsic concept related to social interactions pressuring the user to certain actions. The lack of this dimension means the user would not be able to interact with other and thus feel isolated (Toda, et al., 2019).

The fourth dimension, Personal, is related to the user using the environment. Elements included are Sensation, Objective, Puzzle, Novelty, and

Renovation. Novelty, including for example updates, surprises, changes, is intrinsically related to new information, content, or new game elements that are provided within the environment. Objectives can be missions, milestones, or side-quests, an intrinsic concept related to the user's goals as they provide the user with a purpose to perform certain tasks. Puzzle, either an actual puzzle, or challenges, or cognitive tasks, is an intrinsic concept related to the implemented activities within the environment – therefore, they could also be considered as the learning activities, as the focus is providing cognitive challenges for the user. Renovation, for example boosts, renewals, or an extra life, is an intrinsic concept related to the possibility of allowing the user with a second chance. Lastly, Sensation, is either a visual- or sound stimulation. This element is used to improve the user experience by stimulating the user's senses, e.g. through dynamic, gameful interfaces. Without Personal elements, the user could feel demotivated as the system lacks meaning for the user (Toda, et al., 2019).

Lastly, the fifth dimension Fictional, is related to both the user and the environment, tying the user experience with the context. This dimension includes Narrative and Storytelling, which allows for an immersive environment, adding meaning and context which can influence the overall quality of the user experience (Toda, et al., 2019).

2.3 Gamification in (digital) marketing and social media

Literature suggests that games, and thus gamified tasks, enhance fun and engagement (Xi & Hamari, 2020; Kietzmann et al., 2014; Lee & Jin, 2019), which has led to an increase in interest in utilising gamification in different contexts, for instance in (digital) marketing as well as on social media channels. Additionally, researchers have suggested gamification as a tool to build sustained value for the consumers, through the use of these game design elements, which in return can battle the potential lack of positive exchange perceived by consumers (Mitchell, Schuster, & Drennan, 2016). Due to the creation of positive value, gamified practices support behavioural change, as a result of motivating and rewarding experiences (Alsawaier, 2018). In a (social media) marketing context, this added value can help to decrease the number of negative exchanges. However, it is to be argued that the understanding of such a mechanism through which gamification would create this kind of positive, behavioural impact and change is still unclear.

2.3.1 Gamification in (digital) marketing

Although the implementation of gamification in digital marketing is still a relatively new concept, its benefits and advantages are showing a significant interest in said marketing solution. When it comes to gamification, three key relationship marketing concepts are relevant: engagement, brand loyalty, and brand awareness. Engagement specifically is often mentioned as the main goal

of gamification (Lucassen & Jansen, 2014). Utilising gamification can increase the overall consumer engagement, improve the user experience, support consumer data collection, as well as it can help to increase aspects such as the average time spent on a website, the average time spent reading one's emails, as well as social sharing, amongst others (Nesterenko, 2020). As noted, gamification improves the overall user experience on traditional platforms (Kietzmann et al., 2014). This is done through the utilisation of the implementation of, for example, a certain reward system for completing specific tasks, e.g., virtual badges, quizzes, and progress bars. Different aspect of games and game-like elements can be applied, depending on the desired functionality, format, and outcome.

As aforementioned, gamification has the potential to make traditional platforms more engaging and entertaining. Game-like solutions are seen in a large variety, think of wheel of fortunes with the chance of winning a prize or discount code, a pop-up quiz to provoke the consumer to engage, increasing customer loyalty through a badge system, and so forth (Nesterenko, 2020). Notable examples of business organisations that make use of gamification are Samsung with their "Samsung Nation", allowing active users to obtain badges; Starbucks' "My Starbucks Rewards" programme, whereby customers increase their loyalty levels and additionally receive free products; Nike's "Nike+ Run Club" providing users with a community, the possibility to adapt their goals and objectives, as well as participate in challenges and share their statistics on their social channels. Using gamification in one's marketing strategy has shown to be successful in these examples with a surge in customer satisfaction, engagement, interaction, and overall interest.

To establish whether the gamified marketing project can be seen as successful, 3 pillars are determined, namely, (1) fun-satisfaction, momentary entertainment that gives off a sense of joy and pleasure, (2) friends, to fulfil the need of a sense of belonging and friendship, (3) feedback, the possibility to receive fast information. Combining these elements three successfully allows for a durable, long-lasting involvement of the users/consumers - this kind of involvement and durability are crucial elements that allow gamification to stand out from other tools and approaches in marketing (Widawska-Stanisiz, 2014).

2.3.2 Gamification in social media

Social media has a great potential and power for brands to build a relationship with their (potential) consumers, which can be created through interpersonal interactions and consequently fostering a sense of belonging. The use of gamification in social media networks, allow for the two primordial needs that people are looking for, namely, socialising and gaming competitiveness (Moise, 2013). Take Instagram for example, initially one would not assume that this platform is a game nor game-like, however, the interactions and reactions of users can be studied in the context of influencer marketing. This type of marketing is a strategy which uses the endorsements and partnerships of popular individuals, so-called influencers. Whereby connections can be made between

the users, to engage with, spread, and buy into the provided promotional content – and the way gameplay is approached (Oldani, 2020).

According to McGonigal, a game consists of four key elements: the overall end goal (i.e. the specific outcome that players work towards), an established set of rules which either remove or limit the ways of obtaining said goal, a feedback system regarding the user's progress toward the goal, and lastly, the voluntary participation of the players which helps to establish the common ground to participate and play together (McGonigal, 2011). These elements can be reframed in terms of social media usage, with in particular to influencer marketing. The overall goal from the influencer would be to get users to buy into the promoted products and/or services, the rules are based on the guidelines given by the brand or company, willingly created and posted by the influencer. Moreover, essentially, commenting or liking a post, swiping up on an Instagram story, polls, and open-ended questions to engage users to play along with- and participate in what another user is persuading them to do, can be described as game-like elements. Overall, the driving force behind the creation of brand awareness on social media, is the idea of Instagram, and consequently influencer marketing, as a game to be played (Oldani, 2020). Advertisements are no longer seen as just advertisements, but as an opportunity to “play” or engage with the influencers. If the game is played well, it can satisfy the need of the users.

Besides Instagram, Facebook is another popular platform for promoting brand engagement, which is observed through liking, commenting, and the sharing of posts. These user behaviours can help to increase brand visibility and -awareness (Kabadayi & Price, 2014). Gamification is a popular method to promote brand engagement, sometimes in marketing also referred to as “advergaming” or “advertainment.” This type of promotion entails the process of advertising products and/or services through games. Though gamification on social platforms is seen as a positive, favoured approach, the tricky part is getting the design right. Many companies fail due to the poor design, as a result of a lack of research (Young & Summers, 2016).

2.3.3 Gamification and (brand) engagement

Customer brand engagement is described as a cognitive activity, and an emotional and positive behaviour experienced by consumers while interacting with a brand. It is a form of consumer behaviour towards that brand giving the experience, allowing the consumer to engage- and perceive the brand as either good or bad (Meirani & Abror, 2019). The emotional aspect is tied to affection, referring to positive consumer/brand interactions, or enthusiasm, regarding the evoked reactions and feelings of the consumer. Looking at wider game research and brand engagement literature, immersion-related features are usually connected with the more emotional and affective aspects, such as enjoyment, joy, pride, and surprise (Xi & Hamari, 2020). For this reason, immersion-based gamification is typically expected to have a positive association with emotional brand engagement. Furthermore, cognitive brand engagement relates to the

degree of interest in interacting, and social brand engagement involves the enhancement of said interaction (Xi & Hamari, 2020).

Most marketing efforts that are usually based on material and monetary rewards, for instance customer loyalty programmes, points-based- and membership systems, that aim to engage with consumers, have shown to be less efficient in amassing long-term loyalty, in comparison to strategies relating to intrinsic need satisfaction – such as gamification (Xi & Hamari, 2020). Several empirical studies indicate that gamification can affect brand engagement – an interesting and involving idea, with an engaging plot with potential rewards, can not only help to promote a brand, but also engage and manage the customer relationship (Hollebeek, 2011). It can be argued that gamification is in fact an extension of customer relationship management, as it is a strategy to utilise for managing- and handling customer's interactions.

Literature suggests that gamification can be a useful tool to promote brand engagement on social media (Young & Summers, 2016; Xi & Hamari, 2020). Companies and brands can embed gamification elements in their social channels, without the necessity of inherent game design mechanics. The goal of brand engagement aims to influence the user's cognitive, emotional, and behavioural activity through particular brand interactions (Hollebeek, 2011). Similarly, gamification aims to enhance this engagement by identifying the elements that motivate them. In order to successfully promote brand engagement, the companies and brands should focus on the user's self-expression, through the aforementioned key elements; curiosity, challenge, and fantasy, in order to promote the understanding of the brand (Young & Summers, 2016; Hollebeek, 2011; Malone, 1980). As per the study of Xi & Hamari (2020), many companies believe that gamification can help to increase engagement, brand awareness, as well as customer loyalty in regard to their brand, however, there is still a lack of empirical evidence supporting these ideas.

Looking at online, social communities, enhancing engagement could motivate users or members, to contribute and thus, to improve the sustainability of the community. In reality, a higher engagement means a better social connection, encouraging social cooperation amongst the members (Bista, Paris, Nepal, & Colineau, 2012). Research in marketing and the application of marketing techniques has shown and suggested that applying game-like elements and dynamics could consequently enhance the overall participation. The utilisation of gamification in such online, social communities and networks would make the interactions more fun and appealing (Bista, Paris, Nepal, & Colineau, 2012).

2.4 Gamification theories

Research shows a limitation when it comes to connecting gamification to theoretical principles, as this connection is thin, and the empirical research is scarce (Alsawaier, 2018). Many studies have been founded on similar, often

motivation-related theories – with in particular the Self-Determination Theory, or theories by the same author, with some studies lacking the theoretical foundation altogether. Additionally, there is a gap between theory and practice, highlighting the need of research on gamification connecting to theoretical principles. Connections are mostly recognised between gamification, motivation, and engagement.

2.4.1 Self-Determination Theory

Several studies show a connection between game-like elements and motivation, alongside the self-determination theory (Alsawaier, 2018). In the Self-Determination Theory (SDT) (Deci & Ryan, 1985; Legault, 2018), motivation is described as per different types in regard to the different goals and purposes related to a specific task or action. This theory conceptualises the universal psychological needs and how these consequently affect- and motivate people to further grow and change. SDT is based on three main principles (i.e. psychological needs), namely, autonomy, competence, and relatedness. Competence regards the type of motivation to overcome one's challenges and achieve success; the need for autonomy indicates the power and decision-making in the pursuit and responsibility of a person's actions; lastly, the need for relatedness refers to one's social status as well as the connection with others (Alsawaier, 2018). The need for (social) relatedness can also be understood as the want and need to interact with- and be socially accepted by others – in other words, the need to connect or the need to belong (Kim & Drumwright, 2016).

The main beliefs of SDT are that the need for growth drives behaviour i.e., the development of a strong or ideal sense of one's identity, and that this motivation to grow stems from the fulfilment of the needs for the aforementioned psychological needs (Ryan & Deci, 2000). In order to achieve psychological growth, people need to experience autonomy – the need to feel in control of one's goals and behaviour; connection – the need for a sense of belonging; and competence – the need to master tasks and learn skills (Broeck, Ferris, Chang, & Rosen, 2016). As per Legault (2016), intrinsic motivation concerns the engagement in behaviour which is essentially enjoyable or satisfying. An intrinsically motivated action is independent from the behaviour itself. Whereas extrinsic motivation refers to the performance of behaviour that is essentially dependent of the realisation of the outcome.

With the research on SDT evolving, two main types of motivation are recognised, namely intrinsic and extrinsic motivation. Intrinsic motivation entails “the desire to do or achieve something as one really wants to- and takes pleasure or sees value in doing so”, e.g., a child playing outdoors, for no other reason than it being fun, and extrinsic motivation concerns “the desire to do or achieve something not for their enjoyment, but because it may lead to a certain result or reward”, e.g., a student studies for an exam, in order to receive a good grade (Pintrich, 2003; Legault, 2016). So essentially, intrinsic motivation concerns a certain way of engagement due to it being personally rewarding, rather than having any desire for an external reward – and extrinsic motivation concerns a

certain way of engagement in order to get something in return, or to avoid any form of punishment.

Despite the aim of gamification to aid intrinsic motivation, most of the activities and tasks involved are not. Most activities have a sense of extrinsic motivation to them – with various degree of autonomy. As per Ryan and Deci (2000), “the more internalised and integrated the extrinsic motivation is, the more likely it is that an individual will experience the motivation as internally caused, and thus as being more autonomous and self-determined.” In order to facilitate the internalised forms of both extrinsic- as well as intrinsic motivation, it is of importance that the needs for competence, relatedness, and autonomy are to be supported (Ryan & Deci, 2000; Dahlstrøm, 2017).

Linking it back to gamification, research shows that obtaining extrinsic rewards through the gamification process weakens the intrinsic motivation of the user (Dahlstrøm; 2017, Seaborn & Fels, 2015) Therefore, gamification should favour an affordance allowing intrinsic motivation to engage its users (Hammedi, Poncin, & Leclercq, 2019). Generally, gamification is a process where its users willingly take part in, which contributes to customer engagement through stimulating intrinsic motivations. Extrinsic motivation may also be utilised in order to encourage the initial participation in the process – think of incentives and reward systems – thus, they must be employed with care, in order not to steer away from the focus on satisfying the intrinsic motivations of the user. Otherwise, there is a risk of creating a continuous reward loop, which in effect would weaken the intrinsic motivations and consequently, decreases the overall customer engagement (Hammedi, Poncin, & Leclercq, 2019).

2.4.2 Social Comparison Theory

This Social Comparison Theory is based on two fundamental assumptions, namely, that humans have the intrinsic desire to compare themselves to other (relevant) social entities in relation to their own abilities and opinions; and that if these humans experience a significant difference or inconsistency between themselves and the other entities, they are likely to perform certain actions to reduce these differences (Huschens, Rothlauf, & Rothe, 2019). As a result, people can feel as if they are under pressure, experience lower self-esteem, and have higher anxiety levels.

A number of studies about gamification and its effects rely on the social comparison theory, e.g., studying the role of social comparison orientations or the importance of social influences (Huschens et al., 2019; Hanus & Fox, 2015), however, it can be argued that social comparison behaviour is in fact an outcome variable of the appliance of game-like elements. For instance, due to the implementation of leader boards and consequently their motivational- and pressuring effects.

2.5 Consensus on gamification

Those endorsing gamification, showcase its value as a motivation tool for improving and fostering user engagement. However, research also shows that the implementation of gamification shows different findings with different users. All in all, different studies show different ideas regarding the effectiveness of gamification. A great number of studies point out the positive effects, however, due to the limitations of study design and analysis strategies, empirical evidence of said effectiveness is lacking. Despite existing research stating that the performance, motivation, and engagement can be increased through the utilisation of gamification, it is hard to determine as to why this occurs in certain cases and does not occur in others.

TABLE 1 Studies regarding gamified content and their consensus on gamification

Reference	Gamified content	Consensus	Theoretical connections
(Gatautis, Banyte, Piligrimienė, Vitkauskaitė, & Tarutė, 2016)	Organisational activities	Gamification has a positive relation with consumer brand engagement, albeit a weak relation	Gamification pyramid approach
(Gibson, Flintoff, Ostashewski, Grant, & Knight, 2013)	General use of digital badges as a motivational tool for continued engagement	Positive (high potential)	Motivational theories
(Gupta & Gomathi, 2017)	Employee focused gamification - gamified programmes and platforms	Positive - However, there is a need to establish and expand a strong theoretical foundation	Motivational theories
(Hamari & Xi, 2020)	Xiaomi and Huawei brand communities	(Consumer-) brand engagement seems to be affected by gamification. To recognise the actual benefits of using gamification in a marketing context, further research is required	Flow theory (Continues)

(Harwood & Garry, 2015)	Customer engagement experience environment	Little evidence to suggest that gamification reinforces engagement - identified negative outcomes need further investigation	Social Cognitive Theory, Flow Theory
(Lucassen & Jansen, 2014)	Marketing campaigns	Positive - promising future for gamification	Unified Theory of Acceptance, Use of Technology model
(Robson, Kietzmann, Plangger, McCarthy, & Pitt, 2015)	Five different illustrative cases	Gamification can be used to improve and develop engagement methods and user interaction with brands	Behavioural Game Theory, Behavioural Learning Theory
(Young & Summers, 2016)	Walmart's Facebook page	To promote brand engagement on social media, gamification can be a useful tool. However, not every gamification element seems to be as effective in relation to brand engagement	Grounded theory methods, conceptual model of key game elements
(Yang, Asaad, & Dwivedi, 2017)	Marketing context - gamified brand (Oreo)	Positive	Theory of Reasoned Action

3. RESEARCH METHODOLOGY

To address the research question – **How does Duolingo use gamification elements in its social media engagement?** – Duolingo’s efforts on their official Instagram account are examined through a qualitative content analysis. The sample size for this analysis consists of 353 posts by Duolingo, during a 9-year time frame, starting from Duolingo’s first Instagram post on the 3rd of October 2012, to the 1st of January 2021. Data was collected and coded manually, followed by an intercoder reliability test, whereby 10% of the collected data was analysed and coded by a University of Jyväskylä alumni as per the coding instructions provided.

3.1 Study context

Duolingo is a free-to-use language learning app created by Luis Von Ahn and Severin Hackerdu, launched into private beta on November 30, 2011, and released to the public on June 19, 2012. According to their website, they currently have more than 300 million registered monthly active learners. The mobile application offers several language courses for both English- and non-English speakers and as of March 2021, the website and app offer a total of 106 different language courses in 38 languages (Duolingo, 2021).

Alongside their mobile application, Duolingo has adapted a social strategy to reach their bilingual userbase. They have official social presences on Facebook (~1.9m likes), Twitter (~385.2k followers) and Instagram (~374k followers on their main account). Throughout these platforms, their illustrator creates the same kind of illustrations for all of Duolingo’s content, done in the same aesthetics as those of their mobile application. This enforces their brand identity as well as it increases the overall brand- recognition and familiarity.

On the company’s official Instagram, different types of content are posted. Examples include updates about the mobile application, e.g., new content; updates about Duolingo’s external media, e.g., their podcasts or blog posts; celebratory posts during (inter-)national holidays; fictional posts about Duo, Duolingo’s official mascot; inspiring stories of their userbase; events and meet-ups; contests and puzzles; acknowledging user-generated content; among others.

Additionally, Duolingo has a number of other Instagram accounts, namely one targeted to the Brazilian userbase (@duolingobrasil), the Spanish userbase (@duolingoespanol), a Spanish language community account which organises regular events and meeting (@duolingocss), one account focusing on the Duolingo English test – which allows users to certify their English proficiency online (@duolingoenglishtest), and lastly a global community account that organises events for people all around the world (@duolingoevents). Besides Duolingo’s official presences, unofficial presences have been created by

Duolingo's users themselves. For instance, pages focusing on humorous translations, pages focused on specific language courses, as well as a Duolingo subreddit which currently holds 120k members. In addition to their official presences, these unofficial pages and platforms help to increase Duolingo's engagement and brand recognition. For this content analysis, however, solely the main, official Instagram account from Duolingo will be looked at (@duolingo).

Through their social media strategy, Duolingo tries to decrease their churn rate. As per Dalsimer, Duolingo's senior PR manager, the company sets their social media goals, with deciding on their most important metric and optimising this accordingly. When that decision has been made, it helps Duolingo to focus on what to post, with a certain purpose in mind. The company's main two social media goals are said to promote their core value of diversity, and to inform the users about new product launches and features, as well as other company news and information.

3.2 Research method

As aforementioned, given a personal interest in both social media and gamification, the focus of this research lies on Duolingo's use of gamification in their social media posts in relation to different (social media-) post types. As the use of gamification elements on social media allows for creating a community, participation, and competition – and thus engagement, gradually more people are using such elements in their social media marketing. Twitter, but especially Instagram, are big platforms from which people consume imagery, be it photographs, videos, gifs, or stories – making it a suitable platform for the utilisation of (visual) gamification. Both Twitter and Instagram are Duolingo's most active social media channels. Therefore, the initial plan was to analyse both accounts. However, once the data had been collected, the majority of content deemed similar, thus analysing the same data from both accounts would not be contributory for the research. Taking the aforementioned into account, solely Duolingo's Instagram posts are used for conducting the content analysis.

According to Holsti, Weber, and Krippendorff (1969; 1990; 2018), content analysis can be defined as a qualitative, systematic, and replicable research technique which identifies and summarises any form of content through counting and categorisation based on explicit rules of coding. As per Hsieh and Shannon (2005), a qualitative content analysis entails “the subjective interpretation of the content of text data through the systematic classification process of coding and identifying themes and patterns” (Hsieh & Shannon, 2005). As Duolingo's social accounts contain a lot of data, through content analysis these big volumes of data can be systematically analysed with relative ease.

This method of content analysis allows to examine trends, patterns, and correlations, to then consequently draw realistic conclusions. Additionally, the method of content analysis has the advantage of analysing communication and social interaction without the necessity of direct involvement of participants.

Furthermore, as it follows a systematic technique, it should be possible to easily be reproduced by other researchers, thus generating findings with a higher reliability.

Existing research shows limitations, with most studies merely investigating the connection between a few gamification mechanics and brand-related aspects, thus only covering a few aspects of gamification. This thesis aims to contribute to the existing research by focusing on analysing different gamification elements in a social media context.

3.3 Data collection

As the utilisation of gamification elements in social media networks, such as Instagram and Twitter, and their effect on user behaviours and engagement are socially constructed through interactions, a grounded theory approach to this content analysis is applied. As discussed earlier, the social media posts on Duolingo's Instagram account were collected. The data was manually collected in Excel and coded in QDA Miner.

3.3.1 Original data collection

As of 22.02.2021, Duolingo has 385 posts on their Instagram account. A sample size and scope of the research had to be determined. For this content analysis, the start date of the collected data would be Duolingo's first post – October 3rd, 2012 – to the 1st of January, 2021 – adding up to a sample size of 353 posts. The ending date stems from the original data collection. On March 8, data was collected from both Twitter and Instagram.

Random sampling was applied, as the basis of the sample selection is arbitrarily and thus based on random chance. To increase the odds, posts were collected in an alternated manner. For example, when there would be posts on January 7th, January 9th, January 12th, and January 15th, the posts from January 7th and January 12th were considered. The advantage with random sampling, or probability sampling, is the lack of bias as there is an equal chance of selection. However, a disadvantage is that no additional knowledge is taken into consideration, thus, there is no guarantee that the findings of the data collected is accurate and reflective of the data as a whole.

Duolingo has been on Twitter since January 2010, with not being as active in the first year compared to recent years, therefore, the time frame was set to be within the last 5 years, selecting- and analysing every other tweet, up to the 1st of January 2021. For Instagram, as the platform is easier and quicker to navigate than Twitter, it would be plausible to analyse all their existing content, but the same end date was set for the data collection. These posts were selected- and analysed in a similar manner as Twitter, taking every other post into account.

As aforementioned, due to the overlap in content on both accounts, it was eventually decided to solely focus on the collected data from Instagram. As a

result of the random sampling- and selecting the posts in an alternate manner, it showed that a big number of posts that include gamification elements had been skipped, thus, the collected data was not representative of the research. Therefore, a decision was made to analyse all of Duolingo's Instagram posts, but still taking the same end date of the original data collection.

3.3.2 Revised data collection

On the 5th of April, the remaining Instagram data was collected. Table 2 shows the collected data of Duolingo's official Instagram account.

TABLE 2 Collected data information from Duolingo's Instagram account

Instagram	
https://www.instagram.com/duolingo/	
2012	1 post
2013	3 posts
2017	5 posts
2018	91 posts
2019	102 posts
2020	150 posts
2021	1 post
Overall timeframe	Sample size
Oct 3, 2012 - Jan 1, 2021	353 posts

The total amount of collected data from Duolingo's Instagram during a 9-year timespan was 353 units, i.e. social media posts. Principally, each post included multiple gamification elements and therefore, included multiple codes. Out of the 353 posts, 4,5% did not include any gamification element. When solely focussing on the posted media (i.e. photo, graphic, video, or gif), without coding the caption, 65.6% of the posts utilised gamification elements in the media itself. The data was manually collected in an Excel sheet with 6 columns listing the post dates, captions, screenshots, URLs, the number of comments, and the overall topic of each post.

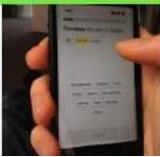
Date	Caption	Image	URL	Comments	Topic
09/10/2012	Almost ready for submission.		https://www.instagram.com/p/QvTt9h9p00/	176	Duolingo App

FIGURE 2 Data collection in Excel

To prepare the coding in QDA Miner, three additional columns were added. One column to indicate the presence of gamification elements, one to state the present gamification dimension(s), and one to state the present gamification element(s).

3.4 Data analysis

3.4.1 Clarifying categories, variables, gamification dimensions, and gamification elements

The *categories* refer to the five different groups (i.e. the gamification dimensions). These dimensions are used as the main categories in the coding process, under which the grouped gamification elements are the individually coded elements.

The *variables* are the different post characteristics used for further analysis, these include the post date, the actual image (screenshot), the number of comments, the number of likes, and the post type.

The *gamification dimensions* are the five groups as per the gamification taxonomy of Toda et al. (2019) i.e. the Performance, Ecological, Social, Personal, and Fictional dimensions in which the gamification elements are grouped and organised.

The *gamification elements* include different tools and techniques which allow for gamification, e.g. Competition, Time pressure, Storytelling, which are grouped under the gamification dimensions.

3.4.2 The different phases in the data analysis process

The unity of the analysis is Duolingo's Instagram posts, with the units of meaning being the images/photos/graphics as well as the caption. The analysis of the data was conducted in different phases. Firstly, the use of gamification elements in Duolingo's social media posts were identified, following the coding process of Strauss and Corbin (2008) the relevant literature was reviewed to recognise existing coding categories. In this phase, the deductive coding was largely based on the gamification dimensions and gamification elements based of the gamification taxonomy of (Toda, et al., 2019).

Next, categories were better defined, with the flexibility to add- or remove categories through the coding process - allowing to introduce and analyse potentially new and important content which would have significant implications to the research objective. The posts and their main communicated messages, themes, and ideas characterising the posts were studied and analysed. The posts were coded accordingly when said messages corresponded to the deductive coding. In case of discordance, new categories were created.

Then, the categories found from the coding process were investigated, analysed, and interpreted in regard to the literature in order to better understand the correlation between the utilisation of gamification elements and engagement.

The level of analysis is focused on both phrases and themes. For instance, in Duolingo's posts phrases such as "Contest time" and "Do you have what it takes" evoke competition, a gamification element part of the Social dimension in the gamification taxonomy. Whereas the underlying themes could be focused on the gamification element storytelling from the Fictional dimension.

To ensure the reliability of the collected data, an intercoder reliability test was conducted during the early stages of the data analysis. A percentage of 10% of all collected data was selected and coded separately by both the author and the participant, after which the findings were examined for agreements and differences. Based on the coding frequencies, a percent agreement was calculated through calculating the number of agreements divided by the total number of units. The percent agreement was calculated to be 83%. For this approach, no commonly accepted threshold to indicate an acceptable reliability exists. However, Miles and Huberman (1994) suggest that on 95% of codes, there should be a standard agreement of 80%. Additionally, the Content Analysis Guidebook by Neuendorf (2002), states agreement over 0,9 acceptable by all, and agreement of 0,8 acceptable by many. Based on the aforementioned, the reliability was indicated to be acceptable. However, the intercoder reliability test did point out some errors in the coding elements (i.e. gamification elements), which were then either adjusted or eliminated.

3.5 Coding process

Following the three-step coding process from Strauss and Corbin (2008), the posts were manually coded, using Excel and the qualitative analysis software QDA Miner.

During the first step, the open coding stage, the focus was on conceptualisation and categorisation, whereby the posts that include and utilised gamification elements were identified and added to a new column in the Excel sheets. The data was broken up into smaller parts to be further analysed with the purpose to understand- and develop the code to describe the data. For this, QDA Miner was used.

Next, these smaller parts were compared and analysed for differences and/or similarities. The goal of this first step is to develop an array of codes that describe the found data. To reach this goal, questions such as "which gamification elements are found and described?", and "which strategies are used?" based on the knowledge from the relevant literature.

Secondly, after the open coding stage, axial coding was conducted to investigate the relationships between the gamification- dimensions and elements which have been found and developed in the first stage.

Lastly, in the selective coding stage, the different categories are integrated after further elaborating, integrating, and validating the findings from the axial coding stage. The categories are mapped to gamification elements previously identified in the literature.

3.5.1 Variables - Instagram post characteristics

Prior to the coding, the variables had to be distinguished. Variables used for the coding were postdate (i.e. the date of when the post was published), image (i.e. a screenshot of the posts), caption, number of comments, number of likes, as well as post type. The reason for looking into the number of comments and likes, was to try to find out whether using certain gamification elements would seemingly have an effect on the social media engagement (i.e. a significant increase in comments and/or likes). The motivation behind looking into the post type in relation to the gamification elements was an intrigue as to whether certain post types would use specific kind of gamification elements and to find similarities and perhaps recognise a pattern.

For the post type, categorisation was predominantly based on the framework designed by Tafesse and Wien (2017). Their proposed categorisation provides a comprehensive framework to categorise social media posts, offering a convincing foundation to categorise and code in particular brand posts (Tafesse & Wien, 2017). These proposed categories for brand posts are displayed in Figure 3.

Proposed categories	Definition and common message themes
Emotional brand posts	<p>These brand posts evoke consumers' emotions. To this end, the posts typically employ emotion-laden language, inspiring stories or humor and jokes to arouse affective responses, such as fun, excitement and wonder</p> <p>Common themes: emotionally worded posts, emotional storytelling, jokes and trivia</p>
Functional brand posts	<p>These brand posts highlight the functional attributes of company products and services. Typically, these posts promote the benefits of company products and services according to performance, quality, affordability, design and style criteria</p> <p>Common themes: product functional claims, product reviews, awards, green credentials, and so forth</p>
Educational brand posts	<p>These brand posts educate and inform consumers. These posts help consumers acquire new skills on proper ways of applying products, or discover new information about broader industry trends and developments</p> <p>Common themes: do it yourself tips, instructions, blog posts, external articles, technical interviews with employees, and so forth</p>
Brand resonance	<p>These brand posts direct attention to the brand promise and identity of the focal brand. These posts highlight some of the main tropes of brand identity, such as brand image, brand personality, brand association and branded products with the goal of differentiating the brand and favorably influencing consumers' brand attitude and association</p> <p>Common themes: brand image (i.e. brand logo, brand slogan, brand character, etc.), photos of branded products, celebrity association, and brand history</p>
Experiential brand posts	<p>These brand posts evoke consumers' sensory and behavioral responses. Experiential brand posts highlight the sensory and embodied qualities of the brand and often associate the brand with pleasurable consumer experiences</p> <p>Common themes: sensory stimulation (i.e. visual, auditory, taste, odor, etc.), physical stimulation (i.e. physical actions, performances, activities, etc.), brand events (product launches, festivals, fan events, sponsored events, etc.)</p>
Current event	<p>These brand posts comment on themes that capture active talking points in the target audience, such as cultural events, holidays, anniversaries, and the weather/season. These brand posts initiate conversations with consumers using timely and widely talked about events</p> <p>Common themes: weather, cultural events (i.e. sport, film, TV shows), holiday, special day and anniversaries</p>
Personal brand posts	<p>These brand posts center around consumers' personal relationships, preferences and/or experiences. These brand posts typically invoke personally meaningful themes, such as family, friendship, personal anecdotes or future plans to initiate deeply personal conversations with consumers</p> <p>Common themes: friends, family, personal preferences, anecdotes and future plans</p>
Employee brand posts	<p>These are brand posts about employees. Employee brand posts present employees' perspective on a range of issues, such as employees' technical expertise, their managerial philosophies, or their personal interests, hobbies and worldviews</p>
Brand community	<p>These brand posts promote and reinforce the brand's online community. These brand posts foster a sense of community identification and engagement with the community, by recruiting new community members, as well as encouraging participation from existing members</p> <p>Common themes: encouraging fans to become members of the brand's online community, acknowledging fans (e.g. mentioning their name, tagging them), using/soliciting user-generated content</p>
Customer relationship	<p>These brand posts solicit information and feedback about customers' needs, expectations and experiences. These brand posts seek to deepen the impact of customer relationships in social media channels by encouraging customer feedback, reviews and testimonies</p> <p>Common themes: customer feedback, customer testimony and customer reviews and customer services</p>
Cause-related brand posts	<p>These brand posts highlight socially responsive programs supported by the focal brand. These brand posts promote worthy social causes and initiatives and encourage customers and fans to support them</p>
Sales promotion	<p>These are brand posts that entice consumers to take actions toward a buying decision. These brand posts often contain transactional details such as price and availability points, as well as concrete promotional offers, such as price discounts, coupons and competitions</p> <p>Common themes: price discounts, coupons, free samples, customer contests and product competitions</p>

FIGURE 3 Proposed categories for brand post categorisation (Tafesse & Wien, 2017)

With the use of variables, the posts could then be filtered, compared, and further analysed.

Emotional brand posts

As per Tafesse and Wien's framework, emotional brand posts are "brand posts that are intended to evoke consumer's emotions" (Tafesse & Wien, 2017). Emotional brand posts typically use loaded language, share inspiring stories or make use of humour to get an emotional response out of the user. Such emotions include love, celebration, and fun, but also compassion through emotional storytelling. These kind of posts allow the brand to connect with their userbase on an emotional level (Tafesse & Wien, 2017). An example of an Emotional brand post of Duolingo is seen in Figure 4.



FIGURE 4 Example of an Emotional brand post of Duolingo

This post includes emotional storytelling, which highlights one of Duolingo's users and summarises his inspiring story.

Functional brand posts

Functional brand posts "highlight functional attributes of products and services" (Tafesse & Wien, 2017). Typically, these posts underline the advantages or benefits of using these products and services, but they also offer more detailed information, as well as they can inform about new products and solutions – thus, relating to the Novelty element. An example of a Functional brand post of Duolingo is seen in Figure 5.



FIGURE 5 Example of a Functional brand post of Duolingo

This post informs the users about new content that has been added to the mobile application (i.e. Duolingo's product).

Educational brand posts

Educational brand posts are used to educate and inform the users on different topics. These topics can be related to the brand's own products and services, as well as topics that do not have an immediate connection to the brand and are related to broader industry developments and issues (Tafesse & Wien, 2017). An example of an Educational brand post of Duolingo is seen in Figure 6.



FIGURE 6 Example of an Educational brand post of Duolingo

This post aims to educate the users on language proficiency, linking to their blog post with the informative details.

Brand resonance

Brand resonance posts highlight the brand's image, personality, association as well as their products. Through brand resonance, the brand aims to differentiate themselves in favour of the users. For instance, elements from their brand identity to be featured could be the brand logo, slogan, or a brand character – in Duolingo's case, the green owl Duo. Additionally, a brand can use influencers or celebrities to reinforce the brand personality in order to reaffirm the brand

promise and identity (Tafesse & Wien, 2017). An example of a Brand resonance post of Duolingo is seen in Figure 7.



FIGURE 7 Example of a Brand resonance post of Duolingo

In this post, actress and filmmaker Kristen Stewart is seen and mentioned. As mentioned, featuring a celebrity like this, reinforces the brand personality.

Experiential brand posts

Experiential brand posts are used to evoke the sensory and behavioural responses of the users, through relevant brand cues (Tafesse & Wien, 2017). These posts aim to highlight the outstanding user experience. Examples include brand events, fan events, product launches, as well as sensory- and physical stimulation. An example of an Experiential brand post of Duolingo is seen in Figure 8.



FIGURE 8 Example of an Experiential brand post of Duolingo

This post shows a brand event whereby a new product (i.e. Chinese course for Japanese speakers) was launched, providing the users with a “direct, experiential access to the brand” (Tafesse & Wien, 2017).

Current event

Current event brand posts are focused on timely themes and occurrences, such as holidays, anniversaries, and (cultural-) events. Through current event brand posts, the brand can initiate timely conversations, which increases the social interaction in dynamic environments like Instagram (Tafesse & Wien, 2017). An example of a Current event brand post of Duolingo is seen in Figure 9.



FIGURE 9 Example of a Current event post of Duolingo

This post highlights Valentine's Day, a holiday to spread the message to those you love – which is what Duolingo is asking of their users in the caption. Duolingo regularly posts Current event posts, for instance on well-known holidays such as Thanksgiving, New Year's Eve, and Christmas, but also on the lesser-known national holidays and heritage months, such as Juneteenth and Hispanic Heritage Month.

Personal brand posts

Personal brand posts are centred around the personal- preferences, relationships, and experiences of the users. These posts highlight personally meaningful themes, such as friends and family, personal anecdotes, as well as strategies to initiate conversation in the future. With personal brand posts, the brand aims to develop its personal-level connections with their users (Tafesse & Wien, 2017). An example of a Personal brand post of Duolingo is seen in Figure 10.

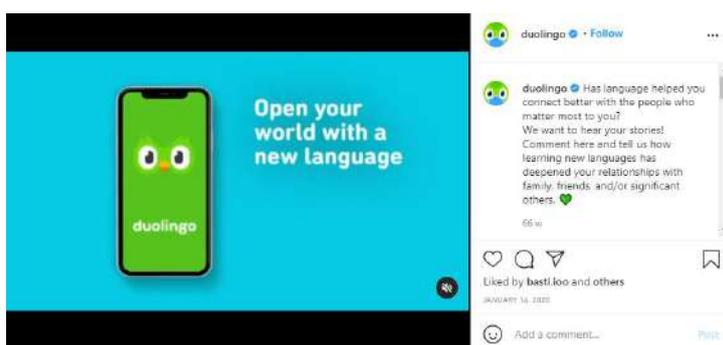


FIGURE 10 Example post of a Personal brand post of Duolingo

This post asks the users about personal relationships and experiences, with the underlying meaningful themes of family and friends in order to initiate more personal conversations.

Employee brand posts

Employee brand posts are posts about the employees themselves – either their technical expertise, personal interests, opinions, and so on. Through giving their employees a voice, users are motivated to connected on a more personal level (Tafesse & Wien, 2017). An example of an Employee brand post of Duolingo is seen in Figure 11.



FIGURE 11 Example post of an Employee brand post of Duolingo

This post shows glimpses of Duolingo's employees' personal life and sharing photos and videos featuring activities the employees have been doing. Through this post, they try to motivate the users to connect on a more personal level.

Brand community

Brand community posts highlight the importance of the brand community, and thus aim to promote, foster, and strengthen the sense of said community. These posts can either be targeted at recruiting new users or enhance the already existing community participation (Tafesse & Wien, 2017). An example of a Brand community brand post of Duolingo is seen in Figure 12.

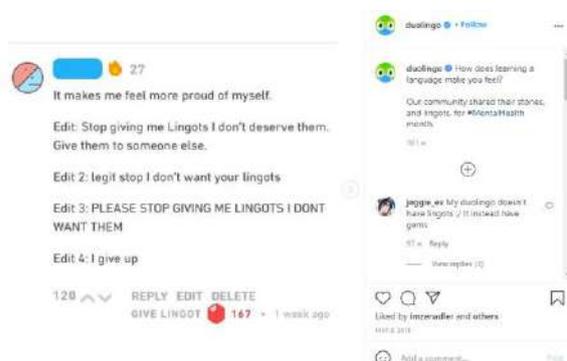


FIGURE 12 Example post of a Brand community post of Duolingo

In the post above, different stories are shared by the community. Sharing these stories and experiences in connection to languages, in particular for Mental

Health Awareness Month, fosters and strengthens the sense of Duolingo's community.

Customer relationship

Customer relationship posts are focused on the issues between the user and the brand and/or their products and services. These posts are of importance in order to strengthen the user relation with the brand. Through customer relationship posts, the brand provides possibilities to listen to their users' preferences, opinions, experiences, and expectations – for example through customer feedback, testimonies and reviews (Tafesse & Wien, 2017). An example of a Customer relationship brand post of Duolingo is seen in Figure 13.



FIGURE 13 Example of a Customer relationship post of Duolingo

In this post, Duolingo asks the users for feedback. They mention: “We want to hear from you! Please comment and share your thoughts”, providing the possibility to provide the users to share their thoughts, experiences and expectations in the comments.

Cause-related brand posts

Cause-related brand posts are posts about organisations and initiatives supported by the brand, while highlighting and promoting the social causes and consequently encouraging the users to join the brand in supporting the cause (Tafesse & Wien, 2017). An example of a Cause-related brand post of Duolingo is seen in Figure 14.



FIGURE 14 Example post of a Cause-related post of Duolingo

This post highlights Duolingo's support for the Yes We Can World Foundation, an organisation that strives to provide education and safe spaces for migrant children. Additionally, in the post, Duolingo encourages the users to support and donate as well.

Sales promotion

Lastly, sales promotion posts are aimed to encourage the user toward their purchase decision. These posts typically include information regarding price and availability, promotional offers, discounts, as well as competitions. Sales promotion posts are therefore of importance in driving the sales of the brand and/or their products and services (Tafesse & Wien, 2017). An example of a Sales promotion brand post of Duolingo is seen in Figure 15.



FIGURE 15 Example of a Sales promotion post on Duolingo

In this post, users can win a limited item through a giveaway. It is to be debated whether this post is a sales promotion post, or rather a brand resonance post – as the tote bag itself focuses on the brand image. However, as per Tafesse and Wien, sales promotion posts can comprise competitions and in order to be eligible to win, the user has to follow the Instagram account. Through following

the account, the user may be exposed to more offers, future purchases, and competitions.

In the sample size, there was a limited quantity of sales promotion posts. This might be explained due to the fact that Duolingo presents itself as a free language learning app and thus, would not want to emphasis- or focus on the additional sales.

3.5.2 Identification of the gamification elements

Identification of the gamification elements was based on the gamification-dimensions and elements classified and grouped in the gamification taxonomy of Toda et al. as seen in Table 3.

TABLE 3 Gamification dimensions and elements from the gamification taxonomy from Toda et al. (2019)

Gamification Dimensions	Performance/measurement	Ecological	Social	Personal	Fictional
Gamification Elements	Acknowledgement	Chance	Competition	Novelty	Narrative
	Level	Imposed choice	Cooperation	Objectives	Storytelling
	Progression	Economy	Reputation	Puzzle	
	Point	Rarity	Social pressure	Renovation	
	Stats	Time pressure		Sensation	

Following the identification of gamification elements in the collected data, posts were categorised according to the gamification taxonomy. However, as a result of the coding scheme and the intercoder reliability test, it was established that certain gamification elements were either not present, too unclear, or that it was necessary to add more gamification elements.

Firstly, the Sensation element of the Personal dimension was too difficult to assign. The definition indicates that it is related to improve the user experience through visual elements. As every post has a distinctive image/media which emphasises the message of the post, improving the overall experience, one could assign Sensation to practically every post.

Secondly, in the Fictional dimension, Storytelling is seen as text stories, audio queues, sensorial resources, among others. Storytelling is defined as “the activity of writing, telling, or reading stories” (Cambridge Dictionary, 2021) which can be used for both fiction- as well as nonfiction narratives. This would indicate that any ‘real story’ and thus a user’s story would also count as Storytelling. Therefore, “Fictional” as a dimension would not be correct. In the paper from Hunicke, LeBlanc and Zubek (2004), elements are described as aspects which make something “fun”, with aesthetics including fantasy, narrative and expression, among others - showing an overlap with the

framework of Malone (1982), which mentions that there should be emotionally appealing fantasies incorporated, creating a system which the user is already familiar with, as well as there should be Curiosity to enhance said fantasy, adding variety, and humour. Curiosity was also recognised in the collected data, and thus added to this dimension. It was decided to rename the dimension to Storytelling. Moreover, it was seen as challenging to distinguish Narrative and Storytelling from one another and thus decided to eliminate Narrative as an element and instead divide Storytelling in visual- and written storytelling.

Furthermore, Duolingo offers monetary rewards for certain tasks, which is the probability of getting something special, thus Chance. However, in the gamification taxonomy Chance is proposed as an intrinsic concept, whereas in this case it would be extrinsically motivated. Similarly, in the gamification taxonomy, Competition is also proposed as an intrinsic concept, whereas competition can also have extrinsic motivation due to the (monetary) reward linked to it. In these cases, it was decided to include both intrinsic- and extrinsic motivation. Additionally, Acknowledgement was proposed as an extrinsic concept - involving extrinsic rewards such as titles, badges, amongst other extrinsic feedback praising the user's actions. However, other literature also suggests simple congratulatory messages for one's achievements to be a form of Acknowledgment (Alexiou & Schippers, 2018), therefore these were also included in the coding.

Lastly, in the analysis some gamification elements were not recognised in the data and thus eliminated from the categories, namely, Level, Imposed Choice, and Reputation. Additionally, in the literature Customisation/personalisation was another element recognised and also identified in the collected data and thus added to the Personal dimension, as it provides additional meaning and value to the user themselves. The adjusted coding categories are displayed in Table 4.

TABLE 4 Adjusted dimensions (categories) and elements based on the gamification taxonomy and literature review

Gamification Dimensions	Performance/ measurement	Ecological	Social	Personal	Storytelling
Gamification Elements	Acknowledgement	Chance	Competition	Novelty	Visual storytelling
	Level	Economy	Cooperation	Objectives	Written storytelling
	Progression	Rarity	Social pressure	Puzzle	Curiosity
	Stats	Time pressure		Renovation	
				Customisation/personalisation	

3.5.3 Coding examples – gamification elements

Acknowledgement



FIGURE 16 Example of a post which includes the Acknowledgement element

This post includes the gamification element **Acknowledgement**. Duolingo acknowledges the work and help of their worldwide volunteers, both in the caption as well as in the illustrated image itself. Other gamification elements in this post include cooperation – as the visual displays a community which have the same shared goal in mind, and Visual storytelling – as said community is portrayed in a familiar, characterisation adding to the narrative and imagination.

Progression



FIGURE 17 Example of a post which includes the Progression element

This post includes Duolingo acknowledging John's **Progression** and stats. Due to the interpretive approach, gamification elements can differ from who views this post. For John himself, the post highlights the Acknowledgement of his Progression and Stats, whereas for other users this could feel like Social pressure and Competition e.g. "I can beat John's streak."

Stats



FIGURE 18 Example of a post which includes the Stats element

This post includes the gamification element **Stats**, as it states the overall statistics. Other gamification elements include Curiosity – as the caption intrigues people to find out more about upcoming content; Novelty – as it introduces new, upcoming content; and Visual storytelling, through the use of Duo.

Chance



FIGURE 19 Example of a post which includes the Chance element

This post includes the gamification element **Chance**, as users have the probability to win something special, namely a free year of Duolingo Plus. As this is a limited resource and only given to 3 users, there is also the gamification element Rarity, as well as there is a Competition concept, as it comes down to user vs. user. The question posed itself is interpreted as an Objective, as users are asked to state their reasons to learn a language, i.e. having a purpose and reaching a certain goal.

Economy



FIGURE 20 Example of a post which includes the Economy element

This post includes the gamification element **Economy**, as users can purchase the mentioned item in the shop through the exchange of their earned Lingots. Additionally, as one is not able to endlessly purchase this feature, it also includes **Rarity**. Furthermore, the feature is seen as **Renovation**, as it can be interpreted as having an extra life.

Rarity



FIGURE 21 Example of a post which includes the Rarity element

This post includes the gamification element **Rarity**, as users have the probability of winning the patch. This patch, however, is not available to everyone, only to those who share their work with the corresponding hashtags, to then have to be lucky enough to be chosen by Duolingo. With that in mind, it also includes the gamification elements **Competition** and **Chance**. Moreover, the patch can be compared to the badges obtainable, as an extrinsic award for completing certain tasks or actions, making it an **Acknowledgement**.

Time pressure



FIGURE 22 Example of a post which includes the Time pressure element

This post includes the gamification element of **Time pressure**. In order to win the Competition, the user has to be the first person to answer correctly, adding additional pressure to answering correctly. Moreover, this contest can be interpreted as a Puzzle, as the user is given the challenge to solve the given problem.

Competition



FIGURE 23 Example of a post which includes the Competition element

This post includes the gamification element **Competition**. Users are asked to write short stories in order to have the Chance to win the monetary reward. Thus, opposing individuals with a common goal. Additionally, there is the added time pressure of submitting it by June 8 the latest, as well as the reward itself is a Rarity, as solely those chosen by Duolingo will obtain the reward.

Cooperation



FIGURE 24 Example of a post which includes the Cooperation element

In this post, there is the gamification element **Cooperation**, as it displays an illustrated picture of a community following the same goal, namely learning a language. Additionally, there is the gamification element **Stats**, highlighting the overall statistics of Duolingo's current learners. As well as **Visual storytelling** and **Customisation/personalisation** as it displays personal avatars – "This could be me."

Social pressure



FIGURE 25 Example of a post which includes the Social pressure element

This post is similar to the post under "Progression", therefore also includes the gamification element **Social pressure** – depending on how one would interpret it. For Christina herself, the post is an Acknowledgement for her Progression and Stats. Whereas for other users it could feel like Social Pressure and Competition.

Novelty



FIGURE 26 Example of a post which includes the Novelty element

This post is a typical type of post for Duolingo to utilise the element of **Novelty**. Through these kinds of posts, Duolingo announces new content and/or information – in this case announcing a new course in the app.

Objectives



FIGURE 27 Example of a post which includes the Objectives element

This post includes the gamification element **Objectives**, as objectives are listed to achieve a certain purpose or goal, in this case contributing to the “Battle of the most 2020 phrase” as well as finding out the special surprise. There is not a Competition between users per se, but rather a competition regarding the content itself. The “special surprise” would indicate Novelty, as well as there is the gamification element Time pressure, as the voting is only possible for a limited amount of time.

Puzzle



FIGURE 28 Example of a post which includes the Puzzle element

This post includes the gamification element **Puzzle**, as users are presented with a challenge to try and guess the next language course based on nothing but a picture. Additionally, the puzzle evokes a sense of curiosity, e.g. “What could it be?”, “Where is this?” Moreover, this puzzle hints at new, upcoming content, thus Novelty.

Renovation



FIGURE 29 Example of a post which includes the Renovation element

This post includes the gamification element **Renovation**, as it informs that through doing the practice lessons, one is able to restore their skills, i.e. renewal. Furthermore, the underlying theme revolves around Progression, as it regards the user’s current progress and how they can further advance.

Customisation/personalisation



FIGURE 30 Example of a post which includes the Customisation/personalisation element

This post includes the gamification element **Customisation/personalisation** as it presents the user with the possibility to dress up (i.e. customise) Duo in different “owlfits.” Users have the possibility to purchase different outfits for Duo in the Lingot store, allowing them to customise and personalise Duo to their own wishes.

Visual storytelling



FIGURE 31 Example of a post which includes the Visual storytelling element

This post includes the gamification element of **Visual storytelling**, one of Duolingo’s most utilised gamification elements. Through the character Duo, Duolingo motivates and encourages their users. Duo is also used as a tool to tell the users about certain activities, events, updates, and so on, in a more playful, engaging way. Additionally, in this post the gamification element Curiosity is used “Check out our Stories to see where he’s off to first” making the users wonder about Duo and his adventures – and continuing the storytelling through the Instagram stories (i.e. interactive videos and photos).

Written storytelling



FIGURE 32 Example of a post which includes the Written storytelling element

This post includes the gamification element **Written storytelling**. Opposed to visual storytelling, the story is told through text, allowing the user to see the narrative point of view.

Curiosity

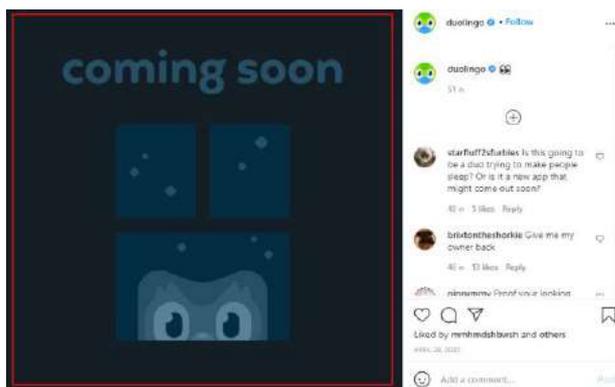


FIGURE 33 Example of a post which includes the Curiosity element

In this post, Duolingo creates and sparks **Curiosity** through both the visualisation and wording used in the post. The post states that something is “Coming soon”, leaving users to guess what that might be. Additionally, the caption gives no further information as to what it is either, which further enhances the user’s need to know what is coming.

4. FINDINGS

4.1 General findings

As mentioned before, 353 units (i.e. Instagram posts) from Duolingo were collected and analysed. Each of these posts included multiple gamification elements, and were therefore included more than one code, resulting in a total of 874 coded elements. In the collected data, all 12 different post types as per the framework of Tafesse and Wien (2017) were recognised. The most recognised post types of Duolingo were found to be Brand community posts, Emotional brand posts, and Current event posts. The least frequently occurring post types concerned Cause-related brand posts, from which only one post was recognised as such, followed by Customer relationship posts and Sales promotion posts. The exact numbers can be found in Table 5 on page 54. On average, users seemed to engage the most by means of commenting on Current event-, Functional brand-, and Brand community brand posts. Whereas on average, most liked posts were Current event-, Brand community-, and emotional brand posts.

When looking at the utilised gamification elements in the collected data, Duolingo's most utilised gamification elements were Visual storytelling, followed by Novelty and Curiosity. The least utilised gamification elements concerned Economy, Renovation, and Customisation/personalisation. Close relationships between the gamification elements were found between Chance & Competition, Curiosity & Novelty, as well as Economy & Renovation.

In summary, the general findings provided a better understanding of Duolingo's post types – thus their way of communication and providing information – as well as their typical usage of gamification elements. Additionally, relations between the post types and gamification elements were found, as well as relations between the gamification elements themselves were recognised. The more specific findings and numbers are provided in the following sections of this chapter.

4.2 Findings

To answer the research objective, this section provides more specific information and details identified from the coding, which are then further analysed. This information includes data regarding the coding frequency of the used variables, coding frequency of the gamification elements, as well as the coding similarity and relations between the gamification elements. Lastly, the findings are discussed in relation to the reviewed literature and studies.

4.2.1 Coding frequency of the variables

The so-called coding frequency of the different variables (i.e. post types, number of comments, and likes) are analysed in order to find out- and better understand Duolingo's approach to their social media content on Instagram. The reason for looking at post types and the frequency of these different post types was to recognise how Duolingo communicates and provides information to its users. Additionally, the number of comments and likes were chosen as variables in order to try to identify a potential relation between the usage of certain gamification elements in connection to Duolingo's social media engagement (i.e. finding a pattern in regard to the comments and/likes in relation to the gamification elements).

Post types

Looking at the variable *post types* as categorised according to the framework of Tafesse and Wien (2017), the most used post types of Duolingo include 1) Brand community posts, 2) Emotional brand posts, 3) Current event posts, 4) Functional brand post, and lastly 5) Educational brand posts. On the other hand, the least frequently occurring post types were Cause-related brand posts, Customer relationship posts, and Sales promotion posts, as displayed in Table 5.

TABLE 5 Duolingo's Instagram post type frequency

Post type	Frequency	Frequency (%)
Brand community	61	17,3
Emotional brand post	51	14,4
Current event	49	13,9
Functional brand post	46	13
Educational brand post	44	12,5
Experiential brand post	39	11
Personal brand post	28	7,9
Brand resonance	21	5,9
Employee brand post	8	2,3
Sales promotion	3	0,8
Customer relationship	2	0,6
Cause-related brand post	1	0,3
	353	100

Likes and comments

For the variables 'Likes' and 'comments' the average number was calculated. Moreover, the standard deviation was also calculated as it shows the dispersion

of the collected data, in proportion to the mean (i.e. the measure of centre). Table 6. shows the exact numbers calculated, as per post type. For these calculations, the post types Customer relationship-, Cause-related-, and Sales promotion brand posts were excluded as these post types were scarcely recognised in the collected data, thus realistically their calculated numbers would not be reflective of these post types in general.

TABLE 6 Average and standard deviation of comments and likes on the collected data

Post type	Comments - Average	Comments - Standard deviation	Likes - Average	Likes - Standard deviation
Emotional brand post	332	573	9572	11893
Functional brand post	432	545	8043	7244
Educational brand post	183	163	6432	4601
Brand resonance	294	344	9453	6665
Experiential brand post	186	428	5094	3915
Current event	457	970	11568	21375
Personal brand post	207	206	6133	6179
Employee brand post	161	111	6500	3825
Brand community	327	439	10938	13623

The table shows that, for Comments about half of the data shows a higher standard deviation in comparison to the average - indicating that the data are more spread out. For Likes, the majority of data show a lower standard deviation - indicating that this data is more clustered around the mean.

Overall, on average Duolingo gets around 287 comments and 8268 likes per post. According to Iconosquare - a management tool for managing and scheduling, as well as analysing one's social media posts, a good engagement rate on Instagram would be around 4.7% on average - however, this seems to differ per industry (Rabo, 2019). Using the numbers of Duolingo's average number of comments and likes per post in relation to their 374k followers (as per the time of the data collection), Duolingo's engagement rate on Instagram would be 2.3% on average. This might seem low in comparison to the aforementioned 4.7%, however, it is to be noted that the more followers and account has, the lower their engagement rate tends to be, possibly also due to the fact that interaction differs a lot between a smaller community is comparison to a bigger community (Rabo, 2019).

4.2.2 Coding frequency of gamification elements

Focusing on the frequency of the gamification elements identified in the collected data, Table 7 shows that a total of 874 coded gamification elements were recognised, with Visual storytelling, Novelty, and Curiosity as the most utilised

gamification elements. While Economy, Renovation, and Customisation/personalisation were utilised the least.

TABLE 7 Gamification element frequency in Duolingo's Instagram posts

Dimension	Gamification element	Count	Codes (%)	Cases	Cases (%)
Performance/ measurement	Acknowledgement	73	8,4	71	20,1
	Progression	31	3,5	28	7,9
	Stats	50	5,7	42	0,6
Total count		154	17,6		
Ecological	Chance	29	3,3	27	2,8
	Economy	2	0,2	2	9,9
	Rarity	12	1,4	10	11,9
	Time pressure	39	4,5	35	10,5
Total count		82	9,4		
Social	Competition	51	5,8	42	9,6
	Cooperation	45	5,1	37	10,5
	Social pressure	35	4	34	9,6
Total count		131	15		
Personal	Novelty	122	14	95	26,9
	Objectives	54	6,2	51	14,4
	Puzzle	9	1	6	1,7
	Renovation	5	0,6	5	1,4
	Customisation/ personalisation	6	0,7	5	1,4
Total count		196	22,4		
Storytelling	Visual storytelling	156	17,8	156	44,2
	Written storytelling	65	7,4	61	17,3
	Curiosity	90	10,3	84	23,8
Total count		311	35,6		
Overall total count		874	100		

Looking specifically at the gamification dimensions, gamification elements from the Storytelling and Personal dimensions were recognised most frequently, whereas gamification elements from the Ecological dimension were recognised the least, as derived from Table 7.

When focusing on the posted media (e.g., photo, graphic, video, illustration) without taking the caption into account, 297 coded gamification elements were recognised, the numbers still show Visual storytelling as the most utilised gamification element, followed by Novelty, and Progression in place of Curiosity. The least utilised gamification element is Economy, as it is not recognised in the data at all, followed by Renovation, and Social pressure. In

regard to the dimensions, as can be seen in Table 8, Storytelling remains the most recognised dimension, followed by Personal, with the utilisation of gamification elements from the Ecological dimension remaining in last place.

TABLE 8 Gamification element frequency in Duolingo's Instagram posts, based on the content excluding the caption

Dimension	Gamification element	Count	Codes (%)	Cases	Cases (%)
Performance/ measurement	Acknowledgement	5	1,7	5	1,4
	Progression	17	5,7	17	4,8
	Stats	12	4	12	3,4
Total count		34	11,4		
Ecological	Chance	3	1	3	0,8
	Economy	-	-	-	-
	Rarity	3	1	3	0,8
	Time pressure	5	1,7	4	1,1
Total count		11	3,7		
Social	Competition	10	3,4	10	2,8
	Cooperation	12	4	12	3,4
	Social pressure	2	0,7	2	0,6
Total count		24	8,1		
Personal	Novelty	32	10,8	32	9,1
	Objectives	5	1,7	5	1,4
	Puzzle	3	1	3	0,8
	Renovation	1	0,3	1	0,3
	Customisation/ personalisation	5	1,7	5	1,4
Total count		46	15,5		
Storytelling	Visual storytelling	156	52,5	156	44,2
	Written storytelling	15	5,1	15	4,2
	Curiosity	11	3,7	11	3,1
Total count		182	61,3		
Overall total count		297	100		

Thus, comparing the coded data including the caption to the coded data excluding the caption, the most- and least frequently used gamification elements remain similar. In the coded data excluding captions, dissimilarities are seen in Progression taking the third spot in place of Curiosity in most frequently utilised gamification elements, with Social pressure in place of Customisation/personalisation in the third least frequently utilised gamification element. The most- and least frequently used dimensions remain unchanged, namely Storytelling and Personal on top, with Ecological at the bottom.

In Figure 34 the overall distribution of codes is displayed in a 2D column chart. From this chart, it can instantly be inferred that Visual storytelling, Novelty and Curiosity are the most utilised gamification elements.

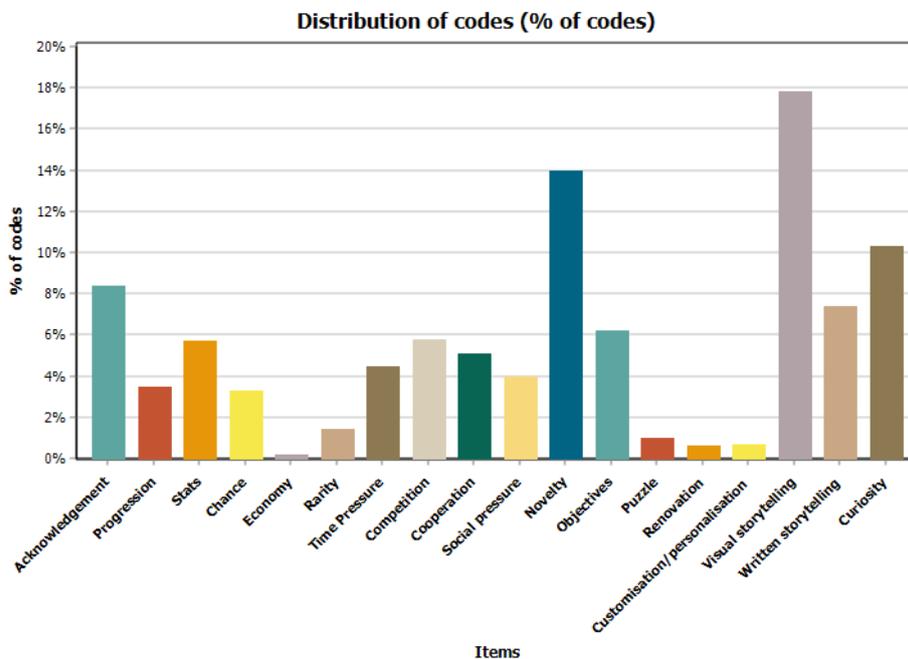


FIGURE 34 Distribution of codes (% of codes) in Duolingo's Instagram posts

Duolingo uses Visual storytelling to engage, motivate, as well as educate their users. The ideas, stories, and emotions are expressed through characters and aesthetics opposed to conversational dialogue. Their most prominent use of Visual storytelling is through a green owl, their character Duo. Duo symbolises wisdom, knowledge and education. In the posts, he can be seen as a coach motivating the users, sending encouraging messages, acknowledging or congratulating one's achievements, as well as the users follow the owl through its adventures and endeavours. Storytelling is used as a useful strategy for both entertainment as well as education. Moreover, storytelling gives context and an overall theme to the environment. A lack of storytelling can hinder the purpose, as the user would find it less interesting and appealing (Giakalaras, 2016).

In regard to the second most utilised gamification element, Novelty, Duolingo often posts updates about new content- or changes in their mobile application, new blog posts, new podcasts episodes, as well as new events. The strategy of using Novelty helps to keep the users interested and avoid stagnation and disengagement (Toda, et al., 2019).

As explained in section 4.2.3, Curiosity is related to Novelty, therefore it is not surprising to see Curiosity as the third most frequently used gamification element. Duolingo uses the gamification element Curiosity to intrigue- and spark the interest of their users. An example post is seen on the next page.

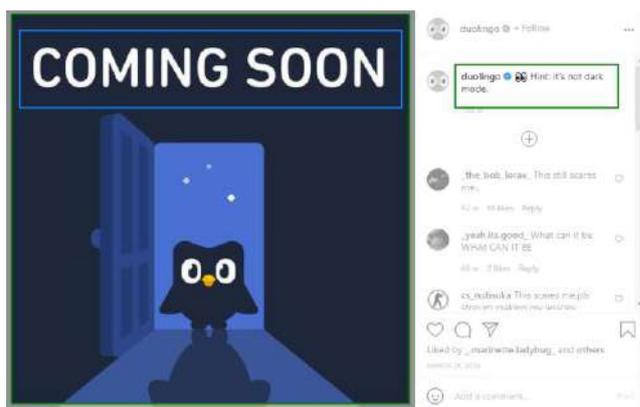


FIGURE 35 Example post of Duolingo utilising Curiosity

In the post above, Duolingo creates interest and sparks curiosity through the use of the visualisation and the wording of the post. Something is “Coming soon”, however, from the image one cannot tell straight away what exactly is indicated to come. Additionally, in the caption a hint is given to leave the users guessing for more.

4.2.3 Coding similarity and relations between the gamification elements

Using proximity plots, an indication is given of the distance between all codes in relation to a specific code. This allows to more easily identify the codes that co-occur with the specific target code. Additionally, proximity plots can be used to represent the similarity of cases (i.e. the individual Instagram posts) based on the coding patterns. The analysed individual proximity plots can be found in Appendix 1. Figure 36 shows a dendrogram of the similarity index analysed through the Cosine Theta formula.

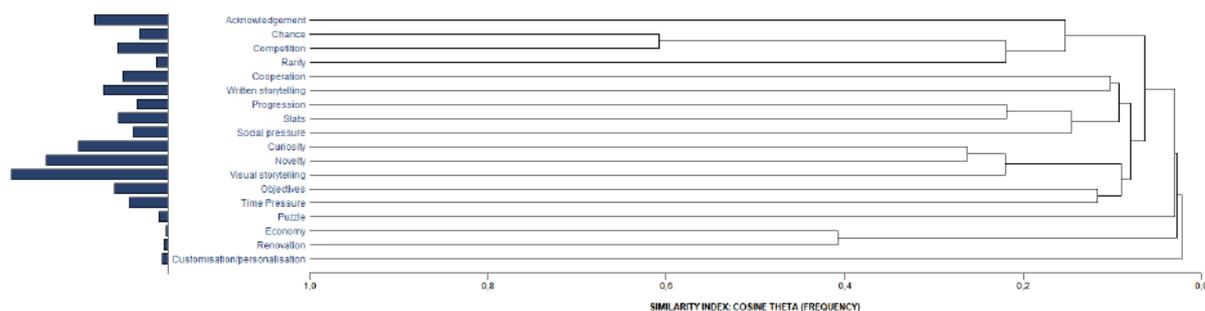


FIGURE 36 Similarity Index: Cosine Theta (frequency) analysed on QDA Miner

From this dendrogram we can see close relationships between Chance and Competition, Curiosity and Novelty, as well as Economy and Renovation. These relationships are not surprising as they are closely interrelated with one another. For example, in Duolingo’s posts related to competitions or contests, there is a probability for the user to obtain something special based on luck, meaning Chance (Toda, et al., 2019).

In case of Novelty, as aforementioned Duolingo makes use of Curiosity to make the users intrigued and wonder what is to come, e.g., “Coming soon”, and “Stay tuned.” No further information is provided, thus, keeping the users interested through ‘obvious wonder’.

Lastly, as explained before, examples of Renovation include boosts, renewals, extra lives, among others. These kind of tools or instruments are to be purchased and obtained through the Lingot Store – a store where users can purchase items with their accomplished Lingots (i.e. rewards) in order to enhance their overall learning experience – thus, a transaction that occurs within the environment.

Moreover, in the dendrogram we can also see relationships between Cooperation and Written storytelling, Progression and Stats, and Objectives and Time pressure. Notable is that, apart from Progression and Stats, these gamification elements all show relations between different dimensions. Looking at unrelatedness, Puzzle and Customisation/personalisation show the least direct connectedness with the other gamification elements but are instead connected to the gamification elements as a whole. These findings show how the different gamification elements are applied in order to enhance the overall user experience.

Utilising gamification elements from the Performance/measurement dimension provides the user with orientation and feedback, gamification elements from the Ecological dimension builds on interactions between the environment and the user, gamification elements from the Social dimension allows for interaction between different users, gamification elements from the Personal dimension provides meaning to the user, and lastly, gamification elements from the Storytelling dimension helps to provide context and makes the overall environment more immersive. Absence- or a lack of these dimensions could either hinder, isolate, or discourage the user (Toda, et al., 2019).

Figure 37 shows the co-occurrence between the coded gamification elements, meaning “the occurrence of two or more gamification elements occurring together at the same time or in the same place” (Merriam-Webster, 2021). Additionally, through agglomeration, the similarity of these co-occurrences can be calculated and further analysed.

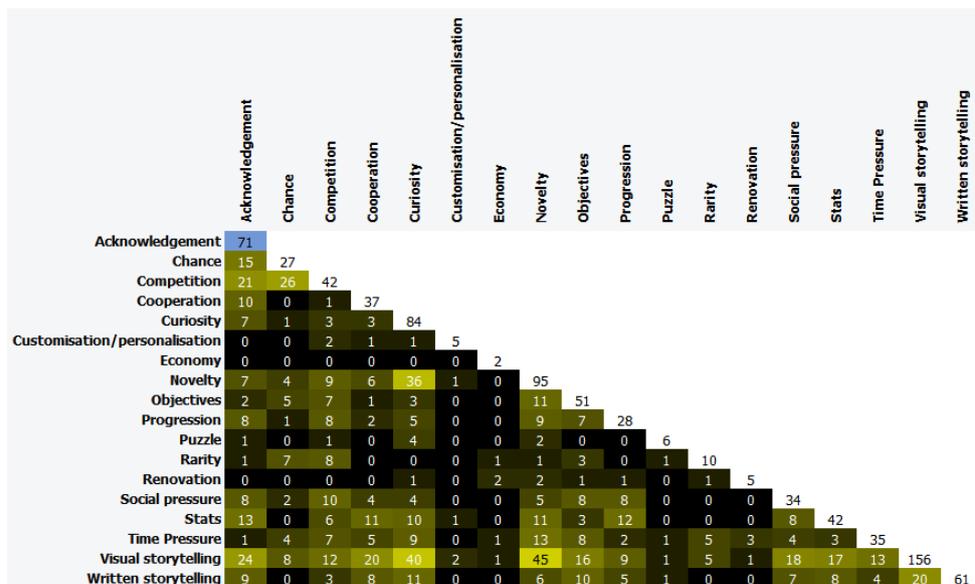


FIGURE 37 Co-occurrences of the coded gamification elements as displayed as a heatmap

The heatmap with the similarity calculations can be found in Appendix 2. In these calculations, the co-occurrences between Chance and Competition (0,605), Economy and Renovation (0,400), Curiosity and Novelty (0,252) show the closest similarities. This further underlines the aforementioned observations and findings.

4.3 Discussion of the findings

The role of digital marketing has been changing drastically. Establishing a social presence and engaging with users, to help and increase their experiences has made social channels increasingly important (Lipsman et al., 2012). As mentioned in the literature, researchers have suggested gamification as tool to build sustained value for the users in digital marketing and social media (Mitchell, Schuster, & Drennan, 2016). Gamification can enhance user engagement, improve the user experience, create interpersonal interactions, as well as increase brand-visibility and awareness (Xi & Hamari, 2020; Lucassen & Janssen, 2014; Robson et al., 2015; Young & Summers, 2016; Hollebeek, 2011). The findings support the idea that gamification aims to extend the period of engagement over time to certain purposes – e.g. acquiring knowledge and understanding toward specific topics, with the possibility to result into valuable profits for the user – e.g. additional rewards, badges, etc. – whereby the engagement is directed towards those purposes (Hamari & Koivisto, 2015; Lucassen & Jansen, 2014; Hammedi, Poncin, & Leclercq, 2019). Hereby the focus is not solely on the end goal (e.g. completing the language course), but rather on the entire process of working toward that goal through providing an enjoyable experience. This is seen in various posts from Duolingo, whereby the users are

asked to go through certain actions or tasks (i.e. objectives), with an underlying focus on Progression, as well as Competition, for instance.

Literature suggests that brands should focus on the user's self-expression through the traditional, key elements of gamification, namely, to spark the user's interest through triggering one's *curiosity*, engaging in a *challenging* way, creating the possibilities for the users to *fantasise* and lastly, provide the users with a sense of *control* (Young & Summers, 2016; Hollebeek, 2011; Malone, 1980). In the findings, these gamification elements were recognised as well. Particularly curiosity was a frequently found gamification element used in Duolingo's posts, namely 23,8%. The element of fantasy could be interpreted from Duolingo's use of Visual storytelling as well as posing questions and stating what-if scenarios. Moreover, in the collected data, engagement in a more challenging way is recognised through competition, puzzles, as well as social pressure. Finally, users are provided with a sense of control, for example through Duolingo asking for feedback on certain aspects, as well as creating polls whereby the user has a choice in deciding on Duo's next outfit, among others.

Lucassen and Jansen (2014) state that elements allowing users to flaunt their progress are expected to be more effective for certain purposes (e.g. increasing engagement, loyalty, or awareness), in comparison to the more personal mechanisms. The findings showed, however, that gamification elements of the performance/measurement dimension accounted for 17,6%, whereas gamification elements from the personal dimension accounted for 22,4%. This could indicate that Duolingo values the individual using the environment more than the environmental response, i.e. the user browsing their Instagram content and engaging with said user through gamification elements such as Novelty, Objectives, Puzzle, Renovation and Customisation/personalisation – intrinsic concepts providing meaning to the user themselves – rather than focussing on extrinsic feedback.

As mentioned in the literature review, a number of empirical studies indicated that gamification can positively affect brand engagement, with the possibility of potential rewards for the users being able to increase brand awareness and improve and manage the customer relationship (Hollebeek, 2011). This strategy is also recognised in Duolingo's posts, through utilising gamification elements of Competition, Objectives, Puzzles, Chance, and Rarity – with Chance & Competition having the closest relationship. Users have a chance to obtain special, limited items through a certain objective, whereby engagement is key. Particularly the competitive element ensures engagement – the user can either be competitive with oneself or with other users. Moreover, Duolingo asks users to participate or contribute with certain challenges or events, be it in the post itself, the caption, or even their Instagram stories. Brand awareness is seen in the company's consistency in relation to their brand personality, i.e. their consistent colour scheme and illustrative design, as well as their own mascot which often appears in their posts. Additionally, to increase brand awareness Duolingo also partners up with other companies and brands, for instance, with

the mobile game Angry Birds, and the professional ice hockey team Pittsburgh Penguins.



FIGURE 38 Duolingo teams up with the mobile game Angry Birds

The content then gets shared and spread across different accounts and platforms, reaching a bigger audience, increasing the brand visibility and thus consequently increasing brand awareness.



Figure 39. Posted content regarding Duolingo and the partnership on the Instagram account from Angry Birds

Findings regarding the utilisation of gamification elements can be directly linked to the Self-Determination Theory, whereby different types of motivation are distinguished based on the different goals and purposes (Deci & Ryan, 1985; Legault, 2018). The gamification taxonomy used in the coding of the data is also based on the principles of intrinsic- and extrinsic motivation. For example, the gamification elements from the Performance/measurement and the Ecological dimensions are mainly related to extrinsic feedback, whereas the gamification elements from the other gamification dimensions are described as intrinsic

concepts. Additionally, posted content can be related to the three principles of SDT – autonomy, competence, and relatedness (Alsawaier, 2018). Competence is seen in the competition and challenges set by Duolingo, whereby success can be achieved through rewards or acknowledgement. Autonomy can be interpreted through polls or questions whereby the users hold the “power” in the decision-making. Finally, the need for relatedness is mainly found through the emotional brand posts, as well as the brand community posts.

Finally, linking to the Social Comparison Theory, which states that humans have the intrinsic desire to compare themselves with one another (Huschens, Rothlauf, & Rothe, 2019) it is to be argued that such a behaviour is an outcome of applying certain game-like elements. This is recognised when applying gamification elements such as Social Pressure and Competition – whereby the users feel the need to compare and “be better” than the other. Example of this is when Duolingo would acknowledge and applaud a user’s learning streak, and users in the comments feel the need to point out their own progress and status, see Figure 40.



FIGURE 40 Example post of users commenting their own progress as a reaction to Duolingo's Acknowledgement post

5. CONCLUSIONS

As mentioned, the main purpose of this study was to analyse and understand the use of gamification elements on social, through conducting a qualitative content analysis of Duolingo's Instagram account. The focus of the research lied on identifying and analysing the different gamification- dimensions and elements (predominantly as per the gamification taxonomy of Toda et al., 2019), and additionally analysing these through different post types as per the framework of Tafesse and Wien (2017).

To answer the research question *How does Duolingo use gamification elements in its social media engagement?* existing gamification-related studies were reviewed, Duolingo's Instagram account was examined for the presence of gamification elements, and consequently the content analysis was carried out through the coding process of Strauss and Corbin (2008).

The main findings show Duolingo's most recognised post types being Brand community posts, Emotional brand posts, and Current event posts, while Cause-related brand posts, Customer relationship posts, and Sales promotion posts were the least frequently occurring post types. Moreover, the findings show Visual storytelling, Novelty, and Curiosity as Duolingo's most frequently used gamification elements, with Economy, Renovation, and Customisation/personalisation being the least frequently used. Furthermore, relations between different gamification elements were identified (e.g. Chance & Competition, Curiosity & Novelty). In relation to the stated variables, these findings give more insight into Duolingo's use of gamification elements in its Instagram strategy and engagement, as well as it provides insight into research for how other businesses could make use of- and combine different gamification elements in their social media marketing.

5.1 Managerial implications

The thesis discusses several definitions of gamification, the application of the gamification elements, as well as how they are used in social media. This study and its findings are supported by existing theories and research (Xi & Hamari, 2020; Huotari & Hamari, 2017; Young & Summer, 2016; Widawska-Stanisiz, 2014; Toda et al., 2019; Tafesse and Wien, 2017 etc.) Furthermore, according to studies, e.g. Xi and Hamari (2020), gamification can be a useful tool to help increase engagement, brand awareness, customer loyalty, however, there is still a lack of empirical evidence supporting this.

As discussed, there is a need to establish and expand a strong theoretical foundation. To recognise the benefits of using gamification in a marketing context, further research would be required. Currently, the majority of social media platforms use little to no gamification, thus, when developing a new social media strategy, the findings of these thesis can help (brand) managers to further develop said strategy. When determining whether- and how to implement gamification elements, it should be considered how their users are engaging toward the brand and its activities on social media – e.g. how they are responding to- and connecting with the different social media posts (as per the post types of Tafesse and Wien, 2017).

Social media has provided new opportunities and possibilities for businesses to diversify their online communication, allowing them to directly engage with their users, as well as request immediate feedback. Therefore, brands and businesses are strongly advised to focus on interpersonal interactions, as well as fostering a sense of belonging, and consequently building and positively influence the overall user experience, to develop their engagement with the users, as supported by several studies. (Robson et al., 2015; Young & Summers, 2016; Xi & Hamari, 2020, Lucassen & Janssen, 2014; Hollebeek, 2011).

In summary, various aspects of the use of gamification in social media have been found and concluded from the findings of this thesis, as well as from previous research on the topic, that gamification can be a useful marketing tool for businesses in their social media marketing efforts. However, the quality of this research needs to be better evaluated for the purpose of identifying research limitations and proposing future research suggestions. These will be discussed in the next sections of this chapter.

5.2 Theoretical contributions

A content analysis was conducted of 353 of posts by Duolingo on its Instagram account in October 2012 to January 2021. Duolingo is a brand which is one of the

most popular language learning platforms that makes use of gamification. Hence, the initial intrigue regarding the research objective.

As aforementioned, gamification and social media have been studied separately many a time, however, when combining the two, existing research is scarce. This thesis contributes to that limited, existing research. The findings provides knowledge about gamification elements (e.g. gamification elements of Competition, Storytelling, Social pressure, and Objectives, among others) used in a social media context, with in particular Instagram content, as well as the findings provide insights of the relations between said gamification elements. The study of Toda et al. (2019), shows how different gamification elements are applied in an educational environment. This thesis found the majority of these gamification elements also to be applied in a social media context.

Moreover, the findings not only show how these gamification elements are utilised, knowledge is also provided regarding how these gamification elements are implemented in regard to the different (social media) post types, as based on the categorisation provided by Tafesse and Wien (2017). This provides more insights into the combination of gamification and social media.

Finally, this study supports the idea of Robson et al. (2015) and Young & Summers (2016) of how gamification can be used as a tool to improve, promote and further develop engagement, as well as interpersonal interactions with brands on social media. The findings of this research shine a bit more light on how the aforementioned is implemented, but further, more thorough research is needed to better understand and analyse *how* exactly gamification can- and should be used to achieve these goals of increasing engagement and interactions.

5.3 Research limitations

Undeniably, the issue of subjectivity and impartiality is the biggest limitation of this research. Although the approach of the content analysis was greatly based on previously reviewed literature and existing studies in order to ensure the objectivity of the study, a level of subjective interpretation remains in place. In regard to the issue of reliability and validity, an intercoder reliability test was conducted to ensure a sufficient percent of agreement and reach a common understanding of the data interpretation.

In addition, practical limitations were found as well. The literature review pointed out that among researchers, a clear agreement on the definition of gamification, as well as the difference between gamification and game-based learning is lacking. Although the literature review addresses this issue, and consequently several definitions were taken into account, it is of importance to emphasis this as a limitation. Additionally, for the coding the gamification taxonomy of Toda et al. was used, potentially using another taxonomy or framework would have gathered other findings.

Furthermore, the research also showed a limitation in regard to linking gamification to theoretical connections, with said connections being thin, and

existing empirical research being scarce, which emphasises the need of further research on this matter.

Another limitation was found in the research approach, which presented some theoretical and procedural challenges. Firstly, the key issue was finding adequate measures and developing the coding scheme accordingly to ensure reliability and validity. Secondly, the research method takes an interpretative approach and thus as aforementioned, involves a level of subjectivity, which can be subject to increased error. Thirdly, when focusing on certain words or phrases, the analysis could become reductive, and oversimplify the content with the risk of disregarding the context and meaning of the content.

Moreover, the process of manually coding through the QDA Miner software turned out to be challenging and time-consuming – when in fact, the use of such software is meant to save time. Although the software provides the user with a number of useful basic tools and functions, when looking to perform more complicated tasks and analyses, the learning curve is rather steep. Limitations were encountered in certain features, which for instance, prevented the analysis of the Comments- and Likes variables in relation to the gamification elements – which would have been interesting for the study. For instance, would the use of certain gamification elements affect the number of comments and likes? E.g. could using the gamification element Competition lead to more comments in comparison to Cooperation or vice versa. The relation between the gamification elements and aforementioned variables could provide further insights in regard to the effect of gamification elements on engagement.

Although different research limitations were encountered, these limitations also create further research opportunities, which are discussed in the next section.

5.4 Future research suggestions

This thesis draws from a fairly small sample size, therefore, future research should look into whether similar findings and relations in regard to the gamification elements are also to be found in a broader sample size, for example across different platforms, or different company accounts.

Additionally, future research could investigate more as to whether- and how users would respond differently in regard to the different gamification elements. It would be interesting to extend this research regarding the use of gamification on alternate social platforms, including the interaction and engagement on those platforms in relation to the gamification elements.

Moreover, as this research collected information for a specific time period, another suggestion for future research would be to conduct a longitudinal study. Whereby the focus could be on collecting data from various specific points in time, allowing to find insights in regard to potential influences and changes from the environment. For instance, taking the current global pandemic as an example – would such a situation have any interesting effects?

Another suggestion is to look further into the findings of this thesis and delve deeper into the recognised relations, in order to create- and study possible new relations. For example, through conducting similar research in a different context, e.g. focusing on different brand(s) or on a different brand community. This would allow for comparison and to analyse these comparable, valuable findings.

Finally, for future research, when conducting a qualitative content analysis, the researcher(s) should be deliberate in their choice of the tools or software to use, while taking the literature and the study context into account, as well as their own ability to identify and recognise relations between gamification elements and codes. Although QDA Miner does provide useful means to discover and analyse themes and relations, it should be noted that not much support for utilising the programme is provided and thus the user is practically alone in learning how to use the programme. Moreover, certain features are either redundant or lacking. Therefore, it is recommended to take other qualitative data analysis software into consideration and carefully consider and understand which tool is best suited.

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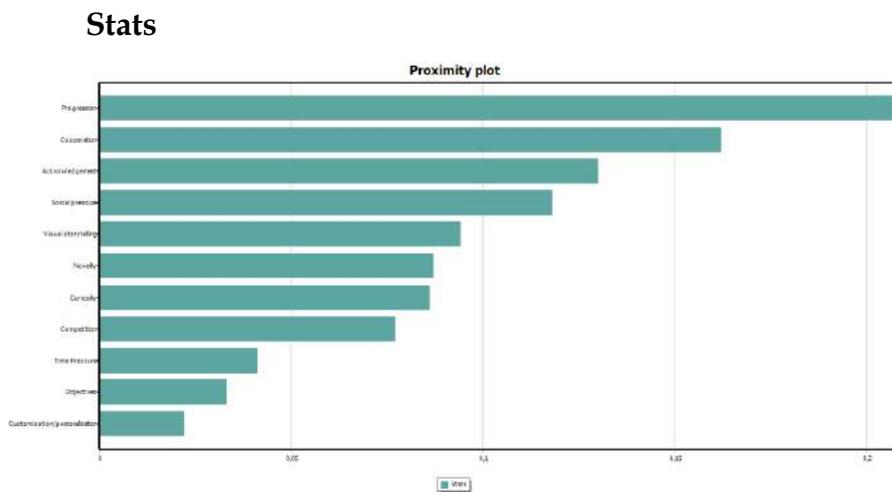
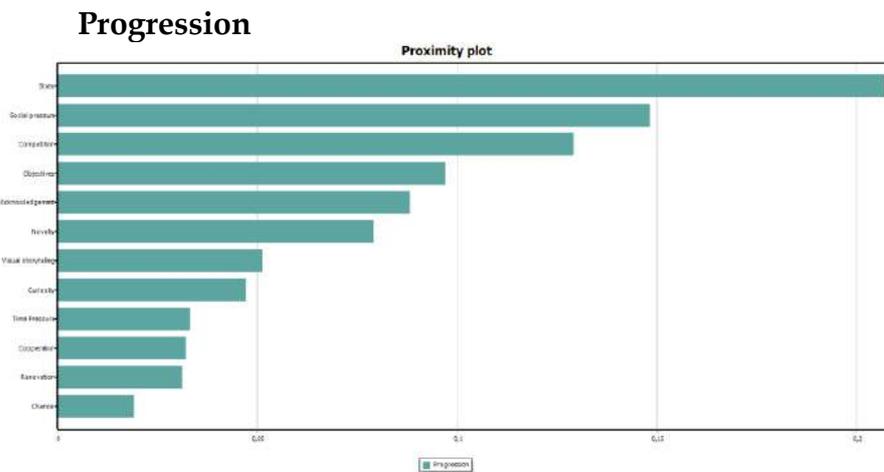
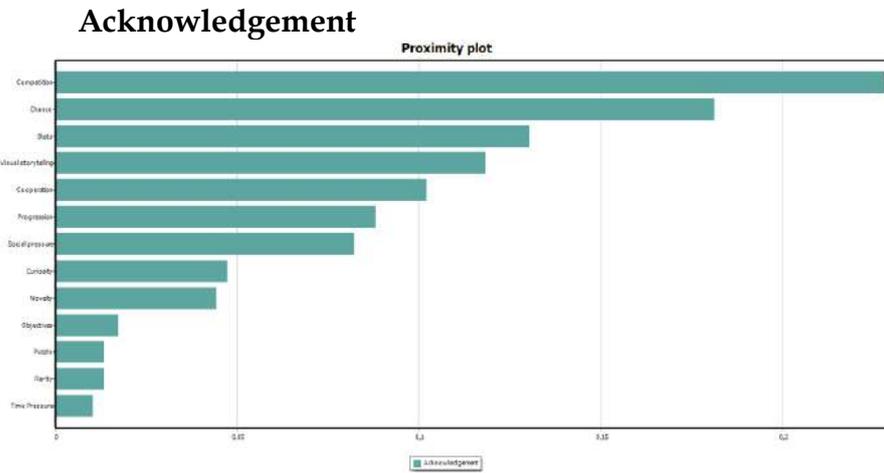
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APPENDICES

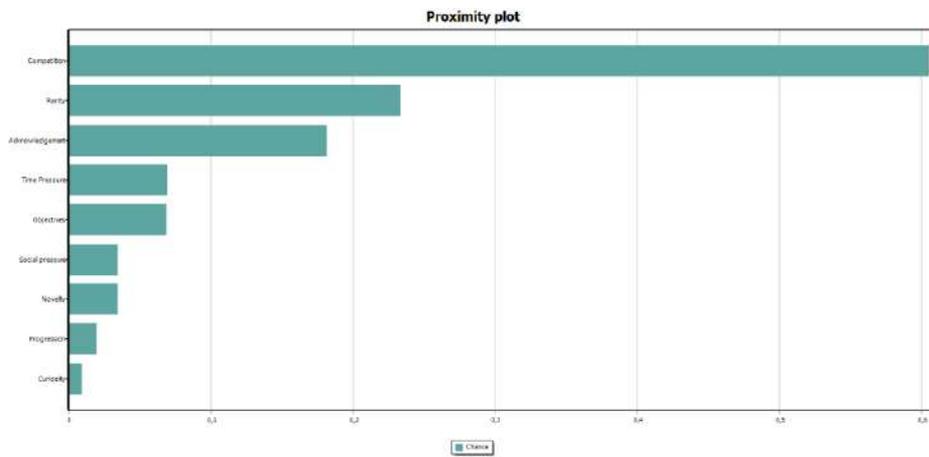
APPENDIX 1 Proximity plots of the gamification dimensions

Performance/measurement dimension

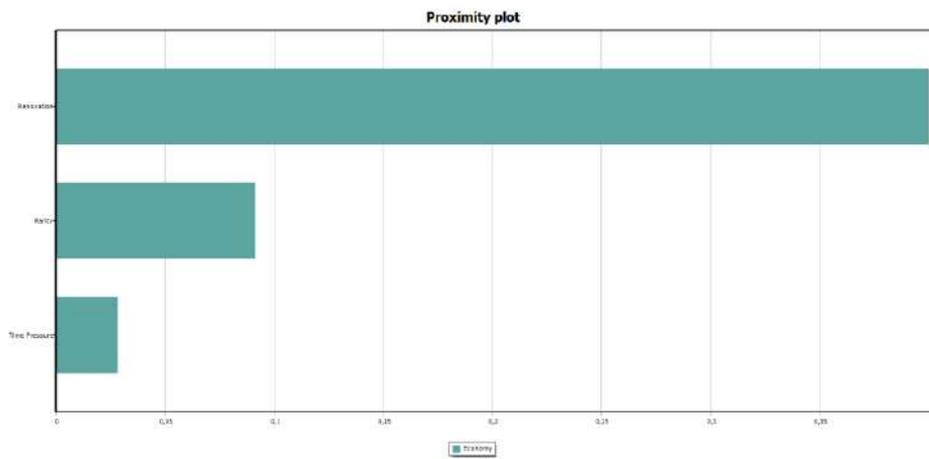


Ecological dimension

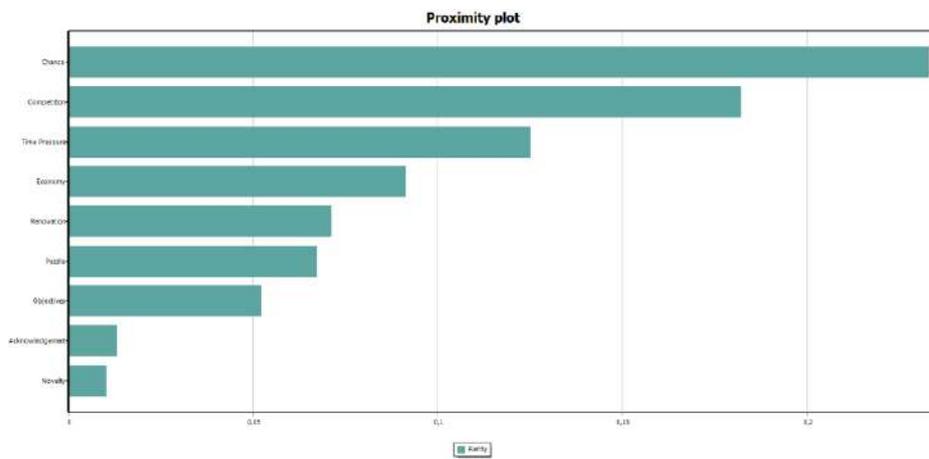
Chance



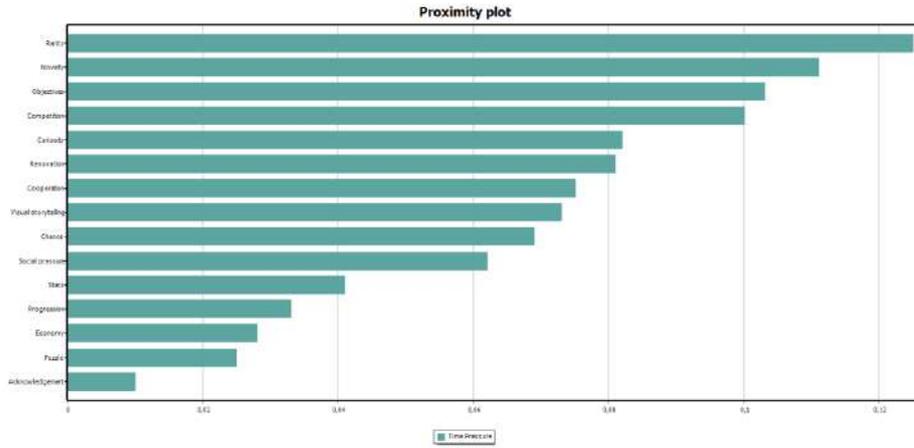
Economy



Rarity

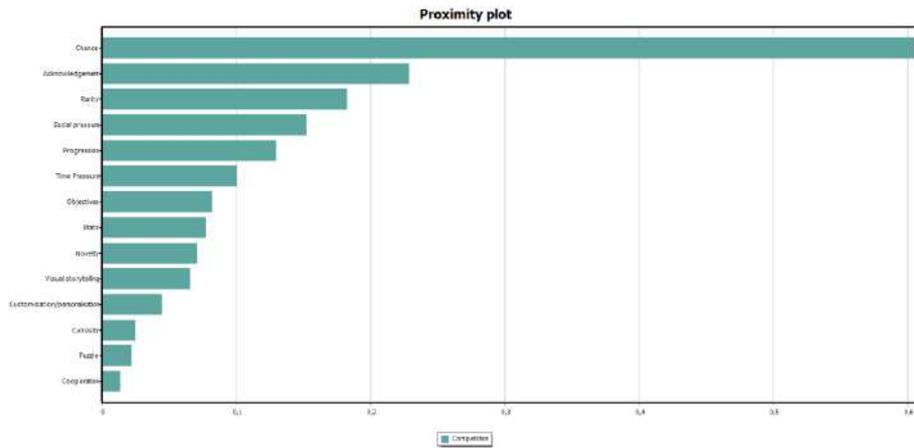


Time pressure

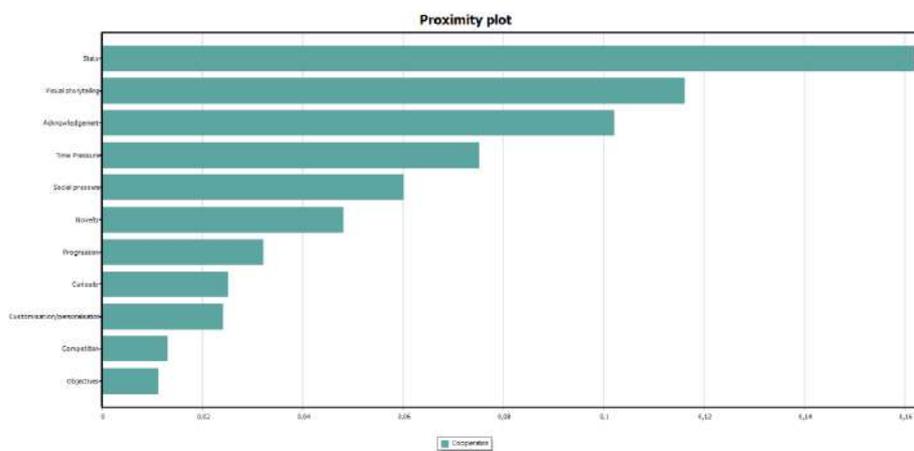


Social dimension

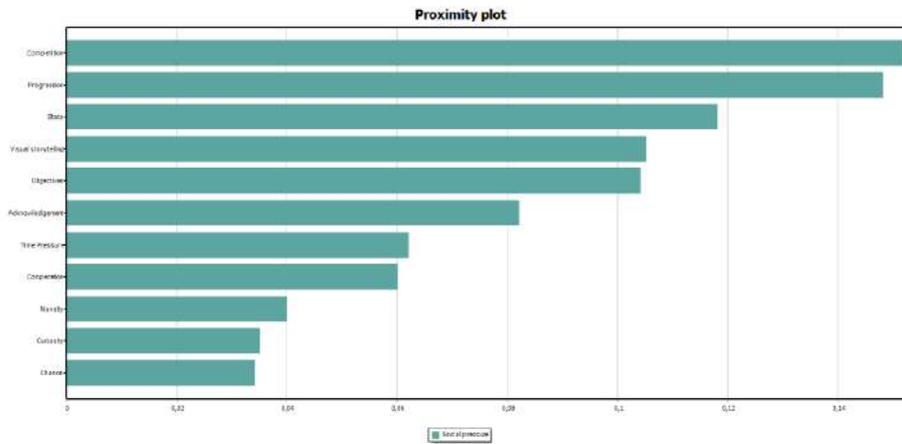
Competition



Cooperation

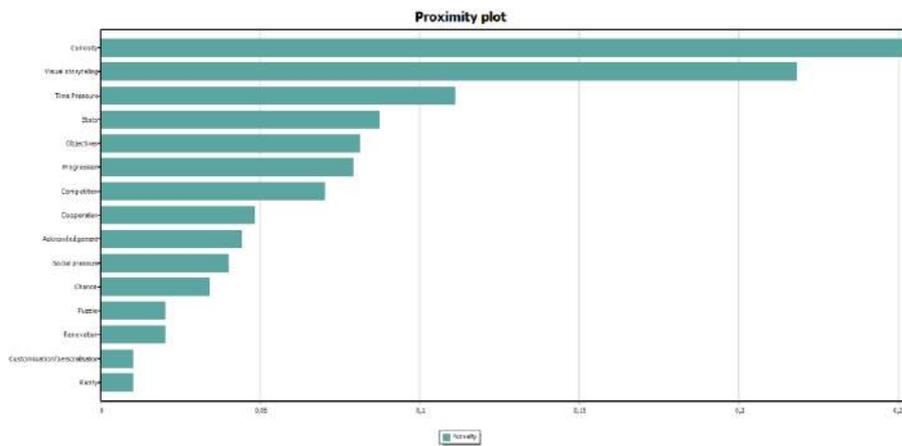


Social pressure

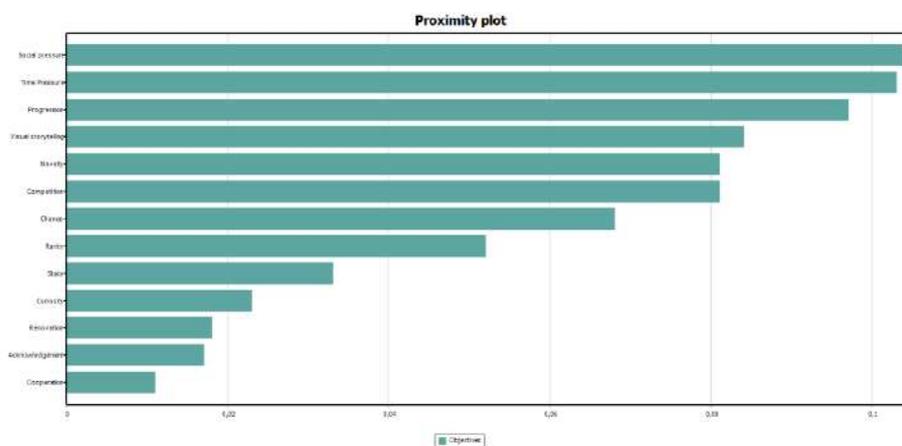


Personal dimension

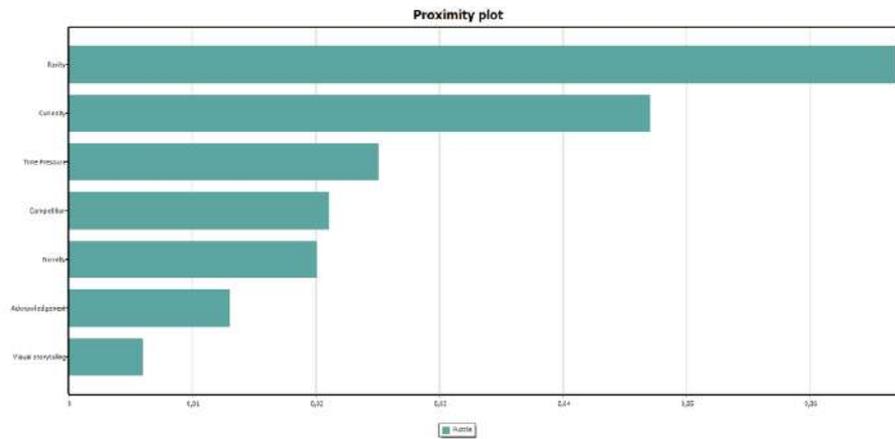
Novelty



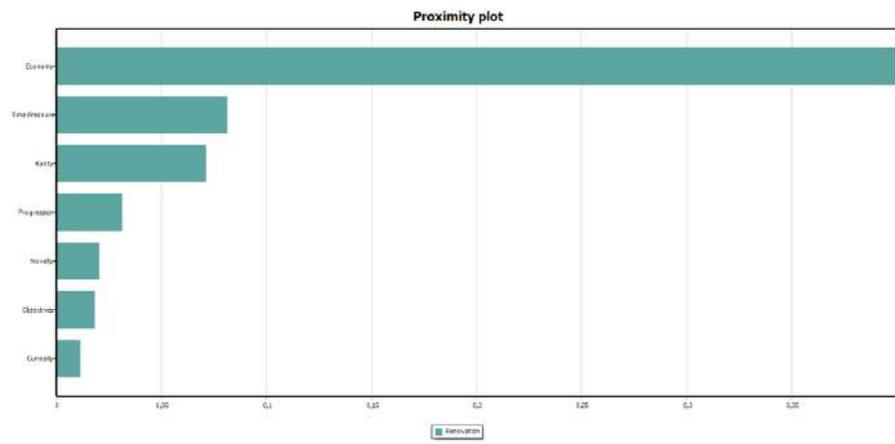
Objectives



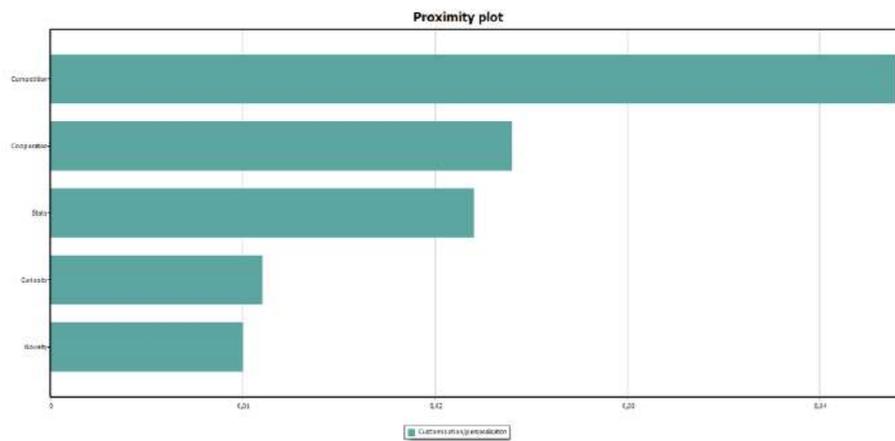
Puzzle



Renovation

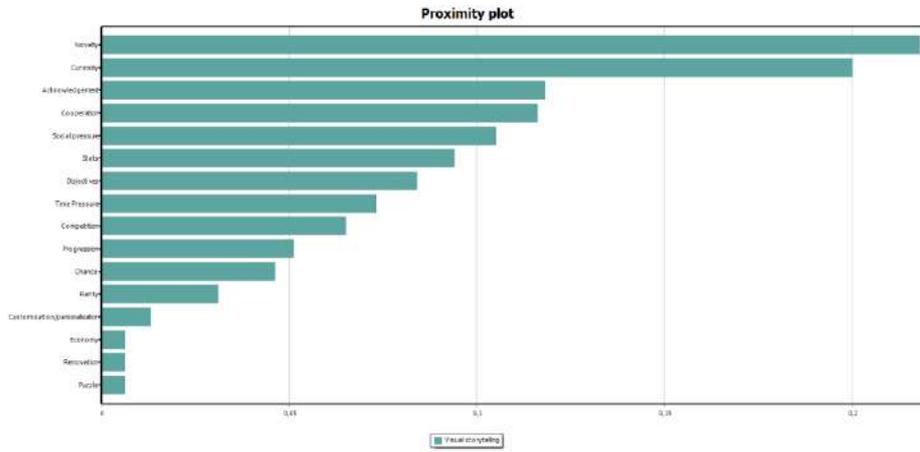


Customisation/personalisation

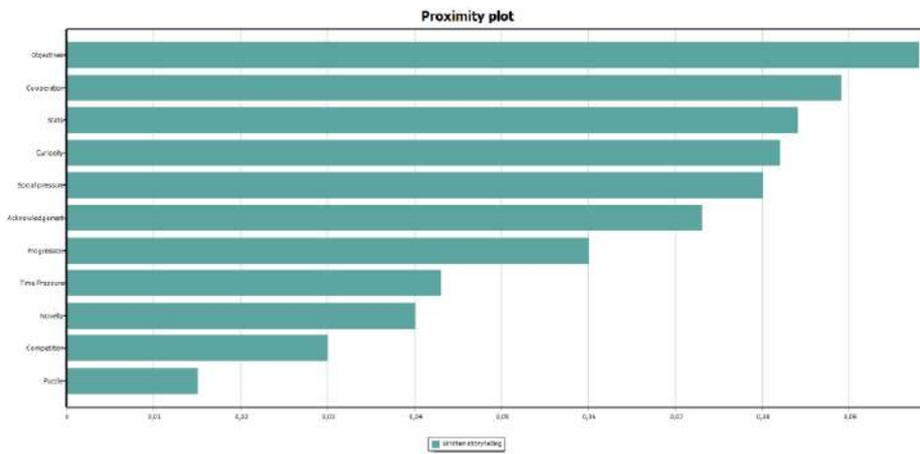


Storytelling dimension

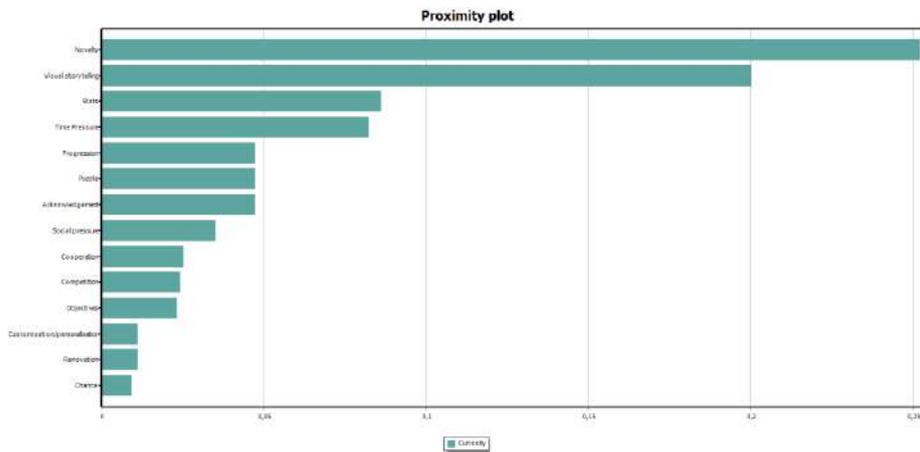
Visual storytelling



Written storytelling

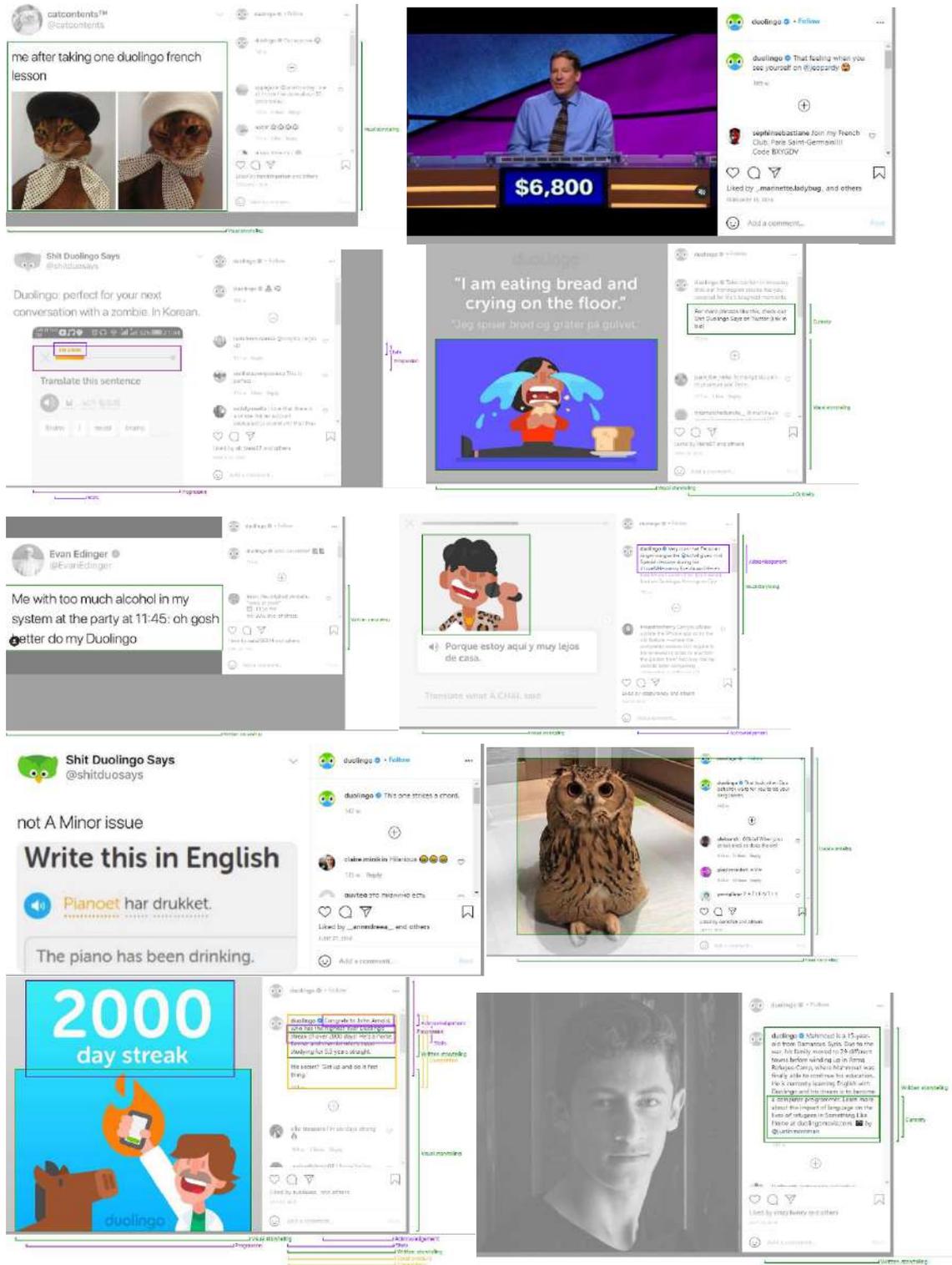


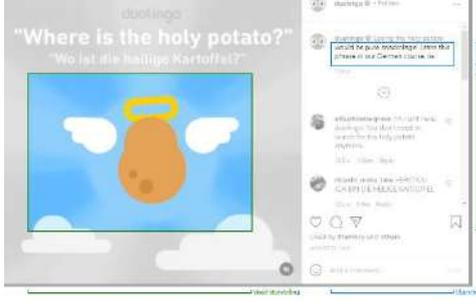
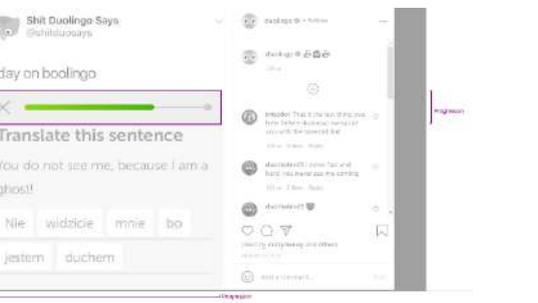
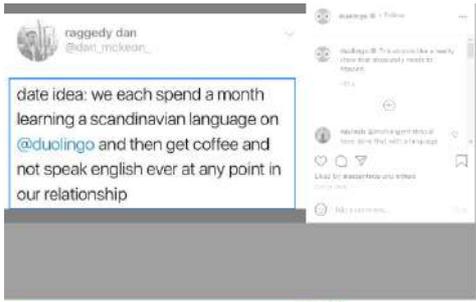
Curiosity

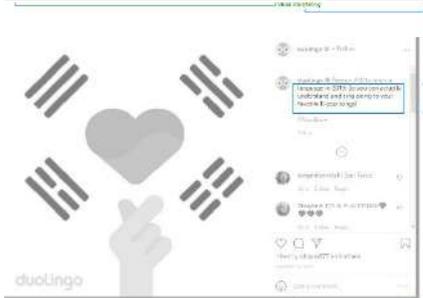
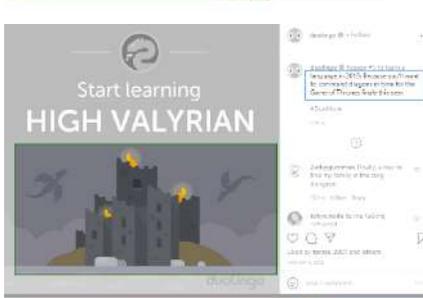
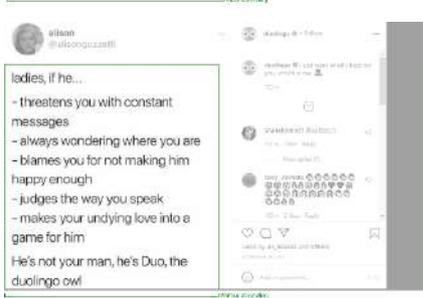
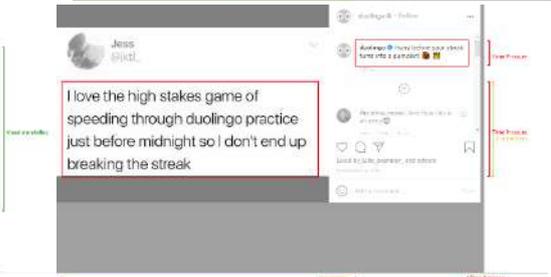
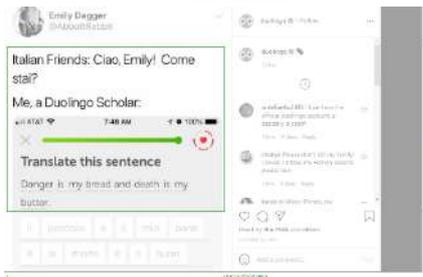


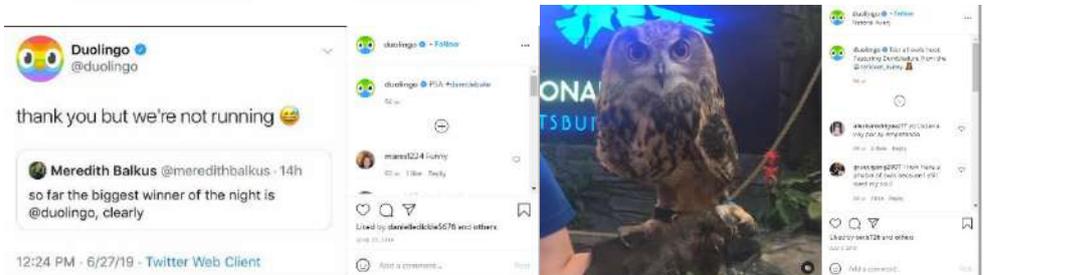
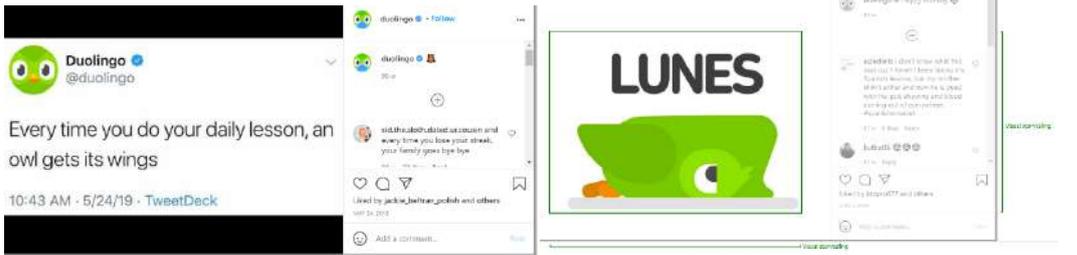
APPENDIX 3 Screenshots of the collected data

Emotional brand posts





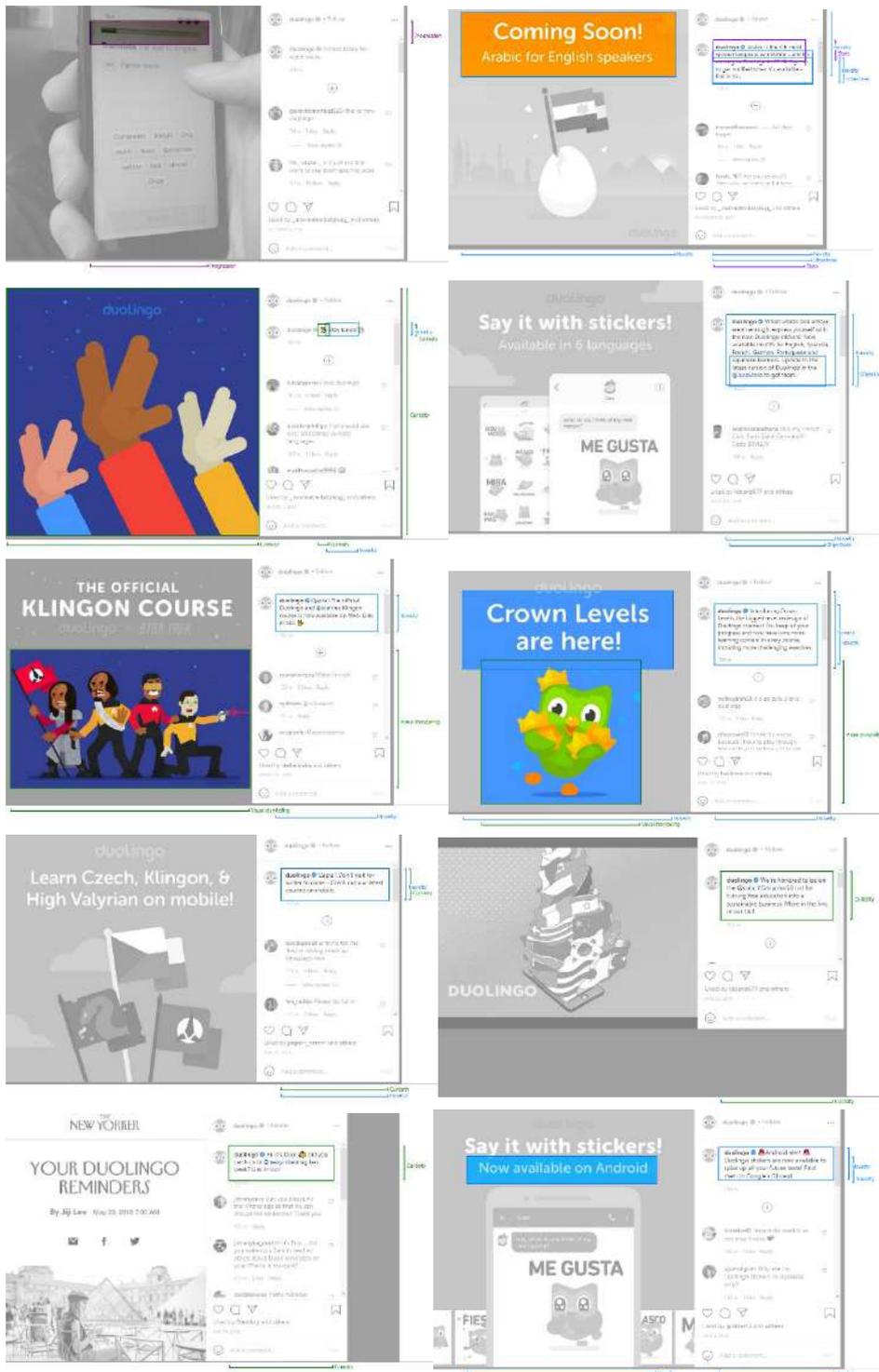




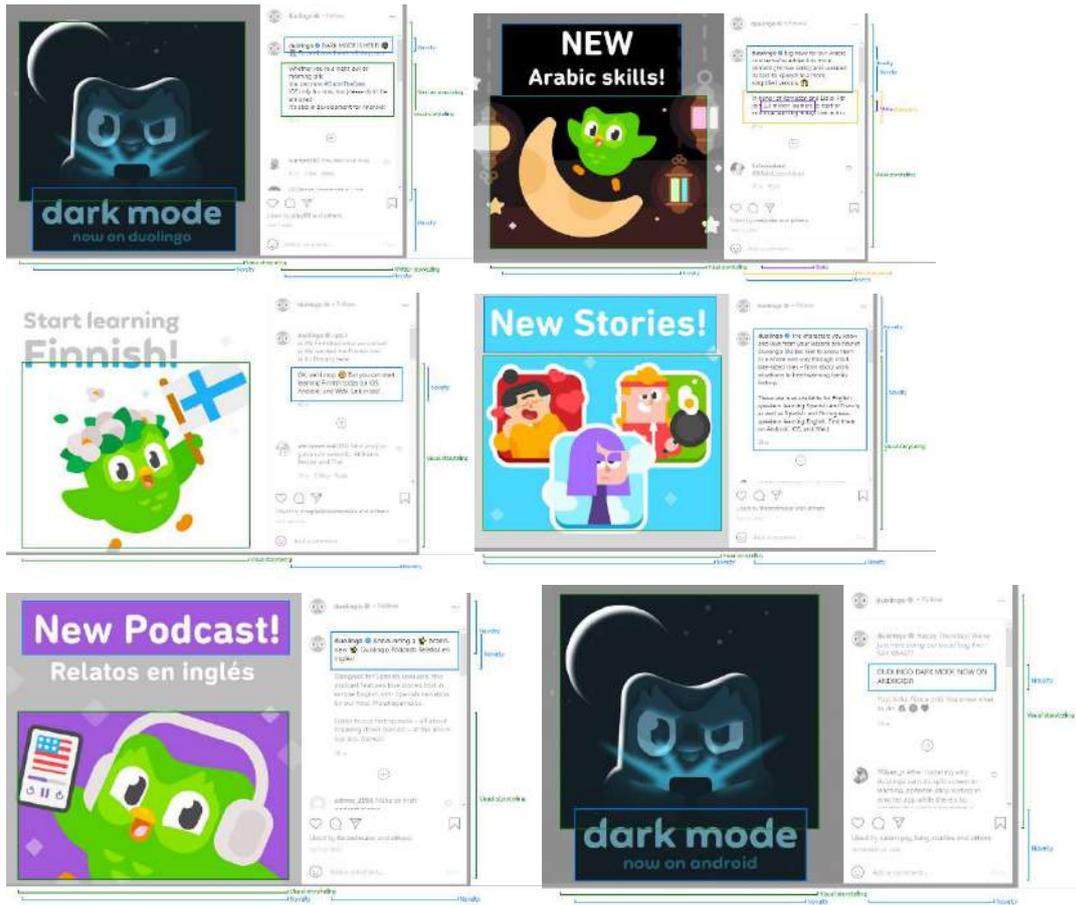
The image displays a series of 14 screenshots from a Twitter thread, arranged in two columns and seven rows. The thread is from Jules Darmanin (@JulesDarmanin) and discusses Duolingo owl memes and the cost of Spanish classes. The screenshots show the original tweet and subsequent replies, including a video of a man speaking and a 'coming soon' graphic for a Duolingo owl. The text in the screenshots includes:

- Original tweet: "i think my favorite anti-greta talking point is 'she should be in school!!' like buddy she's out there giving speeches in her second language at age 16 while you're a grown ass man living in constant fear of the duolingo owl"
- Reply 1: "Me at 15: Skipping free daily Spanish class at all costs. Me at 30: Spending \$6.99/month and two hours of my free time a day re-learning Spanish on @duolingo"
- Reply 2: "when I've upset the bird" (with a video of a man speaking)
- Reply 3: "You're the best!" (with a Duolingo owl meme)
- Reply 4: "coming soon" (with a Duolingo owl graphic)
- Reply 5: "Happy Halloween!" (with a Halloween-themed Duolingo owl graphic)
- Reply 6: "Happy Halloween!" (with another Halloween-themed Duolingo owl graphic)

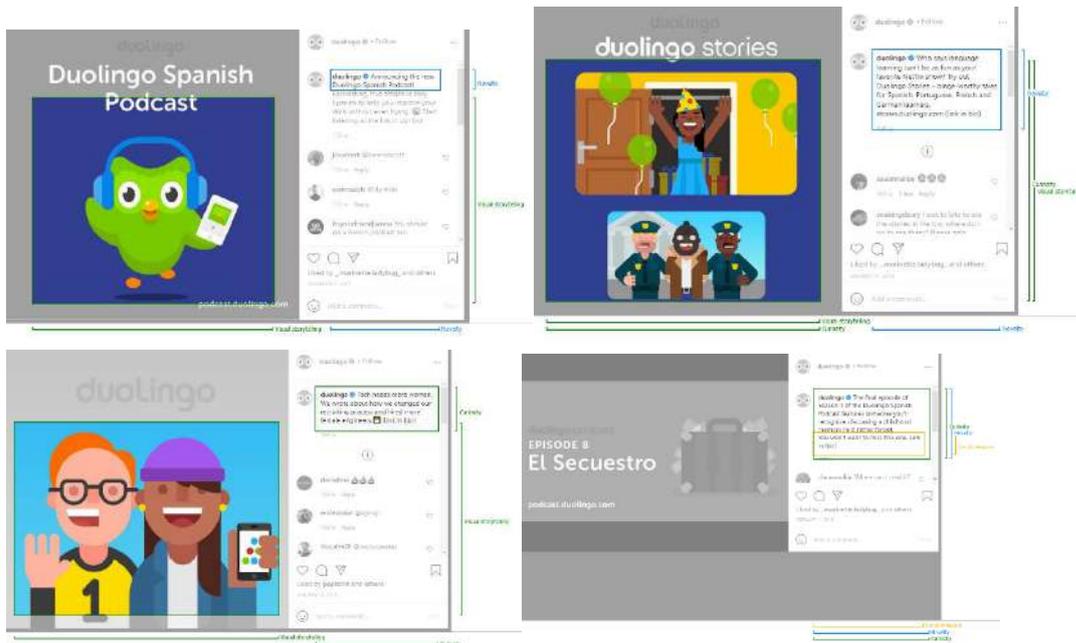
Functional brand posts

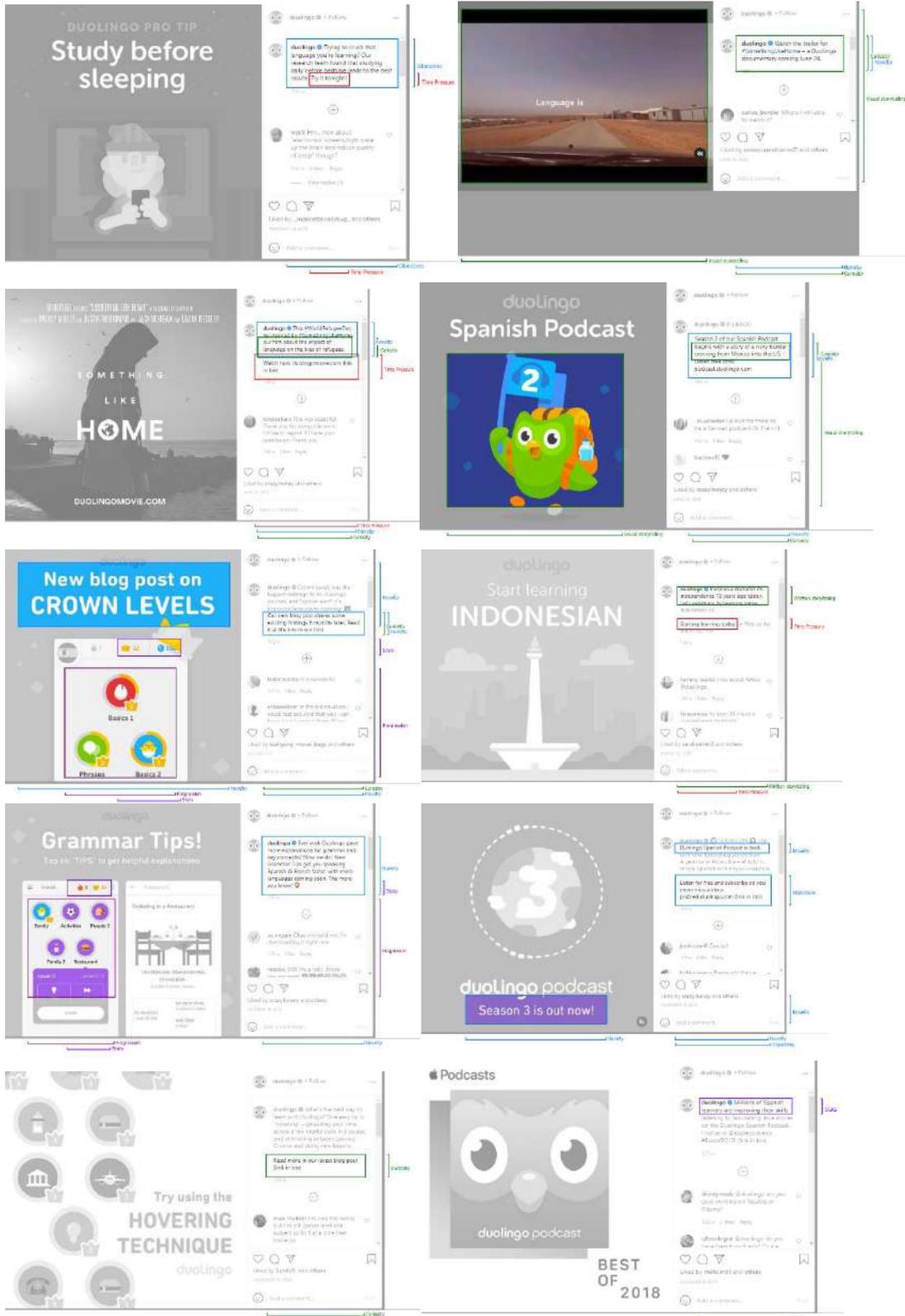






Educational brand posts





Translate this sentence
Let's build bridges, not walls.
Construyamos puentes, no muros.

100 BILLION WORDS TAUGHT!

Conoce a Marcela!
CEO de Hola Code

Announcing The Duolingo French Podcast!

SOMETHING LIKE HOME

¡Conoce a Tatiana!
Piloto de Fórmula 2

Stories now on iOS

Check out our progress for the year!

Découvrez le musicien Chassol!

What an amazing night for Korean film, culture, and language!

C.E.F.R.

Common European Framework of Reference for Languages

Describes language proficiency. Scroll for examples of the levels!

Some isolation tips

- give your day some structure. Make a schedule / timetable;
- learn / brush up on a language with @duolingo (finally sorting out my Hungarian!)
- do oddjobs around the house that you've been avoiding
- video calls w/ friends
- exercise!
- learn recipes

9:41
Tuesday, March 17

Hi, it's Duo. Just here to remind you to wash your hands with soap and water for at least 20 seconds.

make use of Tips!

Tip: Listen to music in your target language to improve your listening skills.

duolingo podcast

¡Conoce a Ana!

duolingo english test

La vida en los tiempos de coronavirus

Découvrez Fabien Cousteau!

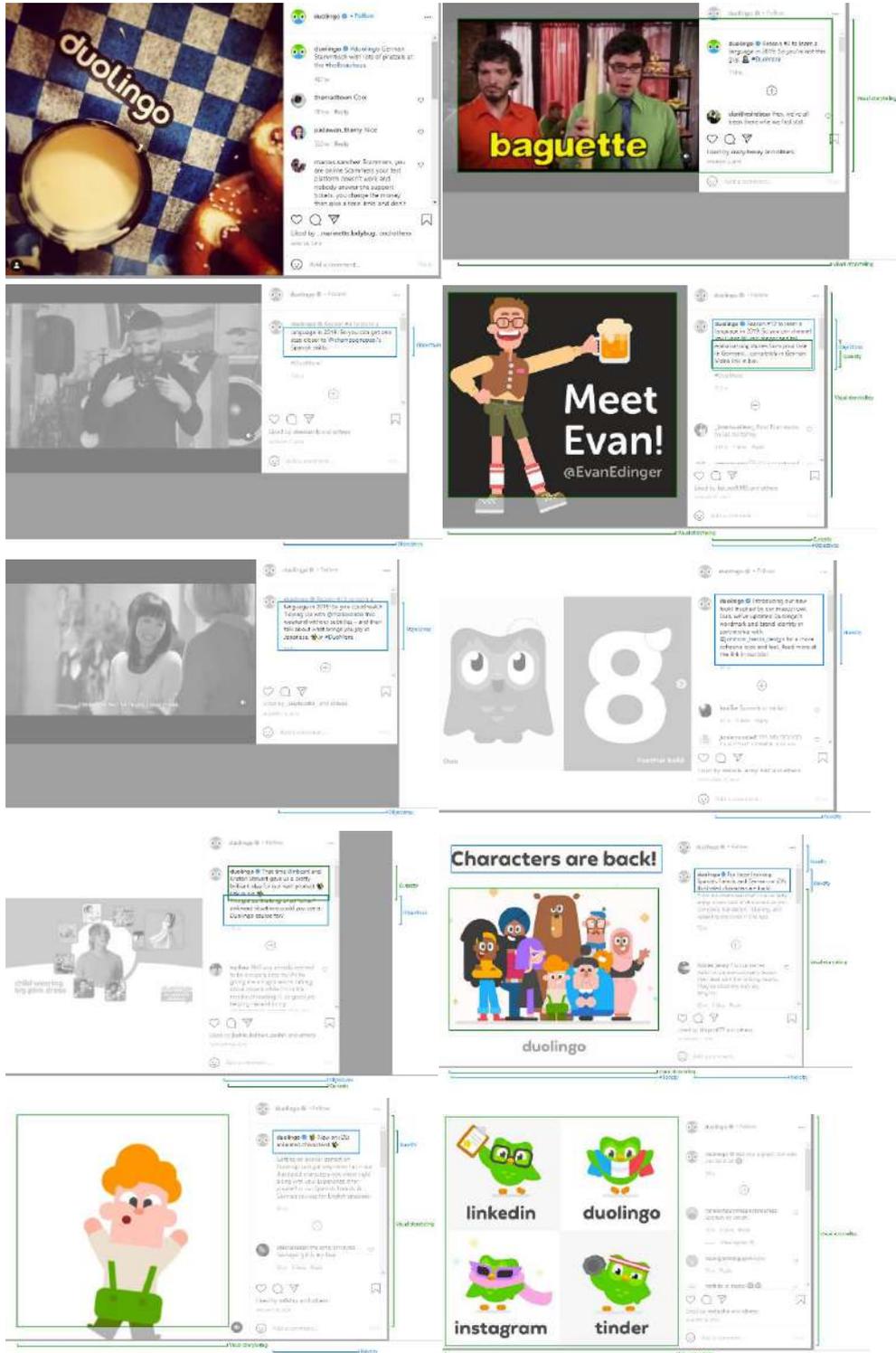
duolingo podcast

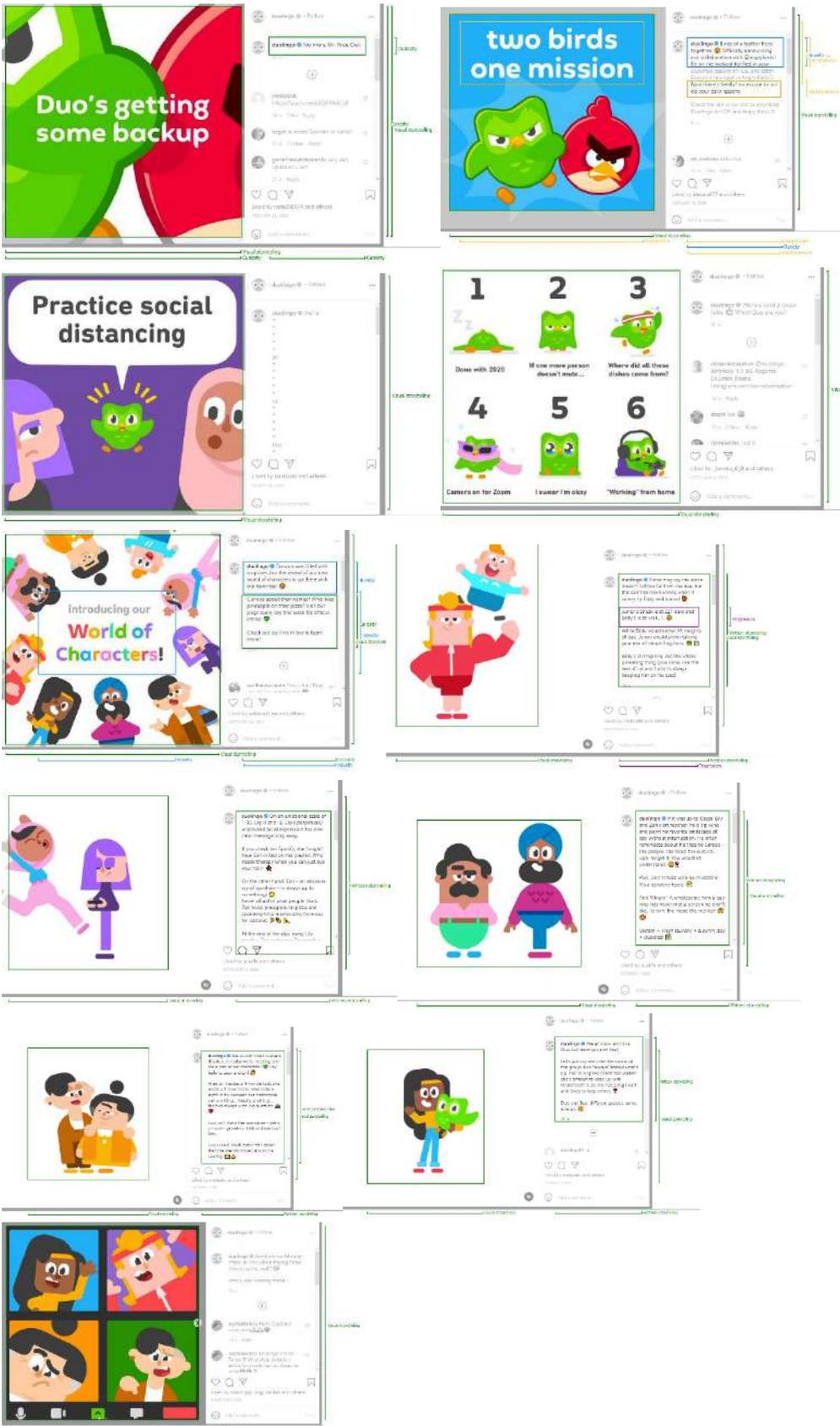
¡Conoce a Erlin!

duolingo podcast



Brand resonance posts





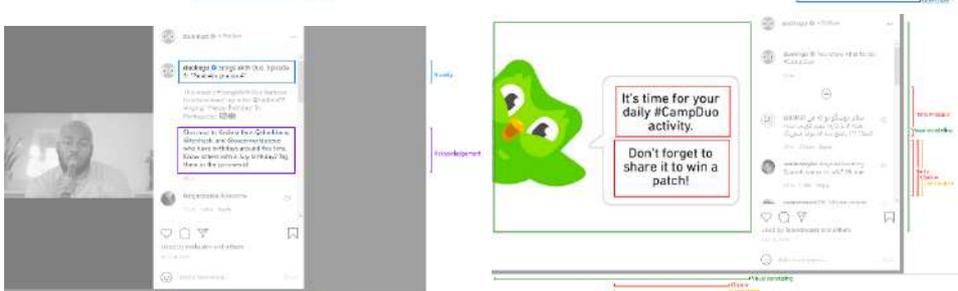
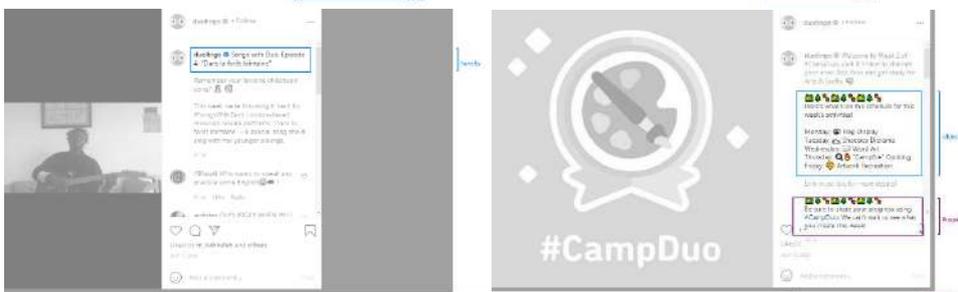
Experiential brand posts



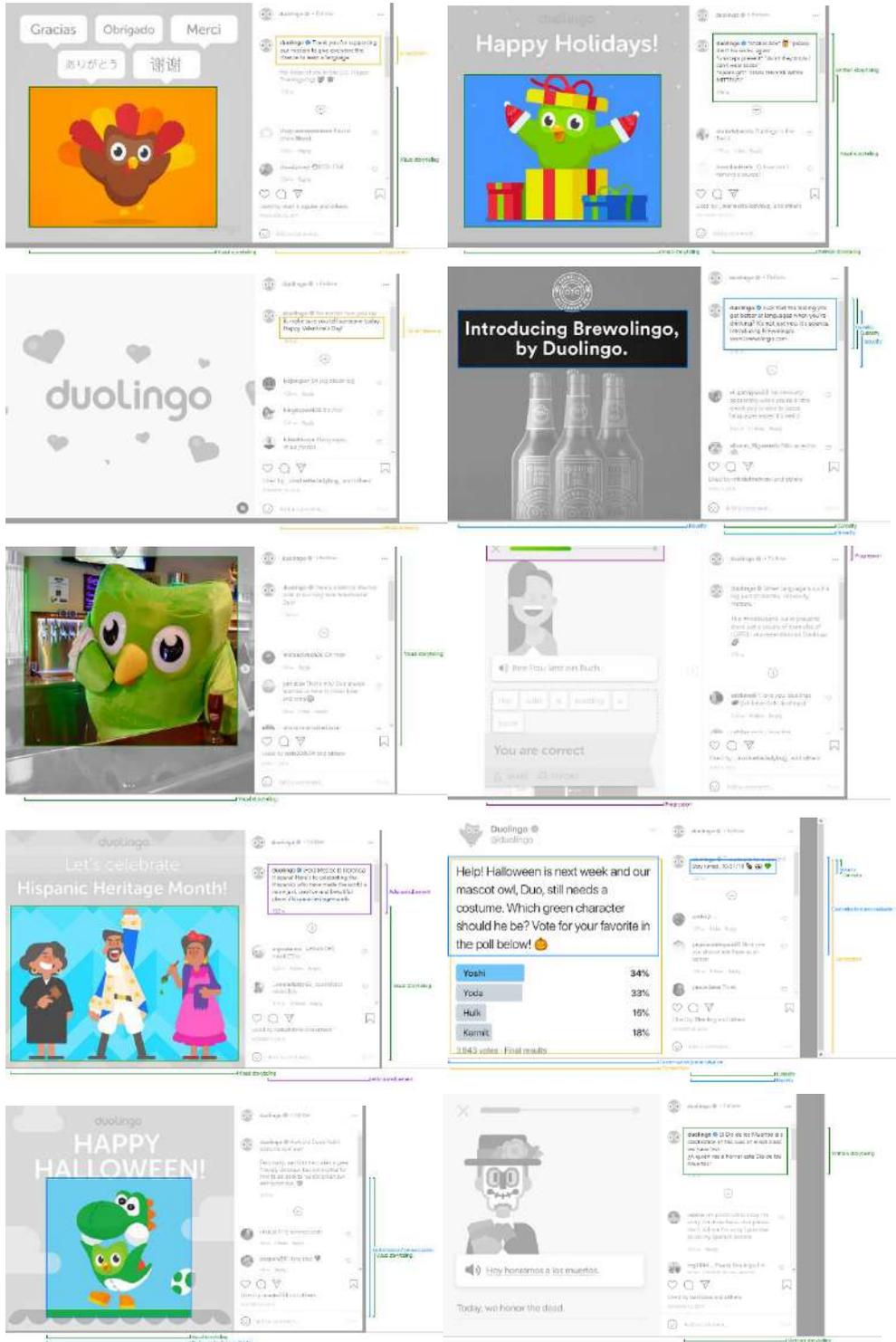
The image displays a grid of 12 social media posts from Duolingo, each featuring a different promotional graphic and text. The posts include:

- Post 1:** "Where are you going this summer?" with a cartoon frog on a pink inflatable.
- Post 2:** "GRACE HOPPER CELEBRATION" featuring a cartoon pilot and a green frog.
- Post 3:** "duocon" with a cartoon frog wearing a red and white outfit.
- Post 4:** "evening celebration co-sponsored by duolingo" with a cartoon pilot and a green frog.
- Post 5:** "The week of Duolingo" with a group of people holding signs.
- Post 6:** "act out a duolingo Story!" with a smartphone screen showing a story.
- Post 7:** "I DARE YOU duolingo sweepstakes" with a red box containing text about submitting a video.
- Post 8:** "songs with duo" with a dark background and a green frog.

Each post includes a main image, a text overlay, and a screenshot of a social media post with annotations. The annotations are color-coded: yellow for text, blue for links, and red for other elements. The posts are arranged in a 4x3 grid.



Current event brand posts



No matter which language you speak, if you're a US citizen, your vote matters. 🗳️
Tu voto es importante.
Votre vote compte.
Seu voto é importante.
投出宝贵一票。
In other words, VOTE.

HAPPY THANKSGIVING

duolingo

Learn a language in 2019!

How will you #DuoMore?

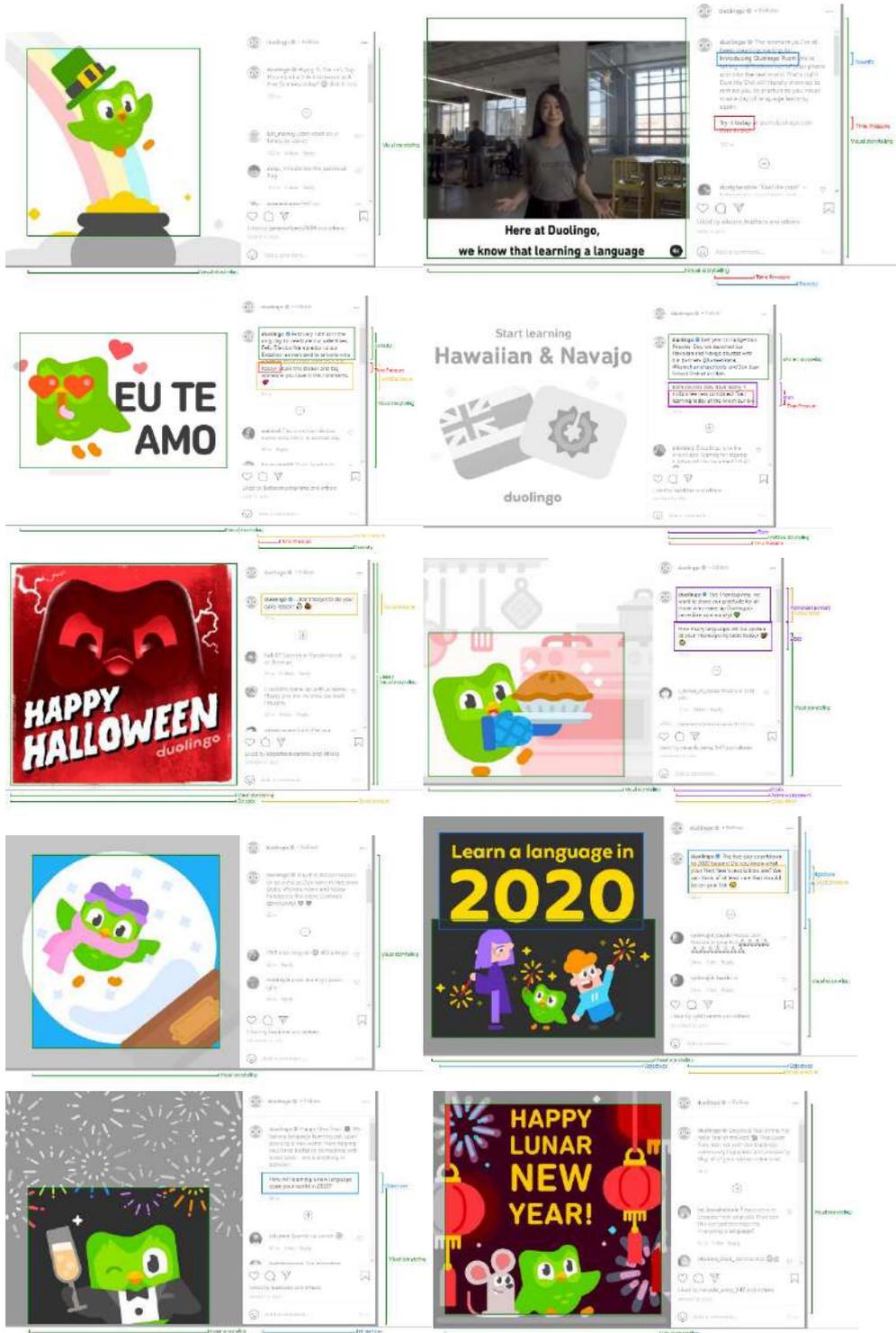
Superb Owl

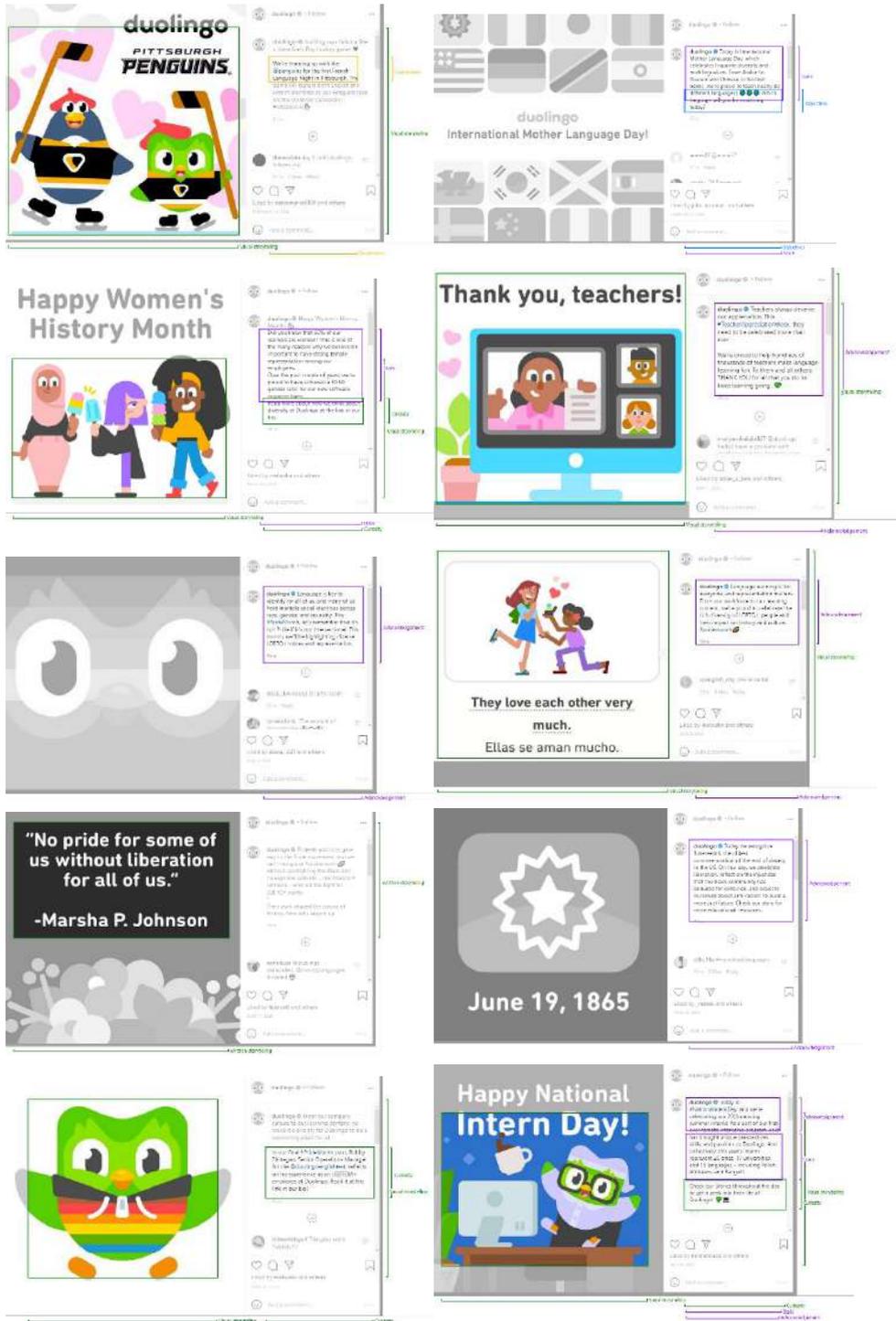
HAPPY LUNAR NEW YEAR!

duolingo

duolingo

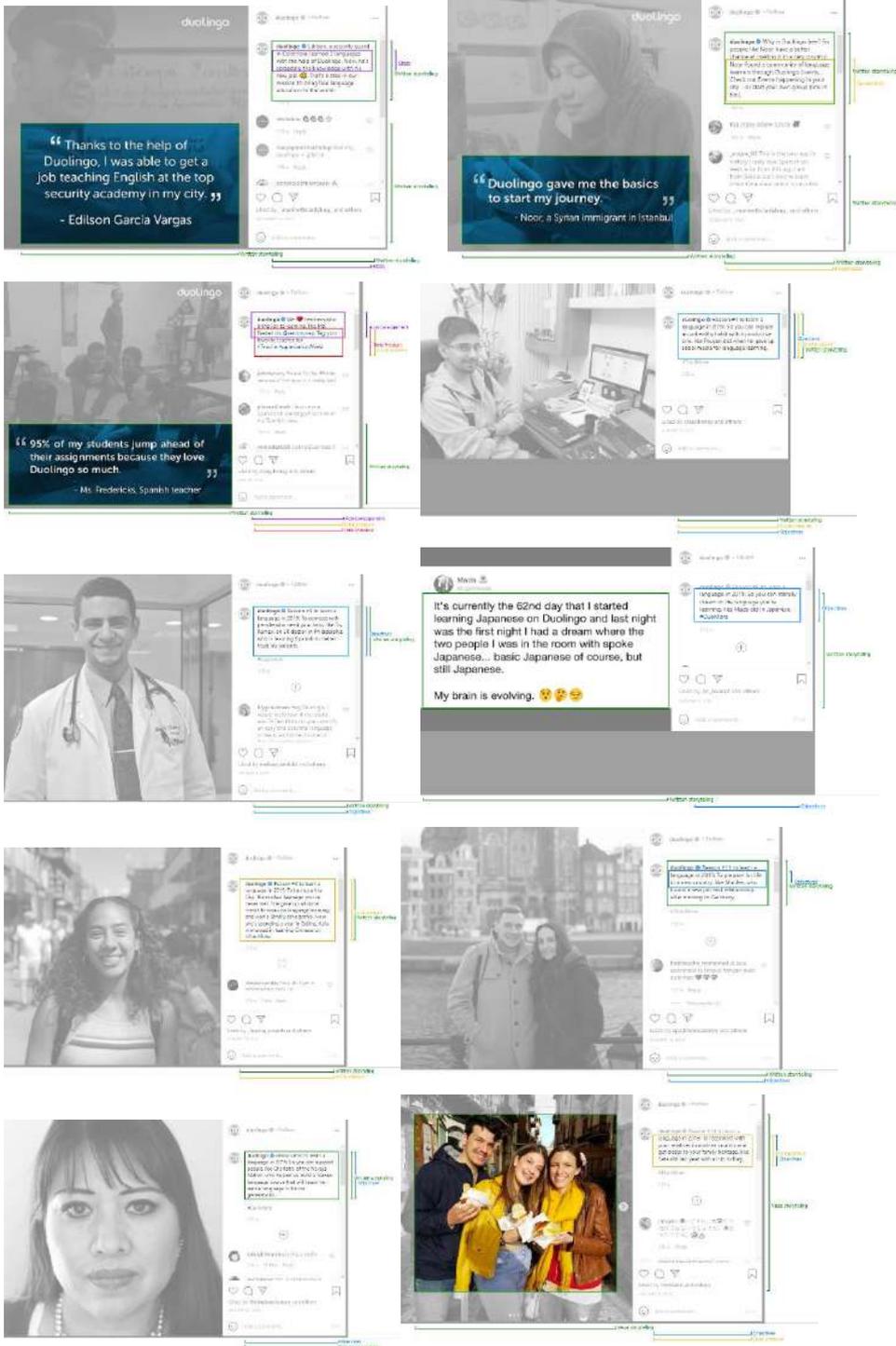
duolingo

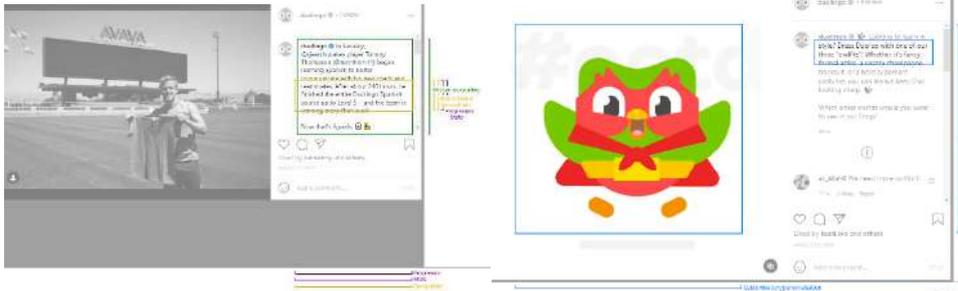
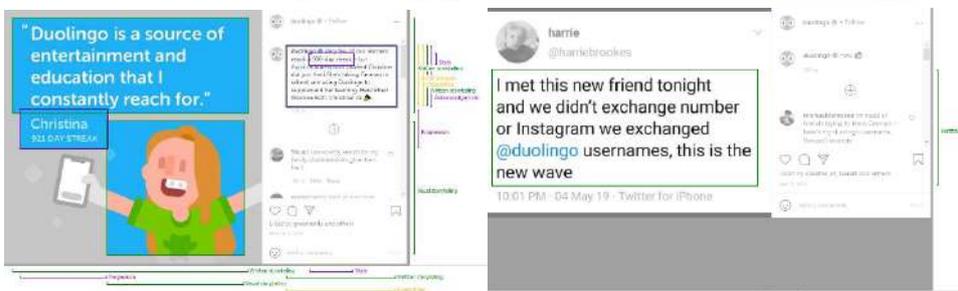
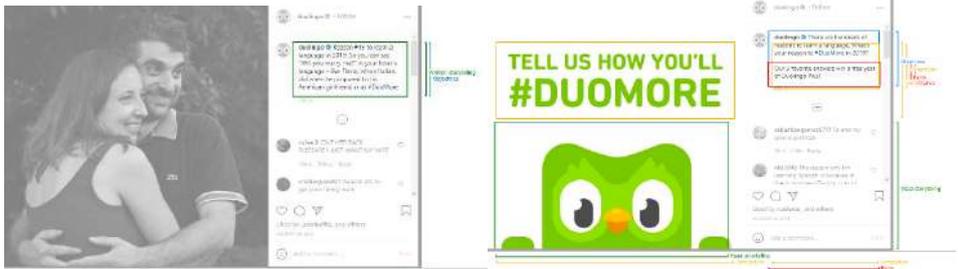


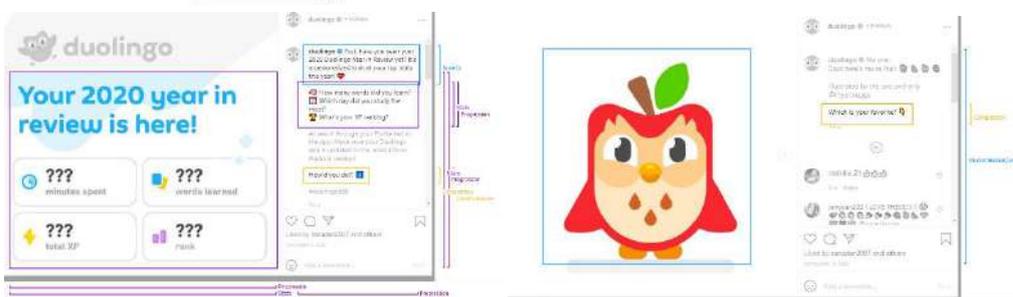
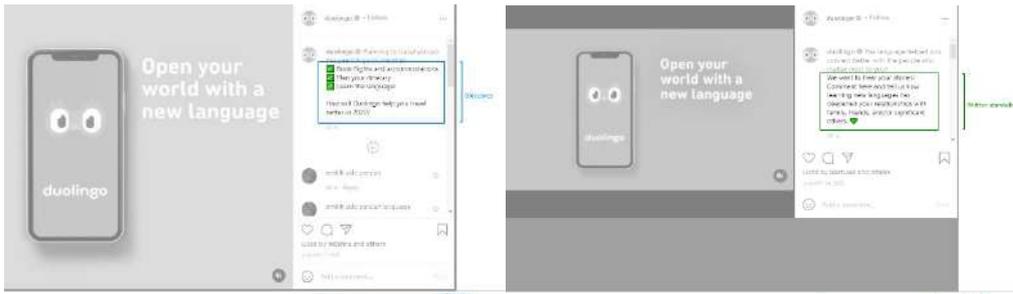




Personal brand posts

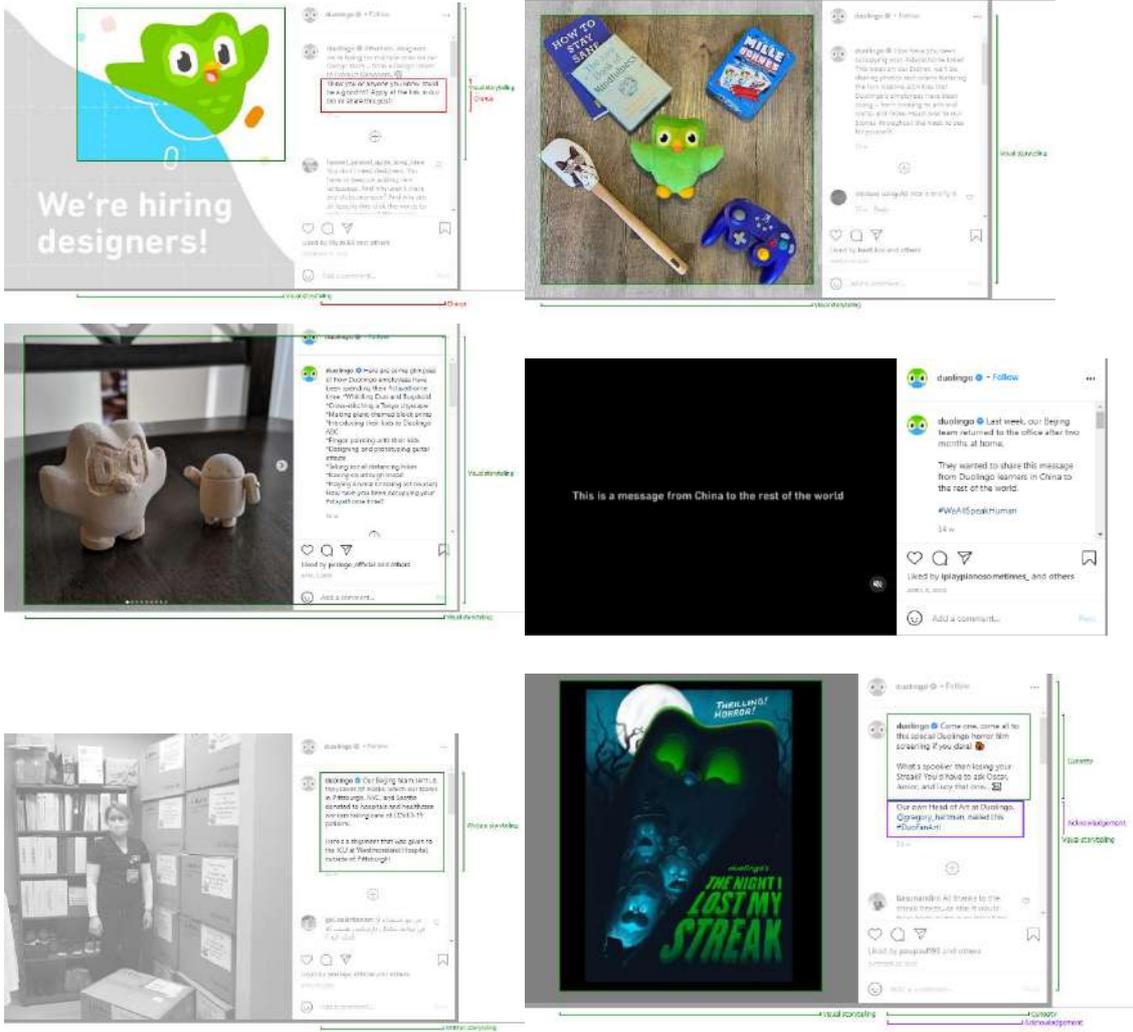






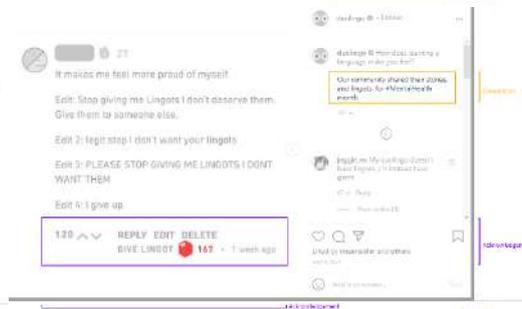
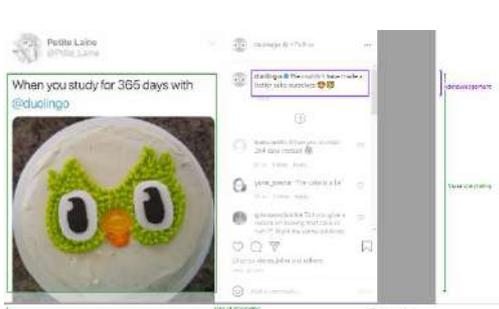
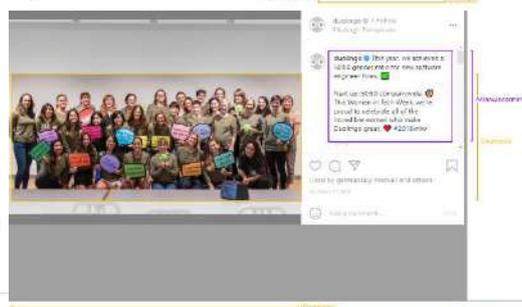
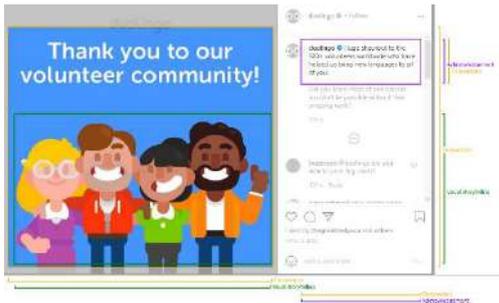
Employee brand posts

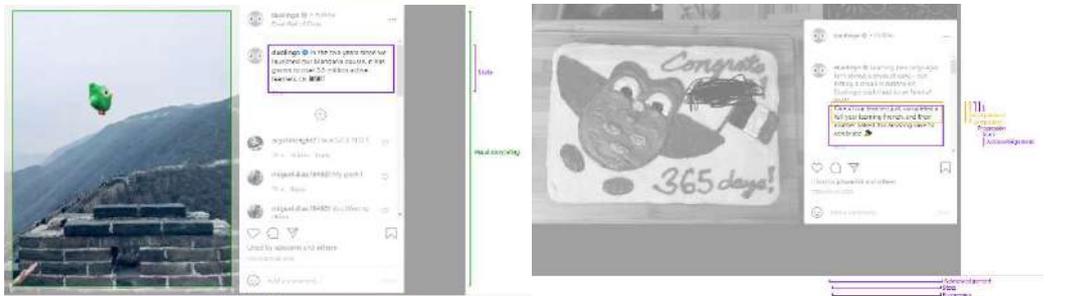
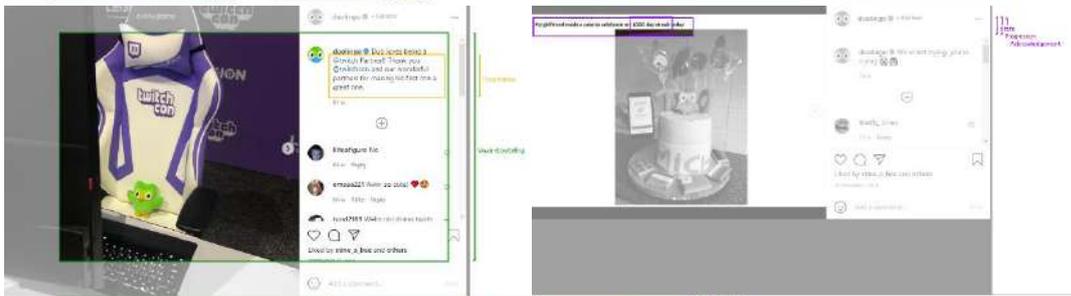
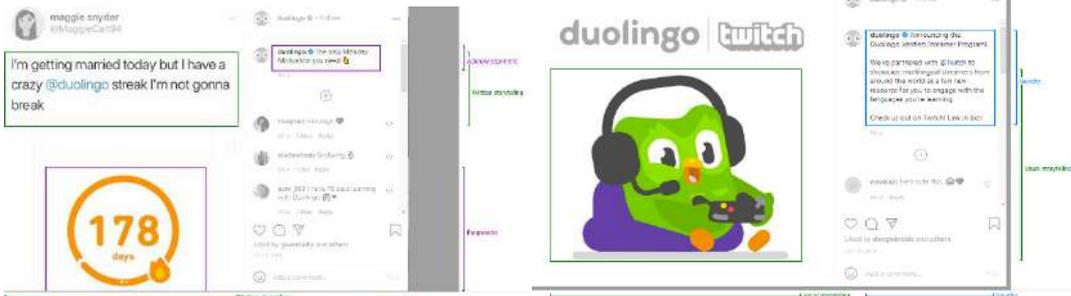
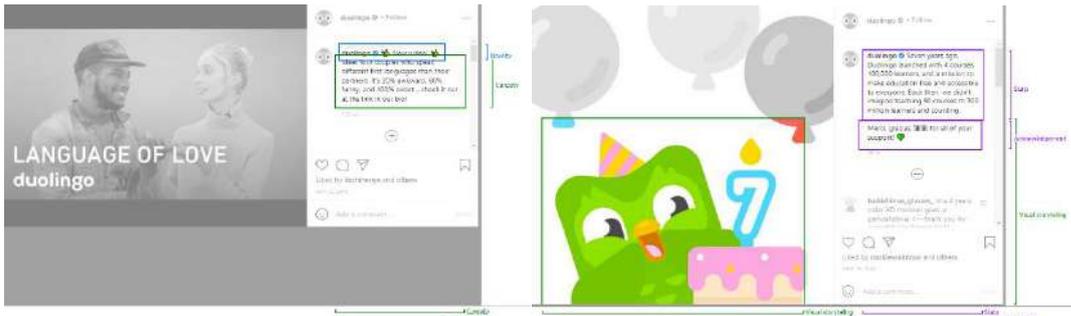


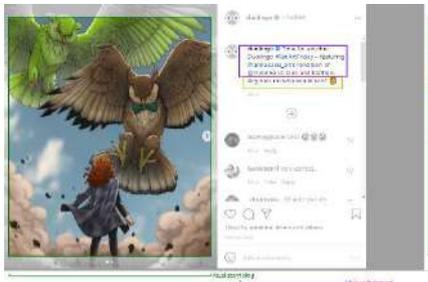
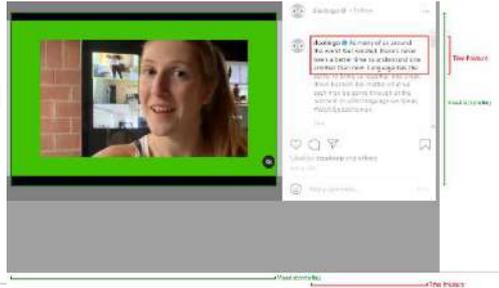


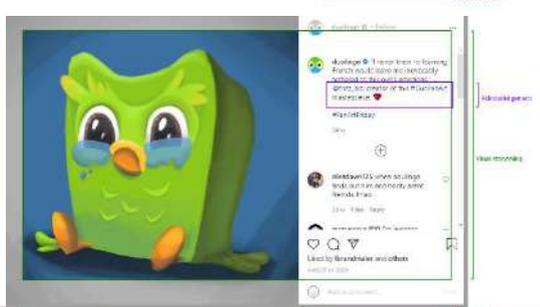
Brand community posts

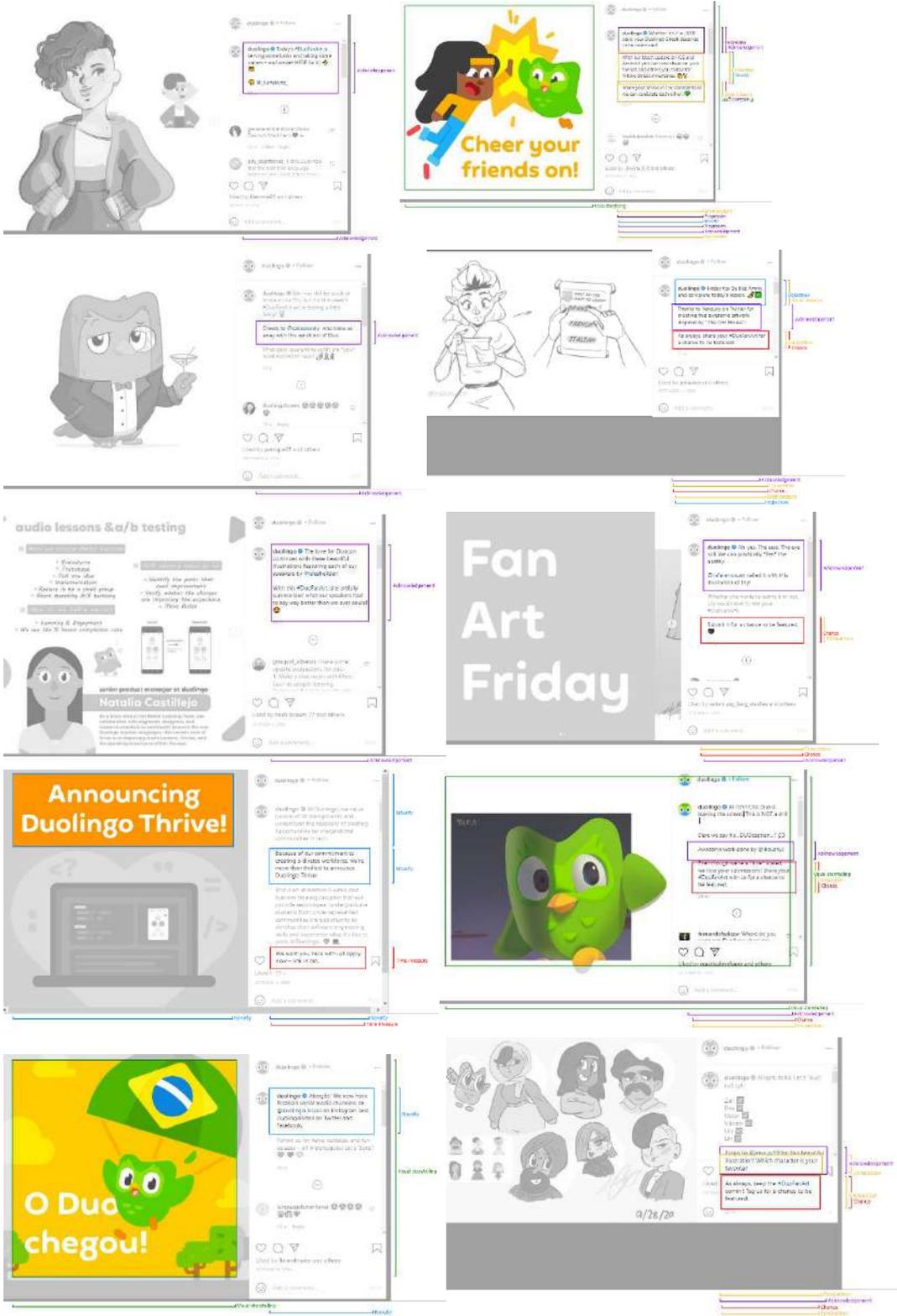














Instagram post featuring a 3D printed owl and a graphic celebrating 500 million downloads. The graphic shows a group of diverse people and the text "500 million downloads!". The post includes a caption and several comments.



Instagram post featuring a 3D printed owl inside a white frame. The post includes a caption and several comments.



Instagram post featuring a 3D printed owl inside a white frame. The post includes a caption and several comments.

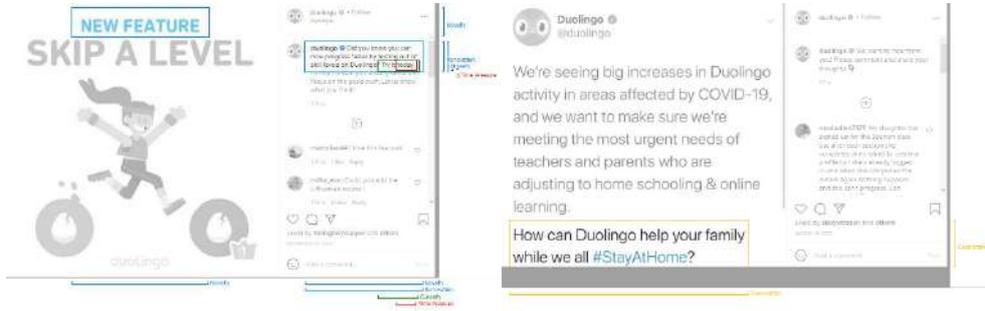


Instagram post featuring a 3D printed owl inside a white frame. The post includes a caption and several comments.



Instagram post featuring a 3D printed owl inside a white frame. The post includes a caption and several comments.

Customer relationship brand posts



Cause-related brand posts



Sales promotion brand posts

