Insta-Diversity

How Dutch universities communicate their diversity and inclusion on their Instagram accounts?

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Abstract

Purpose

In the modern academic landscape, universities are under increasing pressure to prioritize *diversity and inclusion (D&I)* due to a rising demand from both employees and students. To address this, the Netherlands ministry of education introduced a national action plan in 2020. To effectively respond to this demand, universities are urged to use their official websites and social media platforms, particularly Instagram, as tools for communicating their D&I initiatives. However, there is limited exploration of how social media affects the perceptions of D&I efforts among students and staff, making it a key focus of this study that examines Dutch universities' communication strategies and their impact on audience engagement.

Method

The study employed quantitative content analysis, where 557 Instagram posts from 8 Dutch universities' official pages were analyzed. The content was selected non-randomly, focusing on two distinct time frames related to the release of the national action plan for diversity and inclusion, and the analysis included various post formats such as single pictures, videos, and carousels, assessing the presence or absence of visual, textual, and auditory cues related to diversity and inclusion (D&I).

Results

It was observed that explicit strategies positively influenced the number of likes from the audience but had no discernible impact on the number of comments. Furthermore, specific D&I themes including gender, race and ethnicity, LGBTQIA+, disability, and diversity in general did not significantly affect audience engagement in general. Additionally, the findings demonstrate a 6% increase in the utilization of implicit communication strategies and a 4% increase in explicit strategies following the implementation of the action plan.

Conclusion

In order to promote diversity and inclusion (D&I) on Instagram, Dutch institutions have adopted a variety of communication strategies. Notably, explicit techniques had a beneficial effect on audience "likes" but no discernable effect on "comments. Diversity and inclusion (D&I) themes including gender, race and ethnicity, LGBTQIA+, disability, and diversity in general had little effect on

audience participation. This highlights the fluidity of D&I promotion through social media and the continual requirement for flexibility in establishing inclusive academic settings.

Keywords: Universities. Diversity. Inclusion. Instagram. engagement. interaction. gender. race. ethnicity. LGBTQIA+. disability.

1. Introduction

Universities are encouraged to provide and support a diverse, inclusive and safe learning and working environment that enables people to thrive, succeed and improve research and education standards across the entire field. This can prepare students for active involvement in a diverse society (Ali-Choudhury, Bennett, & Savani, 2009; LePeau, Hurtado, & Davis, 2018). For this reason, the Dutch ministry of education, culture, and science released an action plan in August 2020 (The Netherlands ministry of education, 2020) in which more incorporating diversity into current policies is recommended. In addition to the overarching goal of the plan, increasing diversity monitoring in educational institutions is emphasized in the action plan.

A number of studies have been conducted in recent years on the importance of diversity in students' perceptions of a university (Ali-Choudhury et al., 2009), on how campus educators from Academic Affairs and Student Affairs work together to textually communicate social justice, diversity, and inclusion through institutional websites (LePeau et al., 2018), as well as the impact of the type of visual content on the engagement of consumers in various sectors and topics (Dhanesh & Rahman, 2021; Jin, Ryu, & Muqaddam, 2021; Rietveld, van Dolen, Mazloom, & Worring, 2020). Therefore, to draw and keep a diverse student population and workforce, universities must successfully communicate their commitment to diversity and inclusion (D&I), both in real life and online platforms.

Prospective students' decision-making is significantly influenced by the visual portrayal of a university's brand (Ali-Choudhury et al., 2009), and in recent years, several organizations have realized how crucial it is to publicize their initiatives in various fields using social media platforms like Facebook and Instagram (Rietveld, et al., 2020). According to Statista (2022), the majority of students and teachers are in the 18–34 age bracket, which accounts for 61.9% of Instagram users (Education at a glance: OECD statistics, 2019). Furthermore, Instagram enables organizations, including academic institutions, to produce advertising and educational material utilizing both textual and visual modalities, enabling them to produce owned media and engage with their followers (Rietveld, et al., 2020; Ali-Choudhury et al., 2009). Consequently, Instagram provides universities with a visual medium to showcase their values and commitment to D&I, by highlighting the experiences of diverse students, staff, and faculty,

promoting events and initiatives, and sharing experiences that align with their D&I goals.

Although mentioned studies developed the structure of current research, there are no particular studies on the impact of D&I topics on social media visual content and how audiences interact with these sort of content. There are a number of benefits to researching the connection between audience engagement and social media material regarding D&I in higher education. First of all, it helps the educational institutions comprehend how to clearly express their dedication to D&I to prospective students, employees, and other stakeholders. This may make it easier to entice a more ethnically and racially diverse student body and staff, which may improve the general learning and working environment. Secondly, researching the link between audience engagement and social media content might help us understand how to better represent and portray different groups on social media. This can encourage a more inclusive and fair society by combating negative perceptions and prejudices. In addition, knowing the connection between audience engagement and social media content might also help the development of effective social media strategies for other institutions and organizations that are committed to promote D&I. This facilitates expand the beneficial effects of D&I initiatives and foster a society where different groups are more widely understood and accepted. Last but not least, since one of the goals of the national action plan was to widely monitor the state of diversity and inclusion in educational institutes, this study gives an overview of the effectiveness of the action plan on efforts that has been done by Dutch universities, to promote D&I on social media. To fill the research gap and to find the answer to the last-mentioned points, we proposed the following research question and sub-research questions:

RQ: To what extent and how do Dutch universities express their commitment to diversity and inclusion on Instagram?

Sub-RQ1: How did the National Action Plan impact the strategy and frequency of Instagram posts containing diversity and inclusion communication by Dutch universities?

Sub-RQ2: How do diversity and inclusion posts on Instagram relate to user engagement when employing various communication methods by Dutch universities?

2. Literature review and theoretical framework

2.1. Diversity and inclusion

Diversity in a group of people, according to the conventional view, refers to differences in their demographic traits, cultural identities, ethnicity, and levels of education and experience (Hong & Page, 2004). The conventional idea of diversity in a population relates to distinctions in a population's demographic characteristics, cultural identities, ethnicity, and degrees of education and experience (Hong & Page, 2004). In general, diversity is the inclusion of persons from various gender, gender identity, sexual orientation, ethnic, racial, and socioeconomic groups (Woreta et al., 2022; LePeau et al., 2018; Ali-Choudhury et al., 2009; van Rekom & van Riel, 2000). Inclusion refers to creating a welcome environment for all participants, regardless of their origins (LePeau et al. 2018).

Diversity and inclusion have a profound impact on identity creation within organizations. Research in this area emphasizes how diversity and inclusion efforts can shape the organizational identity (Dutton, Dukerich, & Harquail, 1994), foster a sense of belonging (Cox, 1993), and influence the perceptions of employees (Ellemers & Jetten, 2013) and external stakeholders (Maak & Pless, 2006). Dutton et al. (1994) assert that diversity may lead to a deeper and complicated corporate identity. Employees offer a wide range of viewpoints, experiences, and beliefs to different workplaces. By demonstrating the organization's dedication to inclusiveness and representation, diversity enhances its identity. Organizational identity which is built on diversity and inclusion also has external impacts. External stakeholders like clients, partners, and investors frequently view businesses that prioritize diversity and inclusion as being morally and socially responsible. This enhances people's perceptions of the company (Maak & Pless, 2006). In research by Ali-Choudhury et al. (2009), diversity of student body of a university is mentioned as one of the components of decision making by prospective students. This factor is mentioned as one of the key elements of a university's identity which contributes to creation of a university's brand.

In the context of diversity and identity, it's important to note that while identity-forming groups play a role in shaping an individual's identity, diversity, and exposure to various perspectives can significantly impact the development of one's identity. This influence goes beyond mere group membership, highlighting that exposure to diverse individuals and ideas can shape how people perceive themselves and others (Schelenz & Vondermaßen, 2021). In essence, diversity

contributes to the complexity of identity development, demonstrating that it is influenced by a wide range of factors, including interactions within diverse groups and exposure to different viewpoints and backgrounds. Numerous studies (Woreta et al., 2022; Tuor Sartore & Backes-Gellner, 2020; Khan, Korac-Kakabadse, Skouloudis, & Dimopoulos, 2019; Hong & Page, 2004) have discussed the advantages of diverse teams in many industries as well as the impact of diversity on their performance. For instance, Woreta et al. (2022) state in their recent study that members of a healthcare team are best able to tackle difficult problems and improve health outcomes for underrepresented groups when they bring a variety of life experiences and perspectives to the task. Another research by Hong & Page (2004) found that when creating a problem-solving team from a diverse population of intelligent agents, an agent team chosen at random outperformed an agent team composed of the best performers. The results of these research highlight the value of D&I in learning environments where students develop their problem-solving abilities while mastering difficulties unique to their field of study to better prepare them for participation in a global society (LePeau et al., 2018).

This makes it more clear why universities nowadays put a greater emphasis on providing a more diverse and inclusive environment. The Netherlands ministry of education's national action plan for greater diversity and inclusion in higher education and research (The Netherlands ministry of education, 2020) states that ensuring the diversity of people and the content of the research will improve the quality of education and research. Therefore, to enhance the quality of education and research, universities should prioritize creating diverse and secure environments and communicate their actions with their audience properly.

In the current research, D&I themes are defined by merging D&I components utilized by various research and action plans (Woreta, et al., 2022, Mkatini, 2022, The Netherlands ministry of education, 2020, Khan, et al., 2019). The themes contain gender, race and ethnicity, LGBTQIA+, disability and diversity general. In order to achieve justice and equal rights, gender equity places a strong emphasis on examining and comprehending how various genders are represented, given chances, and treated. Studying and analyzing how various racial and ethnic groups are portrayed in society as well as their experiences and difficulties is a key component of race and ethnicity inclusion. Investigating the different facets of gender, sex, and sexual orientation and examining how they interact and affect people's lives is referred to as LGBTQIA+ inclusion. In order to achieve disability equity, one must look at how people with disabilities are portrayed, included in

society, and what their lives are like. One must also recognize the opportunities and challenges that exist for accessibility and equality. Diversity general indicates a larger category that includes diversity's additional characteristics not specifically covered here. It could entail examining and comprehending variety in a range of contexts, not only the ones already listed.

2.2. Brand-generated content on Instagram

Social media includes a variety of web-based tools that make it easier for people and organizations to communicate and connect with audience with the use of text, photos, music, and video. In line with this, experts in the field increasingly adopt the term *content* to encompass the diverse multimedia elements, acknowledging that social media messages encompass not just text but also include images, audio, and video (Voorveld, 2019). Various studies have examined the advantages of using a mixed of visual-based and text-based content on social media (Rietveld et al., 2020; Dhanesh et al., 2022). Instagram gives a powerful tool to organizations to distributing visual brand-generated content (Dhanesh et al., 2022; Voorveld, 2019), a communication that is started with people by the company on its own social media accounts. Instagram is generally used by users in this sort of communication as a source of information and amusement, where they look to learn more about the company's goods, services, and general likeability. They might not, however, be devoted to actively creating content, leaving comments, or supporting the brand. This style of interaction is in line with the collectivist cultural orientation, in which users may value their connections to organizations and rely on social media for information, leading to their preference for information seeking and consuming activities (Rita Men & Tsai, 2013).

Brand-generated content has been identified as a technique that increase audience engagement and income (Mendini, Peter, and Maione, 2022). The income of brand-generated content is distinct from the income of commercials. Contrary to commercials, brand-generated visual content does not activate coping mechanisms. In contrast to the latter, which has a tendency to repeat itself, it also offers a wider range of information (Rietveld et al, 2020). By connecting people, giving them a voice, and magnifying dialogues around shared interests, brand-generated content causes the organization's conventional target audiences to become "activated" (Badea, 2014). These kinds of activating content that are focused on being informative, attractive, multimedia-rich (Rita Men & Tsai, 2013), are also mentioned as a tool that may be used to encourage stakeholder engagement and

behavior change (Van Der Heide & Lim, 2016; Thomas et al., 2020). Additionally, they have a significant influence on organizational culture consolidation, value promotion, and community development (Badea, 2014).

2.3. Public engagement on Instagram

Instagram as a visual-based social media channel is becoming one of the most popular ways to send and receive messages. The interactions of stakeholders on Instagram is referred to as engagement, and it is described as a range of actions from passive message intake to active participation (Dhanesh et al., 2022). A company's image and reputation are now primarily determined by the active participation of people linked through social media. Social media have revolutionized how brand-generated content is created, delivered, and consumed (Rita Men & Tsai, 2013). Brand awareness and finacial return are significantly impacted by public engagement, one of the most often used terminology in public relations research (Rietveld et al., 2020). Public engagement refers to interactions with diverse publics via social media and encompasses a variety of stakeholders who connect with an organization's social media accounts (Dhanesh et al, 2022).

The two essential areas of public engagement study are user-generated content and first-level engagement metrics such as clicks, likes, views, shares, comments, tweets, and reviews (Dhanesh et al., 2022). Instagram likes and comments are regarded as crucial assessment metrics since they show how people interact with contents (Dhanesh et al., 2022) and with eachother (Rita Men & Tsai, 2013), in addition to increasing the account reach by new audience (Casaló, Flavián, & Ibáñez-Sánchez, 2021)

2.4. D&I representation of universities on Instagram

The extensive usage of social media platforms that favor visual material over word, such as Instagram, has boosted the production and consumption of photos on social media. This has caused people to get more accustomed to seeing things visually (Dhanesh & Rahman, 2021). Accodring to a research by Ali-Choudhury et al. (2009), prospective students are significantly influenced by the visual representations of a university's brand (advertising, photography, logo, etc.). The majority of people who participated in the research talked about the connection between diverse visual representations and possible uses for the universities to prevent the appearance that educational quality has been compromised. That is the reason why universities are realizing the importance of using visual content to interact with younger audiences about an specific topic.

In April 2022, around 62% of Instagram users globally were between the ages of 18 and 34 (Statista, 2022). However, just 8% of students in the Netherlands, the study's target country, were over 30, and a greater percentage of teachers than average was expected to be in the 25–34 age group, according to education at a glance 2021: OECD indicators (2019). We assert that the majority of Dutch university-generated social media material consumers are under the age of 35 based on these data points.

Therefore, universities will reach a bigger audience, including potential students, and develop a community of allies and supporters by promoting D&I and their work on that as a value through brand-generated visual content on Instagram. Universities may also get comments and ideas on how to strengthen their D&I activities and boost audience engagement by actively engaging with their followers on social media.

Due to the national action plan for greater diversity and inclusion (the Netherlands ministry of education, 2020), monitoring D&I and providing a direction for communication strategy regarding D&I in universities is required. Therefore, one of our focus areas is on the function of Dutch universities on D&I efforts before and after this action plan. Hence, we formulated our first hypothesis as bellow:

H1: "The implementation of D&I action plan is expected to have a positive effect on the frequency of Instagram posts containing explicit diversity and inclusion communication by Dutch universities."

However, because Instagram is one of the most popular platforms among the younger generation, we decided to analyze it to see the effect of Dutch universities' D&I communication strategies on audience engagement. To assess the level of engagement, we concentrated on the two most significant first-level interaction metrics from public engagement on social media, comments and likes, which were used by Dhanesh & Rahman (2021), because these metrics are largely used to assess users' communicative activities in corporate social media communication. Hence, our second hypothesis is formulated as bellow:

H2: "The level of audience engagement (i.e., number of likes and comments) in Instagram posts containing explicit diversity and inclusion communication is higher than those do not communicate it explicitly.

3. Methodology

This chapter provides an in-depth exploration of the research design, sample selection process, and the creation of the codebook. Additionally, we present the final codebook and appendices containing guidelines. The chapter concludes with the presentation of the intercoder reliability test results, which establish the study's reliability.

3.1 Research design

There are two key sections to this study. The first section evaluates how Dutch universities' Instagram pages D&I communication strategies are affected by the national action plan for greater diversity and inclusion in higher education and research, as outlined by the Netherlands ministry of education in 2020. The second section is to comprehend how these strategies affect the audience engagement with the content.

To address the sub-research questions pertaining to these two components, we conducted a quantitative content analysis. This method involves the systematic categorization and documentation of visual, textual, or aural materials for subsequent analysis. Bell (2004) defines visual content analysis as an observable and systematic approach for evaluating hypotheses regarding how the media represents people, events, circumstances, and other elements. It enables the assessment of observable content samples categorized into various groups.

Because diversity and inclusion measures are ongoing, as noted in the national action plan, we chose Dutch universities as the subject of our data collecting and analysis. In addition, the Netherlands is relatively new to this field when compared to countries like the United Kingdom, Ireland, Germany, and Norway. The action plan places emphasis on the necessity of monitoring progress in order to fulfill its goals.

3.2 Corpus

For this study, we conducted a visual communication content analysis, drawing on the methodologies detailed by Bell (2004) and Dhanesh et al. (2022). To align with our research objectives, we employed purposive non-random sampling for university selection and systematic non-random sampling for post selection. This selection approach was chosen to enable statistical inference, as justified by Dhanesh et al. (2022) and Bell (2004).

In the first stage, we selected eight universities that actively promoted the national action plan via their websites or other D&I actions. To provide a more in-depth analysis of the distinctions between the two categories of universities, we separated universities into "technical" and "non-technical". The University of Twente, Delft University of technology, Wageningen University & research, and Eindhoven University of technology were among the four prominent technical universities on the list. The remaining four universities were categorized as non-technical universities; these were the University of Groningen, University of Maastricht, University of Amsterdam, and University of Utrecht. We collected data from the official Instagram accounts of these universities.

In the subsequent stage, we collected all types of posts, encompassing single pictures, carousels, and videos, shared on the official Instagram pages of the selected universities (N = 575). The data was gathered before and after the National Action Plan's publication, across two separate time frames. The first time frame was two months long, running from September 5 to October 31, 2019, and the second timeframe was two month long, running from September 5 to October 31, 2022.

The national action plan's publishing date, the first of September 2020, served as the basis for choosing these time frames. To establish the first time frame, we looked back to September 5, 2019, exactly one year before the plan's publication. For the second time frame, we considered the impact of COVID-19 on the practical actions of university social media teams during 2020 and 2021. Given the likelihood that universities did not have a well-defined strategy for communicating diversity and inclusion during these years, we opted for the year 2022 as the second time frame. This choice allowed us to effectively assess our first hypothesis and address the first sub-question. Bellow you can see an overview of the time frames and Covid-19 lockdowns in the Netherlands.
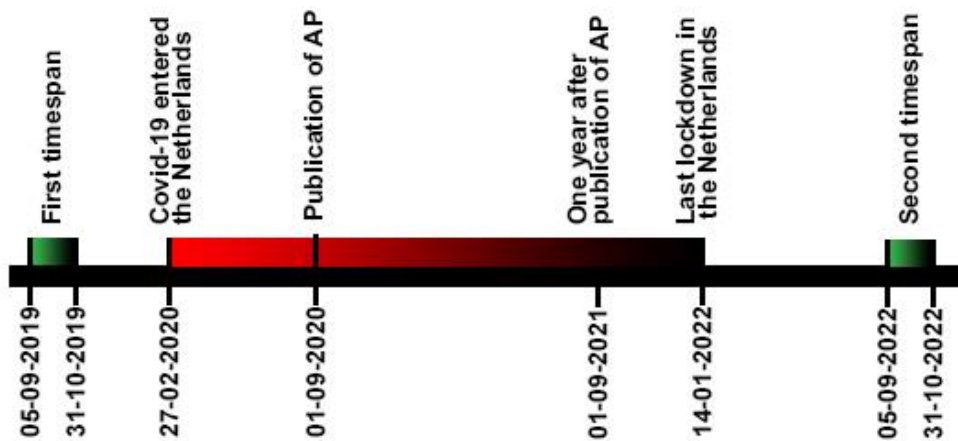
Figure 1. The timeline of choosing time frames according to publication of action plan

The choice of two-month periods aligns with the academic calendar followed by Dutch universities, which adheres to the European Credit Transfer and accumulation System (ECTS). Notably, the academic year typically commences on September 5 and concludes the first quarter on October 30. It's worth mentioning that some universities exclude the exam week from this period, while others include it. However, these variations do not significantly impact the research outcomes. This standardized period offers valuable insights for evaluating our research hypotheses.

A total of 575 posts were collected during the initial data collection process. However, after a careful review, we decided to exclude one post (a single picture) from Delft University. This decision was made due to the post's Dutch caption, which we considered inconsistent with the overall scope of the study. The inconsistency could potentially affect the level of engagement, particularly among non-Dutch-speaking students and staff. Therefore, this post was removed from the dataset. After finding notable outlier we decided to remove them to get a more consistent result. Consequently, our final sample consisted of 557 posts.

Appendix A is provided for more comprehensive information about the universities' Instagram accounts and the number of posts shared during the two specified time frames.

3.3 Coding scheme

During creation of codebook, we used both deductive and inductive codes as there were not any codebooks in literature to fit the scope of this research. We did a pretest of sample posts (N=120) from four sample universities, Wageningen university of research, university of Twente, university of Amsterdam, and university of Groningen to complete and define codes. The sample of 575 posts contained the posts in the test sample.

At the beginning, we coded type of content with an inductive approach based on types of content presented on Instagram. Then we coded D&I themes with a deductive approach based on the affiliations between the research by Woreta, et al (2022), the action plan by DE&I team (2022), the Netherlands ministry of education, (2020), and Khan, et al. (2019). The contents included three D&I communication strategies. While some of them included an explicit reference (Bell, 2004) in the caption, text, or audio, others chose to express the D&I topics in visual form implicitly (Bell, 2004). The third method combined the two approaches.

After the pretest of the test sample, a codebook was developed to determine the clues of diversity and inclusion in each post and measure the type of D&I communication in the post. The final codebook was a detailed table with definitions for each D&I theme. In addition, a structured dataset in excel was provided to do the coding and a flow chart was designed to assist the main coder and the intercoder going through the dataset from the first question to the conclusion about communication strategy for each post.

In the excel sheet, coders could answer to simplified questions regarding our categories by checking squares. The flow chart and an overview of final codebook including metrics for each D&I theme can be seen in Appendix B and Appendix C. An overview of titles for final dataset can be found in the table 1.

Table 1

Overview of titles for final dataset

Category	Question regarding the code	Codes
Type of content	What type of content is this post?	Single pic, carousel, video
Human figures in content	Does The visual content contain human figures?	Yes, no
Implicit	Does at least one of the human figures fit in at least one of diversity themes? (Mark one or more)	Gender, race and ethnicity, LGBTQIA+, disability
Explicit	Is there a text (caption or in visual) AND/OR symbols about at least one of the themes? (Mark one or more)	Gender, race and ethnicity, LGBTQIA+, disability, diversity general
Conclusion of predominant D&I communication strategy	Mark the circle that you ended up in the flow chart (just one)	Explicit, implicit, no D&I

Note: this table demonstrates the elements of a prototypical table

D&I theme, diversity general as a code was present just in explicit communication category since it was present just in text and/or using symbols. Otherwise, all D&I human figures could fit in one of the defined themes.

To conclude the predominant communication strategy, for the posts that contained both implicit and explicit content, we prioritized direct (explicit) communication over indirect (implicit) communication.

3.4 Intercoder reliability

Following the preparation of the codebook, the raw dataset, and the flowchart, the coding process was initiated with the assistance of a second coder, who examined a random test sample (N=57) representing 10% of the total number of posts. An in-person meeting was conducted to facilitate this process, during

which the primary researcher provided the necessary files and explained their content to the second coder. This meeting allowed for a discussion of any questions or concerns related to the files, the codebook, and the coding process.

Cohen's kappa was calculated to determine the level of agreement between the two coders, particularly for the categories implicit, explicit, and final communication strategy. The results indicated a substantial strength of agreement for the "implicit" category (K=0.84). Notably, the "implicit" type of content related to D&I posts achieved total agreement (K=1), while the "explicit" type exhibited a relatively lower agreement level (K=0.26).

Upon conducting a discussion between the researcher and the second coder, the source of disagreement in the "explicit" content category was identified. It was revealed that the second coder had not considered specific terms, such as "culture" and "international students" mentioned in captions of four posts. These terms had been coded into the "race and ethnicity" theme (N=6 in the test sample, including the four missed posts by the second coder) by the first coder, consistent with the codebook.

After this discussion, the second coder recognized the rationale behind this coding, and both coders reached a consensus on the coding, resolving the initial disagreement.

4.   Results

The findings of the content analysis are presented in three primary sections in this chapter. For each D&I theme under examination, we presented examples of explicit and implicit communication in the first section. The second section focuses on how frequently universities used D&I communication strategies both before and after the national action plan's implementation. The central theme of the third part is an analysis of how D&I communication strategies impact audience engagement. Subsequently, we expand this analysis to gain a better understanding of each D&I theme and to compare audience engagement levels across these themes.

In our dataset, we incorporated several variables, including the number of followers for each university, the date of the post, the type of content (single picture, carousel, video), the number of likes for each post, the number of comments for each post, and links to the individual posts for reference. To assess audience engagement, we computed the like and comment ratios, accounting for the number of followers for each university's page. This factor plays a crucial role in influencing audience engagement rates, and these ratios were calculated using the following formulas in SPSS:

Like ratio: (Number of likes / Number of followers) x 1000

Comment ratio: (Number of comments / Number of followers) x 10000

4.1 Examples of D&I communication strategies for D&I themes

Three D&I communication techniques were visible in the contents. While some of them contained an explicit reference (Bell, 2004) in the caption, text, or audio, others opted to represent the D&I issues implicitly (Bell, 2004) in the visual form. The third strategy brought the two strategies together. We gave explicit communication a higher priority than implicit communication for the postings that had both implicit and explicit communication to sum up the dominating communication approach.

According to Bell (2004), making generalizations about the relative frequency of visual representations of specific classes of people, actions, roles, situations, or events involves implicit or explicit classification and quantification of media-circulated content, whether or not it is explicitly referred to as content analysis. This idea is additionally referred to as evaluating the "manifest content" of a text or image.

As an example, we showed the representation of gender theme in figure 2. The first picture shows a woman in a lab with a laboratory uniform (Eindhoven

University of technology, 2019) as a metrics to recognize the precence of implicit communication. In another content we see that one of the women is explicitly mentioned as a leader (University of Utrecht, 2019).

Figure 2. Examples of D&I gender theme in the main study (Eindhoven University of technology, 2019; University of Utrecht, 2019)

In figure 3, the race and ethnicity theme is presented with students from different races to communicate about race and ethnicity in an implicit way (university of Amsterdam , 2019). It should be noted that this theme is not mentioned in the caption. In the other content (Delft university of technology, 2019)

we see race and ethnicity is communicated explicitly by presenting countries flags in addition to the hashtag related to international students.
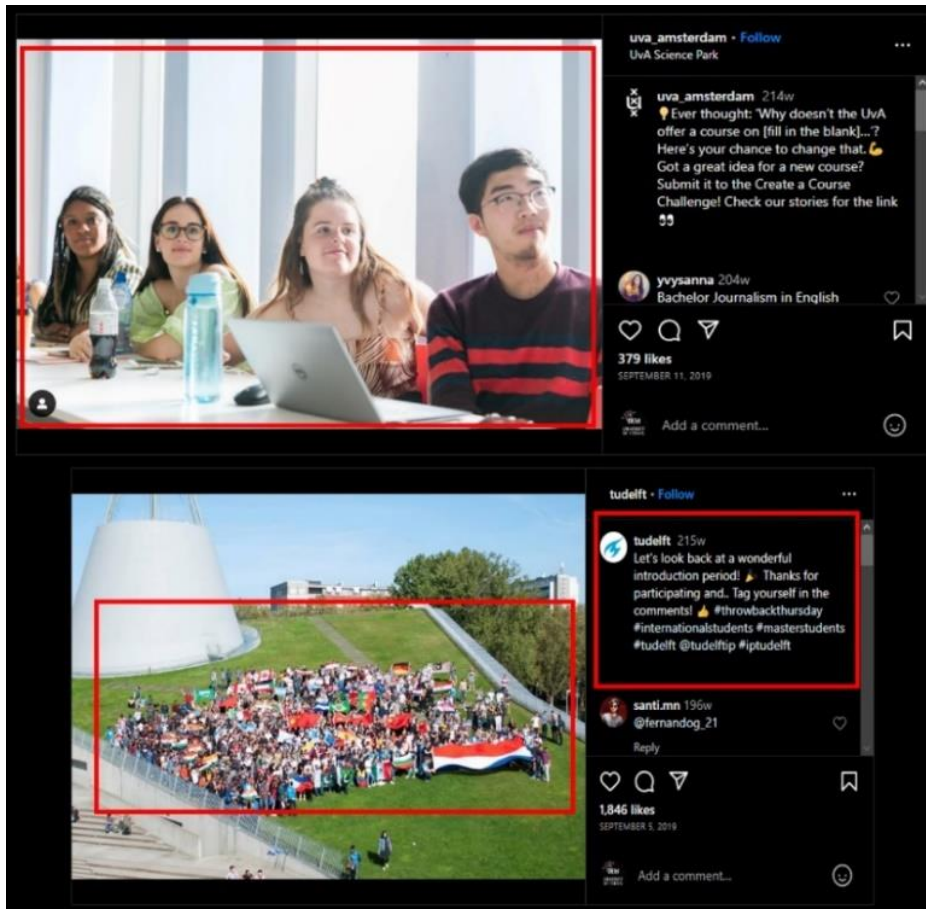
Figure 3. Examples of D&I race and ethnicity theme in the main study (University of Amsterdam, 2019; Delft university of technology, 2019)

figure 4 shows the examples of LGBTQIA+ theme. In the first content which is a video, this theme is communicated both implicitly with the presence of human faces and explicitly with the use of rainbow flags and mention of the theme in the caption (University of Utrecht, 2019). In the second content human faces are

not apparent but the use of rainbow flags and the caption reveal an explicit communication strategy about the theme (Delft university of technology, 2019).
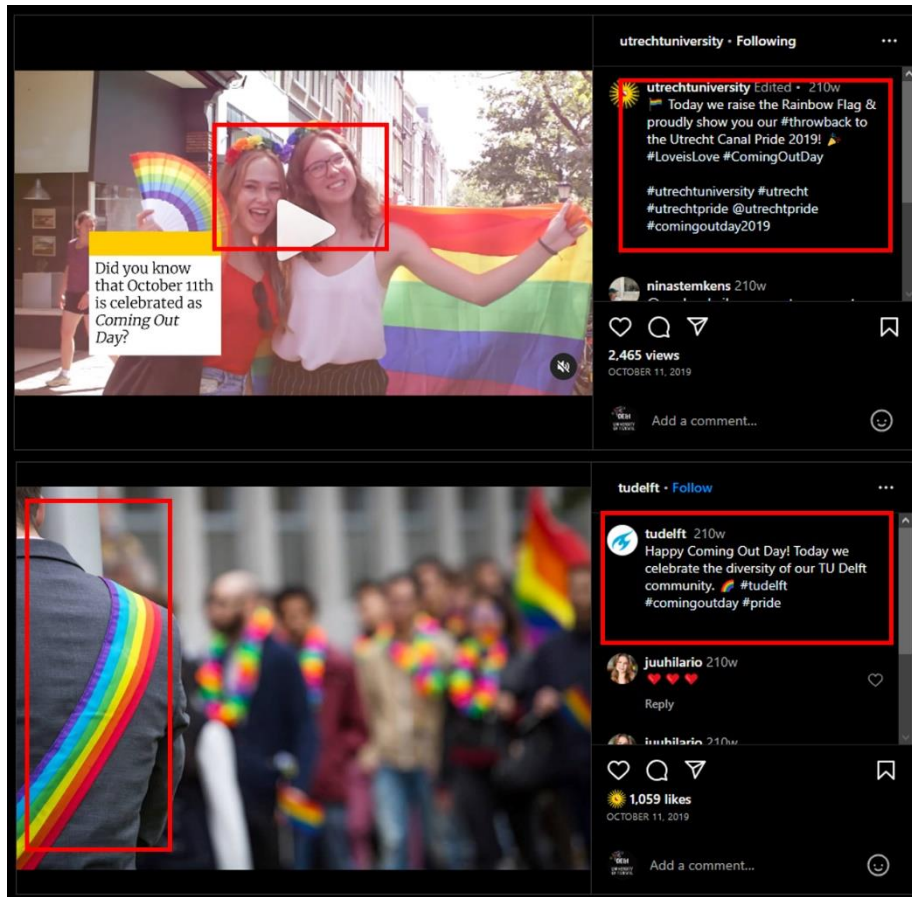
Figure 4. Examples of D&I LGBTQIA+ theme in the main study (University of Utrecht, 2019; Delft university of technology, 2019)

The examples of disability theme are presented in figure 5. In the first content the theme is communicated both implicitly with the presence of a human figure and explicitly with the mention of the theme in the caption and a person on a wheelchair (University of Amsterdam, 2022). In the second content which is a video, human figures do not represent people with disability, but in the caption, disability is communicated explicitly (University of Utrecht, 2022)
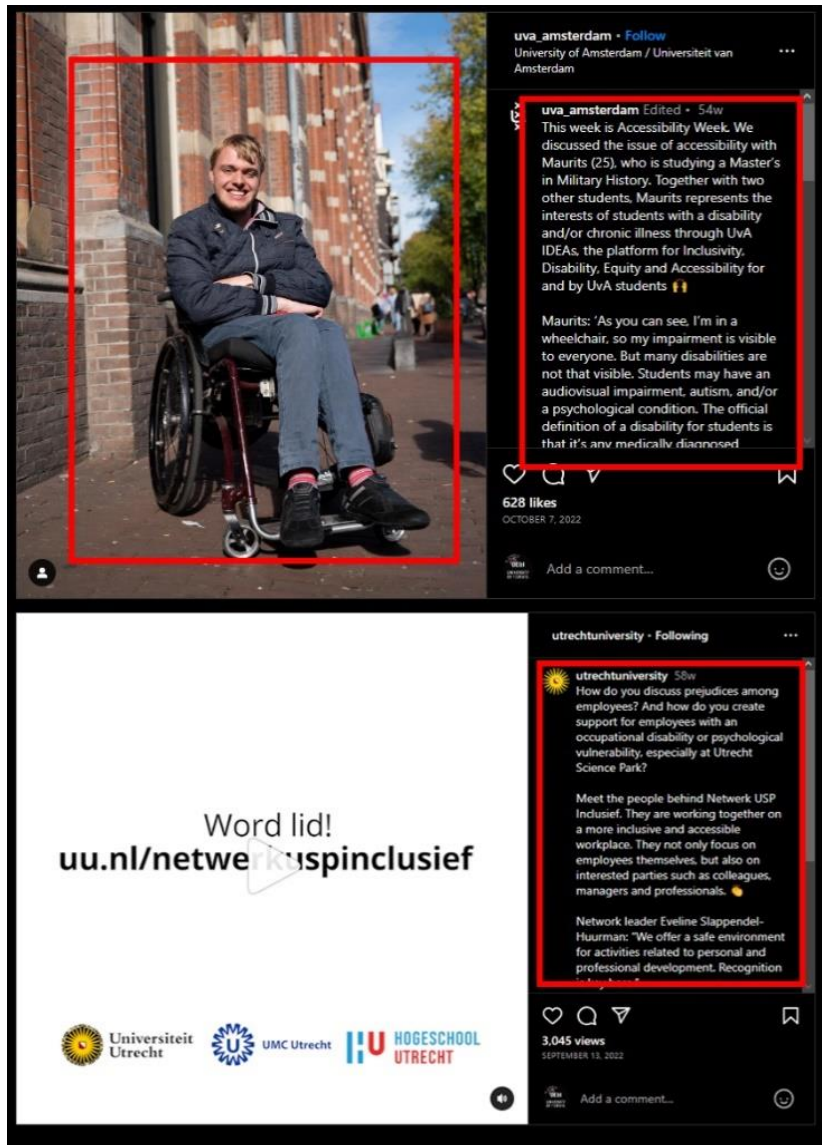
Figure 5. Examples of D&I disability theme in the main study (University of Amsterdam, 2022; University of Utrecht, 2022)

Some of the contents included more than one theme. For instance, figure 6 represents a non-white European girl and in the caption, we see that disability is mentioned directly without being recognizable in the visual in the first sight (Wageningen University of research, 2019).

Figure 6. Examples of D&I race and ethnicity and disability themes in the main study (Wageningen University of research, 2019)

The sample showed that there were some posts which did not fit in D&I themes according to the literature. Therefore, we added a code named diversity general with an inductive approach, to cover general posts about D&I topics that did not fit into defined D&I themes. In figure 7 we can see the word *diversity* is mentioned in the caption, while there are not any clues of one of main D&I themes in the picture (Eindhoven University of technology, 2021).
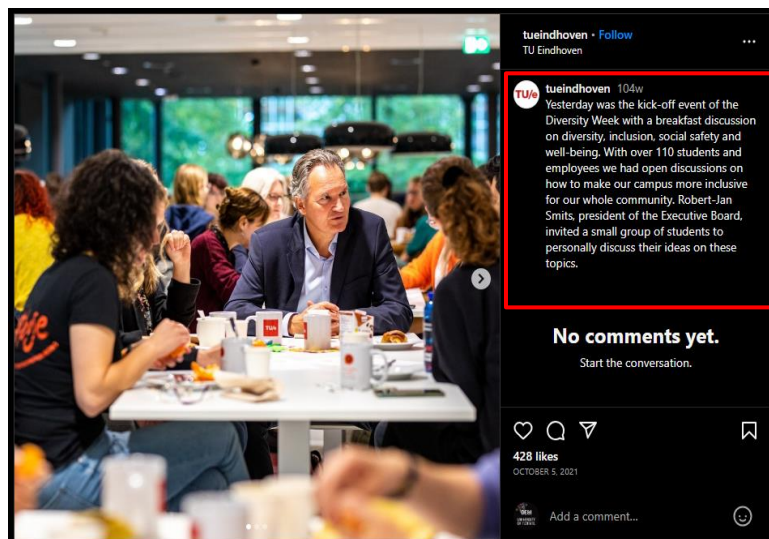
Figure 7. Examples of diversity general themes in the main study (Eindhoven University of technology, 2021)

4.2 D&I posts frequency before and after national action plan

To compare the frequency of each communication strategy before and after the national action plan, a cross table was extracted from our data sheet in SPSS. In table 2, we see an overview of the frequencies of posts related to the strategies universities used to communicate their D&I in the two time frames, before and after the national action plan.

Table 2

the frequency of D&I communication strategies
before and after national action plan

		Time frame	
		Before action plan	After action plan
D&I communication strategy	No D&I	(80%) 258	(70%) 163
	Implicit	(9%) 30	(15%) 35
	Explicit	(11%) 35	(15%) 36

Results showed that the frequency of posts containing no clues of D&I is more than the other two types in both time frames. But there was a decrease in the frequency of posts with no D&I clue before (80%) and after (70%) the national action plan. On the other hand, we can see that the frequency of posts communicated D&I implicitly after the national action plan (15%) was higher than the frequency of posts communicated D&I implicitly before the action plan (9%). Also, an increase can be seen in the frequency of posts communicated D&I explicitly before (11%) and after (15%) the national action plan.

Hypothesis 1 predicted that the implementation of the National Action Plan for greater diversity and inclusion in higher education and research is expected to have a positive effect on the frequency of Instagram posts containing explicit diversity and inclusion communication by Dutch universities. A Chi-Square Test of Independence was performed to assess the potential relationship between time frame and D&I communication strategy used by universities (Table 3). According to the results of Chi-square test ($X^2= 7.81$, df = 2, p<.05), the relationship between these variables was significant. For this reason, hypothesis 1 was confirmed.

Table 3

Chi-Square Test for independence of time frame and D&I
communication strategy

	Value	df	Sig.
Pearson Chi-Square	7.814^a	2	.02
N of valid cases	557		

4.2 D&I and audience engagement

In this part, we concentrate on the effect of different variables on audience engagement including ratio of likes and ratio of comments.

4.2.1 The effect of D&I communication strategy, university type, and post type on audience engagement

In this section, we present the effects of three variables including D&I communication strategy (explicit, implicit, and no-D&I), post type (single picture, carousel, and video), and university type (technical and non-technical) on audience engagement including ratio of likes and ration of comments.

To test the main and interaction effect between mentioned variables, a multivariate general linear model test was performed. Table 4 gives an overview of the results that show the impact of D&I communication strategies, post types and university types on like ratio as our dependent variables. The analysis showed a significant interaction effect of D&I communication strategy on number of likes (F $(2,539) = 7.74$, $p < .05$) which is related to our second hypothesis. There was also a significant interaction effect of post type (F $(2,539) = 4.83$, $p = .008$), D&I communication strategy and post type (F $(4,539) = 7.146$, $p < .05$), and post type and university type (F $(2,539) = 3.13$, $p = .044$) on number of likes.

Table 4

Test of between subject effects for dependent variable like ratio

Source	df	F	Sig.	Partial Eta Squared
D&I communication strategy	2	7.74	.00[*]	.03
Post type	2	4.83	.00[*]	.02
University type	1	1.76	.18	.00
D&I communication strategy * Post type	4	7.15	.00[*]	.05
Post type * University type	2	3.13	.04[*]	.01
D&I communication strategy * University type	2	2.85	.06	.01
D&I communication strategy * Post type * University type	4	1.50	.20	.01
Error	539			
Total	557			

a. R Squared = .150 (Adjusted R Squared = .124)

b.Computed using alpha = .05

A multivariate general linear model test was conducted to evaluate the main and interaction effects of D&I communication strategies, post type, and university types on comment ratio (Table 5). For the number of comments, the analysis reveals a significant interaction effect of a combination of D&I communication strategy and university type ($F_{(2,539)} = 6.50$, $p = .002$). Since the results for D&I communication ($F_{(2,539)} = 2.36$, $p = .09$) does not show a significant interaction effect, we reject the second hypothesis for comments as an engagement factor.

Table 5

Test of between subject effects for dependent variable comment ratio

Source	df	F	Sig.	Partial Eta Squared
D&I communication strategy	2	2.36	.09	.01
Post type	2	1.34	.26	.00
University type	1	.14	.71	.00
D&I communication strategy * Post type	4	.65	.53	.00
Post type * University type	2	.68	.50	.02
D&I communication strategy * University type	2	6.50	.00[*]	.00
D&I communication strategy * Post type * University type	4	1.36	.25	.01
Error	539			
Total	557			

    a.R Squared = .085 (Adjusted R Squared = .057)

    b. Computed using alpha = .05

To support the first hypothesis for the positive effect of explicit communication strategy about D&I topics, the mean of number of likes was higher for explicitly communicated posts (M = 18.90, SE = 1.51) rather than the effect of implicitly communicated posts (M = 12.56, SE = 1.58) and post with No D&I communication (M = 18.39, SE = .62). The 95% confidence interval for the mean score for explicitly communicated contents is between 15.92 and 21.88. By this way, we conclude that our second hypothesis is confirmed for number of likes as one of the engagement factors.

Table 6

Estimated marginal Means for D&I communication strategy and like ratio

D&I communication strategy	Mean	SE	95% CI
No D&I	18.39	.62	[17.16, 19.61]
Implicit	12.56	1.58	[9.45, 15.67]
Explicit	18.90	1.51	[15.92, 21.88]

According to table 7, posts in which D&I topics are communicated implicitly gain less likes than posts communicate it explicitly or does not communicate them at all.

Table 7

Post Hoc Test for communication strategy and ratio of likes

D&I communication strategy		Sig.
No D&I	Implicit	.00[*]
	Explicit	.75
Implicit	No D&I	.00[*]
	Explicit	.00[*]
Explicit	No D&I	.75
	Implicit	.00[*]

[*] The mean difference is significant at the .05 level

To gain a better understanding of the other factors contributed on number of likes and comments, estimated marginal means was analyzed for the factors that showed a significant effect. The estimated marginal means for type of post (table 8) showed that video received more like engagement in general (M = 20.19, SE = 1.55).

Table 8

Estimated marginal Means for type of post and like ratio

Post type	Mean	SE	95% CI
Single Picture	14.06	1.22	[11.67, 16.45]
Carousel	16.45	1.31	[13.88, 19.02]
Video	20.19	1.55	[17.14, 23.24]

According to tables 9 and 10, explicit D&I communicated video receives the most likes engagement (M = 30.39, SE = 3.48), while implicit D&I communicated single pics receives the least number of like engagement (M = 8.75, SE = 2.93). Furthermore, the like engagement of video contents in non-technical universities is more that other categories (M = 24.05, SE = 1.83), while single pics in technical universities receive the least number of likes engagement (M = 13.59, SE = 1.77).

Table 9

Estimated marginal Means for D&I communication strategy * type of post and likes ratio

Communication strategy	Type of post	Mean	SE	95% CI
No D&I	Single Picture	19.59	.74	[18.13, 21.05]
	Carousel	14.44	1.39	[11.71, 17.18]
	Video	19.03	1.87	[15.36, 22.69]
Implicit	Single Picture	8.76	2.93	[3.00, 14.51]
	Carousel	16.96	2.47	[12.11, 21.82]
	Video	11.16	2.47	[6.31, 16.02]
Explicit	Single Picture	13.82	2.05	[9.80, 17.84]
	Carousel	17.93	2.71	[12.61, 23.26]
	Video	30.39	3.48	[23.55, 37,23]

Table 10

Estimated marginal Means for Type of post on Instagram * university type on like ratio

Post type	University type	Mean	SE	95% CI
Single Picture	Technical	13.59	1.77	[10.10, 17.07]
	Non-technical	14.53	1.67	[11.25, 17.80]
Carousel	Technical	17.64	1.80	[14.11, 21.16]
	Non-technical	15.26	1.90	[11.52, 18.99]
Video	Technical	16.33	2.51	[11.40, 21.26]
	Non-technical	24.05	1.83	[20.46, 27.65]

The effect of a combination of factors D&I communication strategy and university type on number of comments, content with no D&I communication in non-technical universities receive the most comments (M = 2.77, SE = .28), while implicit D&I communicated content in technical universities receives the least number of comment engagement (M = .92, SE = .52).

Table 11

Estimated marginal Means for D&I communication strategy * university type and comment ratio

D&I communication strategy	University type	Mean	SE	95% CI
No D&I	Technical	1.12	.28	[.56, 1.67]
	Non-Technical	2.77	.28	[2.21, 3.33]
Implicit	Technical	.92	.52	[-.102, 1.94]
	Non-Technical	1.13	.53	[.087, 2.18]
Explicitly	Technical	2.53	.64	[1.27, 3.79]
	Non-Technical	1.10	.47	[.18, 2.03]

4.2.2 The effect of D&I themes on audience engagement

To see the effect of posts that communicated D&I themes on audience engagement, we conducted ANOVA tests for each theme. The results are showed in table 11 for like ratio and table 12 for comment ratio.

According to the ANOVA test findings for two types of communication style of D&I themes (table 12), implicit disclosure of gender equity (F (1, 555) = 7.45, P < .05), implicit communication about race and ethnicity (F (1, 555) = 8.29, P < .05), and posts that explicitly mentioned disability (F (1, 555) = 16.10, P < .05) showed a significant main impact on ratio of likes.

Table 12

Test of between subject for D&I themes and like ratio

Communication strategy/ Theme	df	F	Sig.
Implicit			
Gender	1	7.45	.00
Race & ethnicity	1	8.29	.00
LGBTQIA+	1	2.42	0.12
Disability	1	1.26	0.26
Explicit			
Gender	1	.82	.36
Race & ethnicity	1	1.06	.30
LGBTQIA+	1	1.06	0.30
Disability	1	16.10	.00
Diversity general	1	1.03	0.31
Error	555		
Total	557		

Another ANOVA test for between subject for D&I themes and ratio of comments, does not show any significant effect for all the themes (table 13).

Table 13

Test of between subject for D&I themes and comment ratio

Communication strategy/ Theme	df	F	Sig.
Implicit			
Gender	1	.48	.49
Race & ethnicity	1	1.79	.18
LGBTQIA+	1	0.18	0.67
Disability	1	0.13	0.71
Explicit			
Gender	1	2.21	.14
Race & ethnicity	1	.001	.97
LGBTQIA+	1	0.12	0.73
Disability	1	0.23	0.63
Diversity general	1	0.39	
Error	555		
Total	557		

Confidence intervals for the ratio of likes (table 14) and ratio of comments (table 15) for each communication strategy and D&I theme does not show a meaningful effect between two communication strategies except for implicit disability. The reason is the low number of implicit posts ($N = 2$) and explicit posts ($N = 5$) for this theme.

Table 14

Confidence interval for communication strategy/theme and like ratio

Communication strategy/ Theme	Mean	95% Confidence interval
Implicit		
Gender	11.08	[8.41, 13.74]
Race & ethnicity	13.62	[10.93, 16.31]
LGBTQIA+	26.68	[7.48, 45.88]
Disability	27.99	[-216.86, 272.85]
Explicit		
Gender	14.90	[5.26, 24.53]
Race & ethnicity	15.75	[12.44, 19.05]
LGBTQIA+	23.89	[14.02, 33.75]
Disability	40.49	[9.33, 71.64]
Diversity general	21.50	[10.35,32,65]

Table 15

Confidence interval for communication strategy/theme and comment ratio

Communication strategy/ Theme	Mean	95% Confidence interval
Implicit		
Gender	1.16	[.63, 1.68]
Race & ethnicity	1.22	[.91, 1.53]
LGBTQIA+	1	[-.08, 2.08]
Disability	.78	[-1.64, 3.21]
Explicit		
Gender	2.68	[.02, 5.35]
Race & ethnicity	1.55	[.68, 2.43]
LGBTQIA+	1.23	[.41, 2.06]
Disability	.91	[.10, 1.73]
Diversity general	1.02	[.28, 1.76]

5. Discussion

In this section, we use theoretical and practical implications to investigate the main findings regarding the impact of the implementation of the action plan on the strategies used by Dutch universities to communicate their D&I efforts. Also, we discuss the effect of communication strategy on audience engagement on Instagram. Then we discuss limitations and provide suggestions for future research. At the end, the conclusion will summarize the study goals.

5.1 Main findings

This research investigated the impact of D&I communication by universities on their official Instagram pages on audience engagement. By spotlighting the perspectives of diverse students, staff, and professors, promoting events and projects, and sharing experiences that support their D&I goals, Instagram gives universities a visual platform to demonstrate their values and commitment to D&I. These visual representations can be done implicitly or explicitly (Bell, 2004) in form of single pictures, carousels, and videos. Therefore, we used these metrics to explore the level of audience engagement with different types of D&I communication strategies (explicit, implicit, no-D&I), post type (single picture, carousel, and video), and university type (technical and non-technical).

According to (Dhanesh & Rahman (2021), engagement is considered as first-level engagement factors, such as likes and comments, which show support for the affiliation with the organization. The findings showed that the communication strategy about D&I topics had an impact on number of likes, while it did not have an impact on number of comments. The conclusion was that explicitly communicated D&I topics received more likes than post with an implicit strategy and post without any clues of D&I. Additionally, the findings showed that the type of posts affect the amount of likes but not comments and the number of likes were more in videos rather than carousels and single pictures. The effect of combined variables, communication strategy and post type, on number of comments showed that the most effective posts were explicitly D&I communicated videos, while least effective posts were implicitly D&I communicated single pictures. The results also showed an effect of combined variables, post type and university type, on likes. Videos in non-technical universities received the most likes while single pictures in technical universities received the lowest number of likes. Finally, the analysis showed an impact on the number of comments when

D&I communication strategy and university type are combined. Non-technical universities receive higher number of comments in posts with no D&I communication and technical universities receive the lowest number of comments when communicating D&I implicitly.

Post about different D&I themes including gender, race and ethnicity, LGBTQIA+, disability, and diversity general topics did not show a notable effect on engagement, except for implicit gender, implicit race and ethnicity, and explicit disability that showed an effect on number of likes.

This study also investigated the impact of the implementation of the National Action Plan for greater Diversity and Inclusion in Higher Education and Research on the frequency of posts about D&I topics on Instagram. One of the objectives of this action plan was to keep track of diversity in educational institutions (The Netherlands ministry of education, 2020). The results confirmed that the action plan had a positive effect on the frequency of posts communicating D&I. The analysis of post in which D&I was mentioned directly or indirectly, showed a 10% increase after the action plan. This increase could be seen more in implicit posts with 6% growth, than explicit posts with 4% growth.

5.2 Theoretical contributions

According to the empirical evidence of this research, although the number of posts in which D&I are communicated increased during two time frame, there are no evidence to show that universities have an action plan on how to communicate their D&I efforts on their social media. Since it may reveal their identity and improve the quality of their visual images, it is crucial for universities to make their D&I initiatives more prominent. A university's identity and visual representation especially if it embraced a wider level of diversity in its student body, are said to be two of the main essential components for the branding of a university and the decision making of prospective students (Ali-Choudhury et al., 2009, Rietveld et al., 2020).

In addition, in is crucial for universities to know the type of the posts that receive the most interaction with the audience, since audience engagement may have a major influence on the identification of a university and financial return (Rietveld et al., 2020), which can be influenced by current stakeholders and prospective students respectively.

Overall, this research contributes to a better understanding about the impact of social media strategies regarding D&I topics and their impact on audience

engagement. Furthermore, it highlights that the extended explicit social media communication about D&I efforts can have a significant impact on the interaction with universities on social media and expand diversity in both the research's content and participants.

5.3 Practical implications

As mentioned by the Netherlands ministry of education (2020), research and education that ignores societal diversity is less representative and has a limited scope in terms of both quality and effect. Experiences with diversity, both on campus and online, have been recognized as a crucial component of student learning and development and the acquisition of skills necessary for success in a multicultural workplace (LePeau et al., 2018). This effect underlines that a person's perception of herself and other people may be influenced by exposure to a variety of people and viewpoints, and this effect goes beyond a person's membership with a particular organization (Schelenz & Vondermaßen, 2021). In addition, knowing the connection between audience engagement and social media content might also help the development of effective social media strategies for universities and that are committed to promote D&I. Therefore, it is crucial for universities to act on that both on campus and on social media to encourage students and staff to pay more attention to the benefits of diverse atmospheres.

In addition to people's experiences with D&I, the Netherlands ministry of education (2020) wish to investigate strategies to structurally monitor diversity and inclusion in the working and learning environment as well as in the research and educational material. The Netherlands ministry of education want to determine what is feasible to monitor. Since social media can give a feasible evaluation on the state of D&I in universities, it is advised to put more emphasis on the importance of social media in educating students and employees about D&I topics. Instagram offers a powerful tool for universities to showcase their commitment to D&I, it is important for them to understand how D&I communication strategies on social media may assist them in selecting the best content to encourage public engagement as they forge connections with diverse publics on social media (Dhanesh & Rahman, 2021). Therefore, universities should pay more attention to the frequency and strategy of their D&I related posts to interact with a wider range of audience.

5.4 limitations

There were some limitations and challenges on this study. Firstly, this study focused on social media content analysis to measure the engagement of

audience. Using surveys and interviews could measure audiences' determination about the ways D&I topics are discussed on social media and their intentions to interact with these kinds of content. Secondly, the audience engagement was limited to two aspects of first-level engagement metrics of social media (Dhanesh, et al., 2022), while other metrics such as views and shares can give a better insight about the topic. This needs more access to the Instagram accounts and a cooperation with social media teams of universities. Lastly, some factors such as the time that the content was posted (day of the week and time of the day) can affect the audience engagement.

One of the main challenges while talking about demanding topics of D&I is the danger of diversity washing. We required to take it into account as one of the main pitfalls during both data gathering and analysis stages in addition to writing and interpreting the results. It is important to be aware when organizations are using diversity washing and do not encourage them to do that,

5.5 Future research

It is advised for future research to choose a wider range of time, since some events, international and national days related to diversity and inclusion are spread throughout the year. It can defer based on the policies of each university for instance to choose a diversity week. A yearly report can help The Netherlands Ministry of Education and also universities to gain a better understanding of the frequence of posts related to the topic.

Also, analysing the content of comments qualitatively can give a better understanding of the attitudes and reactions of the audience about each topic. Some of the topics can receive hateful comments and it can not be considered as positive engagement, although they increase the visibility of the page and content.

5.6 Conclusion

As a result of the increased need for diversity and inclusion (D&I), universities are placing more attention on these issues in today's academic environment. Students are increasingly looking for universities in which diversity is appreciated and celebrated, as well as researchers who are looking for more inclusive research environments. This is because a diverse atmosphere may improve the caliber of learning and research. The research shows that after the implementation of the national action plan for greater diversity and inclusion in higher education and research, universities pay more attention to show their D&I on their Instagram accounts.

The implementation of explicit D&I initiatives on Instagram, has a potential to improve audience engagement and staff and student views of a university's commitment to D&I. Overall, this research can show the importance of communicating D&I explicitly on a university's Instagram account since it effects the audience engagement in terms of number of likes.

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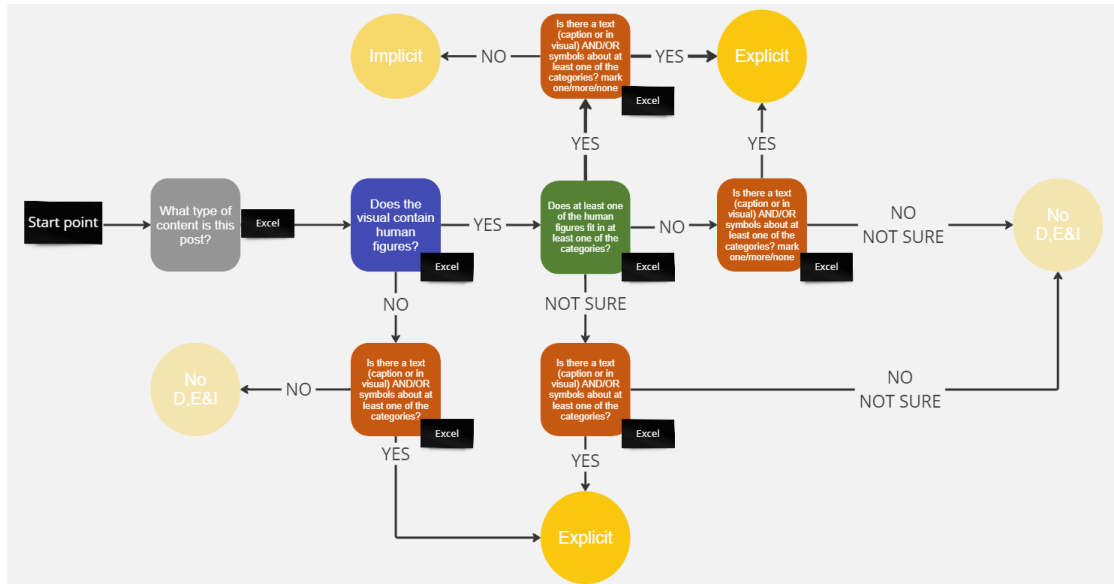
Appendix A

Information about universities.

No.	University name	Username	No. followers September 2023 (in k)	No. of posts Before action plan	No. of posts After action plan	Total no. of posts
1	University of Twente	@utwente	25.7	12	11	23
2	Delft university of technology	@tudelft	57.6	10	14	24
3	Wageningen university of research	@uniwageningen	49.4	57	58	115
4	Eindhoven university of technology	@tueindhoven	25.9	83	62	145
5	University of Groningen	@universityofgroningen	52.8	24	30	54
6	Maastricht university	@maastrichtuniversity	51.9	17	19	36
7	University of Amsterdam	@uva_amsterdam	72	51	34	85
8	University of Utrecht	@utrechtuniversity	50.8	75	17	92

Appendix B

Flowchart guideline to answer the questions in the analysis sheet

Appendix C

Definitions of codes

Code	question	Answer guideline
Likes	How many like does the post have?	Number of likes can be found bellow the post on mobile app or next to the post on desktop browser.
Comments	How many comments does the post have?	Number of comments can be found bellow the post on mobile app or next to the post on desktop browser.
Post type	Is the post displayed in the form of a single picture, a carousel, or a video?	- Single pictures: Just one picture in the post - Carousel: a couple of pictures in the form of slides - Video: all kinds of video with speaker, and/or text as subtitle, and/or music
Human figure general	Does The visual content contain human figures with faces?	- As human figures, we mean realistic human beings (not animated). - At least one human figure must be visible. That means, the population from a distance whose bodies cannot be recognized are not considered in this research. - At least one human figure is considered here.
Implicit gender equity	Does at least one of the human figures fit in gender equity theme?	- Representation of (at least one) woman in leader or science positions - Women in leader position are shown as the head of a team in the visual, as a teacher or tutor, etc. - Women in science position are shown in a lab, with Laboratory uniforms, etc.

Implicit race and ethnicity	Does at least one of the human figures fit in race and ethnicity theme?	- Representation of (at least one) non-White European person. This includes Black, Hispanic, Native American, Alaska Native, Native Hawaiian, Pacific Islander, middle eastern, Asian. - Mention of culture or religion. - Don't mark the square if you're not sure about the ethnicity of the person
Implicit LGBTQIA+ topics	Does at least one of the human figures fit in LGBTQIA+ topics theme?	- Representation of (at least one) person who is a member of LGBTQIA+ community OR a supporter - The representation of community members or supporters is usually done with symbols. Therefore, this question and next question usually should be marked together for this category
Implicit disability inclusion	Does at least one of the human figures fit in disability inclusion theme?	- Representation of (at least one) person with visible impairment
Explicit gender equity	Is there a text (in caption or in visual) AND/OR symbols about gender equity theme?	- Mention woman in leader positions and science, woman empowerment, gender equity, etc. - It can occur in text, graphics, captions, video, etc.
Explicit race and ethnicity	Is there a text (in caption or in visual) AND/OR symbols about race and ethnicity theme?	- Mention race, ethnicity, country, international students, culture, religion, etc. - Culture in the context of performances, exhibitions, and films, which are not communicate a specific culture are not the aim of our analysis. - It can occur in text, graphics, captions, video, etc.

Explicit LGBTQIA+ topics	Is there a text (in caption or in visual) AND/OR symbols about race and ethnicity theme?	- Mention LGBTQIA+ community - It can occur in text, graphics, captions, video, etc.
Explicit disability inclusion	Is there a text (in caption or in visual) AND/OR symbols about race and ethnicity theme?	- Mention disability and accessibility topics - It can occur in text, graphics, captions, video, etc.
Explicit diversity general	Is there a text (in caption or in visual) AND/OR symbols about diversity general theme?	- Are one (or more) of the words diversity, equity, equality, and inclusion mentioned in caption, or in the content as text? - If yes, does it refer to the aim of the research or it is mentioned as something general?
D&I communication strategy	Does the post contain a communication strategy about D&I themes?	- If yes, it can be concluded from the flow chart.