

Research Bank

Journal article

**A methodological approach to the analysis of PISA microblogs :
Social media during the release of the PISA 2015 results
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Phase 2 involved three analytic processes that generated descriptive statistics and excerpts from microblogs. This phase provided a fine-grained analysis of selected users ($n = 65$), focused on more detailed and nuanced descriptions not afforded by a large data corpus analysis. First, we identified the volume and frequency of microblogging for each of the users, reported through descriptive statistics. Secondly, data from the sentiment analysis in Phase 1 were used to identify the polarity of the microblogs, alongside a descriptive content analysis of the microblogs posted by the seven users. Combined, these data identified the type and tone of the content of the microblogs and how the posts were used to convey and contest the findings of the PISA report. As part of the descriptive content analysis, the microblogs were coded into four usage types:

1. *Information*: providing evidence and access to OECD/PISA report.
2. *Promotion*: the dissemination and marketing of OECD/PISA report.
3. *Commentary*: extending the debate with analysis and/or non-OECD literature and/or personnel and/or country reference.
4. *Critique*: appraising the OECD/PISA report with or without additional literature.

This analysis provided insights into the perceived intent of the microblog content. The first two categories focused on the provision and dissemination of information about the PISA 2015 Results, but these also tended to incorporate marketing to promote the work of OECD Education. The next two categories (3 and 4) tended to offer additional perspectives, often contrary and sometimes critical, that enhanced the debate with specific examples.

Thirdly, using descriptive statistics, we identified the range and degree of social recommendations received by a microblog/author. Retweeting, a more active form of social recommendation, and liking or favouriting, a passive indication of support, are also curatorial in that decisions are made about what content is 'important, interesting or entertaining enough to recommend' (Hermida et al. 2012, 821). These analyses of practices, along with the number of followers, show 'the relative visibility and influence' of the clusters and users (Park and Kaye 2019, 6). The amount of support the microblogs received, as indicated by the number of 'favourites' and retweets, was observed through retweet rates that were calculated by dividing the number of retweets by the number of tweets (Park and Kaye 2019). This was used as a means of measuring the circulation and reach of the posts.

Social media data and ethical considerations

Consideration was given to whether these data, which are on public record and do not require any credentials to access, constitute 'human research'.⁶ While Twitter data are much more open and readily accessible than data from other social media platforms (Ahmed, Bath, and Demartini 2017), many research ethics offices would agree that such data gathering should be considered as human research. This is the case because the author of a microblog is not reasonably likely to expect their post to be used for research purposes. In contrast, many of the social media users in our study are likely attached to what ethics documentation refers to as 'brands', in that they are established commercial entities or spokespersons or representatives for these and other entities. As such, their high-profile status as a 'brand' is likely to mean they are unconcerned about being identified or

⁶ We note that the larger project obtained ethical clearance to conduct this research. At that time, in 2016, the United States did not consider the extraction of Twitter data to be human research.

quoted. Additionally, given the focus of our research and analysis, pseudonyms are not likely to ensure any additional anonymity, as these individuals and organisations are key actors in PISA assessments and related public debates. Regardless, for the second phase of our study, we undertook an opt-out approach to consent and approached each of the individuals/organisations in our cluster of users via email communications. Similarly, retweeted content associated with additional individuals and/or organisations that were not asked to provide opt-out consent was not used. That is, if a tweet from one of our cluster users was a re-post, the name/s of the original microblog author/s were removed and replaced by an ellipsis [...].

Three days of PISA: Microblogs, users, content, and engagement

Who participates?

The 3-day period generated 17,260 microblogs about PISA. Most of the posts in the data corpus were authored by individuals ($n = 12,740$, 74%); 23% ($n = 4,012$) were by organisations, with 3% ($n = 508$) from unknown users. Table 1 summarises the proportion of microblogs within the data corpus, disaggregated by user type based on employment or industry areas. Most microblogs authored by individuals (Table 1, column 1) were by educators ($n = 2,782$, 21.8%). Microblogs by the academic category were responsible for 11% of the posts ($n = 1,407$). The largest number of microblogs by organisations (see Table 1, column 2) was by media groups ($n = 1,536$, 38.3%). Union and advocacy organisations comprised the second largest number of microbloggers ($n = 773$, 19.3%), even though union and advocacy representatives accounted for only 3.8% ($n = 489$) of individual posts. Based on combined categories (see Table 1, column 3), educators and schools posted 16.8% ($n = 2,906$) of microblogs, even though schools (as a separate category) were quite low in their representation ($n = 122$, 3.0%). This was followed by media professionals and media organisations, accounting for 13.6% ($n = 2,353$) of combined values. The OECD individuals, organisations, and combined groups (see Table 1, columns 1-3) posted between 0.3-1.1%, the smallest number of microblogs of all categorised groups.

The largest number of microblogs in the corpus ($n = 10,921$, 63%) were posted on the release day (6 December 2016), followed by the day after ($n = 5,513$, 32%), with only 5% ($n = 826$) posted the day before. Microblogs authored by the smaller cluster users followed a similar pattern of posting days, although frequency counts were different: Most were posted on the day of the report ($n = 30$, 46%, although this was comparatively smaller than the volume of the entire corpus), followed by the day after ($n = 25$, 38%) and the day before ($n = 10$, 15%) (see Figure 1). The day before the release of the report yielded the fewest microblogs across all cluster users. The exception was Sahlberg, who posted the same number of microblogs ($n = 3$) on the day before and on the day of the report's release. On the report release day, OECD Education ($n = 12$) and Schleicher ($n = 5$) posted the largest number of tweets. On the day after the report's release, the academic actors' cluster and the teacher union actors' cluster increased their number of posts, except for Hargreaves. The posts from OECD Education, Schleicher, and Hargreaves had a roughly symmetrical distribution, while those from all other authors had a left-skewed distribution.

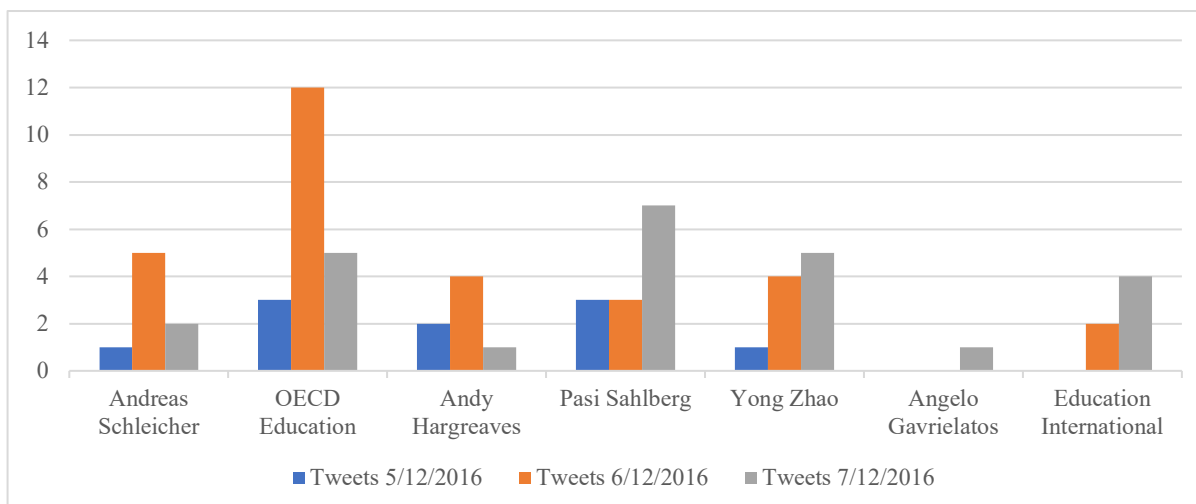


Figure 1: Percentage of microblogs by author, disaggregated by publication day ($n = 65$).

Descriptive statistics about the circulation of the microblogs authored by the cluster users enable an understanding of the reach of the tweets during this period and the perceived value of these posts. The OECD and academic actors have the same percentage of combined followers (45% each; see Table 2). However, the teacher union actors had substantially fewer followers when compared with the other user clusters. The OECD account had the largest number of followers ($n = 71,665$, 37%), followed by Sahlberg ($n = 36,148$, 19%).

The OECD cluster was responsible for just under a third of the tweets in our sample (see Table 2). If Schleicher is presumed to be a synecdoche for OECD Education, then collectively this user cluster accounts for 43% of the tweets. These 65 tweets generated 1,698 retweets and 1,127 indications that the content of these posts was liked by being 'favourited'. The OECD account had the largest number of retweets ($n = 929$, 55%) by their followers. The second largest number of retweets ($n = 308$, 18%) was from Sahlberg's posts. Retweet rates (see Table 2) show that the OECD account averaged 46 retweets per post, with Schleicher, Hargreaves, and Sahlberg generating very similar retweet rates, their averages ranging between 23-25. Comparatively, the number of favourites for the cluster user groups was lower than the number of retweets (see Table 2). Of these, OECD Education had the largest average number of favourites per post ($n = 29$), followed by Hargreaves ($n = 20$) and Sahlberg ($n = 17$).

Table 2: Author microblogs and audience retweets and favourites (vertical descending order of averages per column)

FOLLOWERS		TWEETS		RETWEETS		FAVOURITES	
Number		Number		Number	Average	Number	Average
OECD Education 71,665 (37%)		OECD Education 20 (31%)		OECD Education 929 (55%)	46	OECD Education 589 (52%)	29
Sahlberg 36,148 (19%)		Sahlberg 13 (20%)		Hargreaves 173 (10%)	25	Hargreaves 137 (12%)	20
Zhao 25,544 (13%)		Zhao 10 (15%)		Sahlberg 308 (18%)	24	Sahlberg 224 (20%)	17
Hargreaves 25,110 (13%)		Schleicher 8 (12%)		Schleicher 186 (11%)	23	Schleicher 130 (12%)	16
Education International 17,234 (9%)		Hargreaves 7 (11%)		Zhao 84 (5%)	8	Zhao 37 (3%)	4
Schleicher 16,769 (8%)		Education International 6 (9%)		Gavrielatos 7 (0.4%)	7	Gavrielatos 5 (0.5%)	5
Gavrielatos 1,153 (1%)		Gavrielatos 1 (2%)		Education International 11 (0.6%)	2	Education International 5 (0.5%)	1
193,623		65		1698		1127	

What is being said?

Table 3 shows the findings of a sentiment analysis of the microblog texts across the large data corpus and the smaller user cluster groups. Analytic language was used by all corpus and cluster users (92-98%) and was much higher than the LIWC average (56%). The microblogs from the union actors' cluster registered the highest usage of formal or logical thinking type language within their texts. Similarly, the indicators for clout registered higher than the LIWC average (55%). Texts from the union corpus data (71%) included language that suggested a greater expertise and confidence in their content. The authenticity scores and emotional tone for language used within the microblogs across all groups were lower than the LIWC averages (56% and 63% respectively). The academic cluster group's language indicated the highest degree of authenticity (42%), while the union cluster group had the highest score for emotional tone, registering language usage that was neutral. The emotional tone of other groups was gauged by LIWC to be in the negative range (34-46%).

Table 3: Sentiment analysis of microblogs, aggregated by author categories from large data corpus and smaller cluster groups (vertical descending order per column)

ANALYTIC (*Av 56)	CLOUT (*Av 55)	AUTHENTICITY (*Av 56)	STONE (*Av 63)
Union actors cluster 98 (n = 6)	Unions 71 (n = 310)	Academic actors cluster 26 (n = 42)	Union actors cluster 52 (n = 6)
OECD actors cluster 97 (n = 41)	OECD 68 (n = 81)	Academic/Higher Education 15 (n = 1,551)	Academic/Higher Education 46 (n = 1,551)
OECD 96 (n = 81)	Academic/Higher Education 68 (n = 1,551)	Union actors cluster 11 (n = 6)	OECD 42 (n = 81)
Academic/Higher Education 94 (n = 1,551)	OECD actors cluster 64 (n = 41)	Unions 8 (n = 310)	OECD actors cluster 42 (n = 41)
Unions 93 (n = 310)	Union actors cluster 61 (n = 6)	OECD 7 (n = 81)	Unions 35 (n = 310)
Academic actors cluster 92 (n = 42)	Academic actors cluster 61 (n = 42)	OECD actors cluster 4 (n = 41)	Academic actors cluster 34 (n = 42)

* Denotes average calculated by LIWC of all social media texts analysed including Twitter, Facebook, and blogs. All LIWC values expressed as percentiles.

Figure 2 shows the results of the descriptive content analysis indicating the proportion of microblogs by each cluster user group. Across the three groups, most of the posts (n = 24, 37%) provided commentary, followed by information (n = 16, 25%) and promotion (n = 13, 20%), with critique having the smallest number of posts (n = 12, 18%).

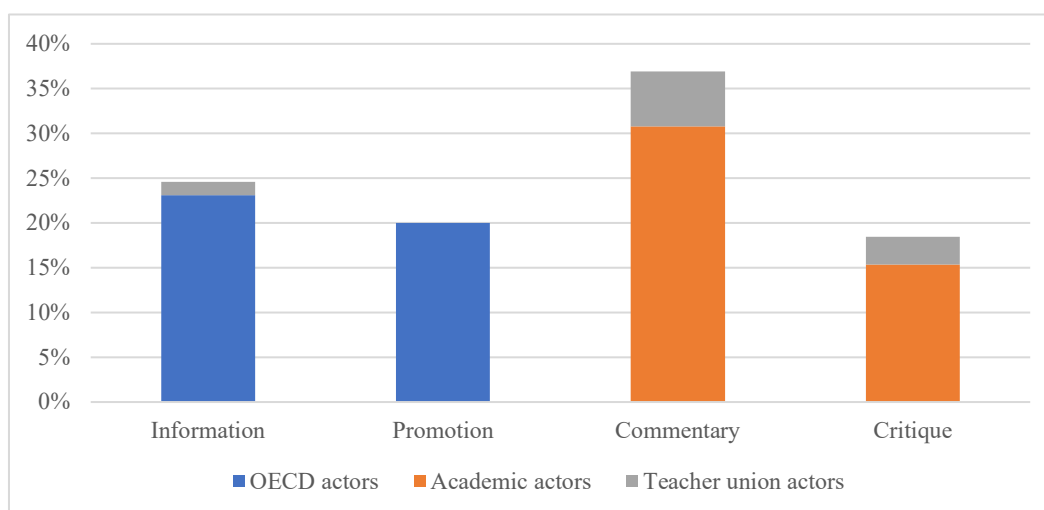


Figure 2: Percentage of perceived intent of Twitter posts by cluster user groups (n = 65).

Most of the posts from the OECD actors (n = 15, 23%), and one from the teacher union actors (2%) provided information about the PISA 2015 Results. The OECD actors (n = 13, 20%) was the only cluster group to promote the PISA report across the 3-day period. The OECD Education

account created 12 posts on the report's release day, referring to the release day as 'PISA day'. All their posts provided information or promoted the PISA report and the OECD. The OECD cluster user posts started at 09:56 and ended at 18:00 (local time). The posts tended to use a 'journalistic format' with some marketing language, making them accessible and potentially appealing to the audience (Dahlgren 2013). An example of a post informing the audience of the availability of the 'results' is seen in the microblog below:

OECD Education [@OECEduSkills]. (2016, December 6, 10:03). PISA 2015 results now available: Get the full package <https://t.co/yugCFLcm7D> Programme for International Student Assessment #OECDPISA #SDG4 <https://t.co/GKLM8VZ9Dj> [Tweet]. Retrieved from <https://twitter.com/OECEduSkills/status/806076527951675392>

The above cluster group post received the largest number of retweets ($n = 527$). The same text was used verbatim by Schleicher's Twitter account 3 minutes later at 10:06; this was not a retweet of the OECD Education post. This supports our perspective that Schleicher is a synecdoche for OECD Education, with the two accounts working in unison. Some of the OECD actors' posts from the morning were repeated in the afternoon, possibly to capture the different global time zones.

In contrast, the academic and teacher union actors predominantly wrote microblogs that provided commentary or opinion, debating the usefulness of PISA testing. This, of course, is only the case if the academic actors decide to participate. Hargreaves, when providing consent for us to use his tweets, noted that in respect of 2018 PISA results, he posted that he would not be tweeting about these results, as he felt PISA was 'getting more attention than it deserved' (Personal correspondence, 5 March 2020). The academic actors predominantly engaged in commentary ($n = 20$, 31%) and critique ($n = 10$, 15%). For example, in this post, Hargreaves provides a link to a TES (formerly *The Times Educational Supplement*) article titled, 'Does Pisa really tell us anything useful about schools?':

Andy Hargreaves [@HargreavesBC]. (2016, December 6). Pause on PISA - read results with caution warn @YongZhaoEd & ... <https://t.co/yomQMWSJb8> ... [Tweet]. Retrieved from <https://twitter.com/HargreavesBC/status/806132560304566272>

Hargreaves tags Zhao in this post. In the article, Zhao is identified as a 'long-standing PISA critic' (TES, 6 December 2016, Does Pisa really tell us anything useful about schools?), who observes, 'Don't read too much into it' (zhaolearning.com), that is, critiquing the value of PISA testing. The Hargreaves post was retweeted by Sahlberg, demonstrating that there are networked links across posts and among the three scholars in this cluster group.

While the teacher union actors had fewer posts, these too were predominantly providing commentary ($n = 4$, 6%) and critique ($n = 2$, 3%). Their posts focused on equity, calling out the gaps in the report and drawing out the policy implications for teachers. For example,

Education International [@eduint]. (2016, December 6). PISA, strong on equity, but weak on positive teacher policy: The OECD's 2015 PISA contains a range of strong and positive proposals on equity, tackling disadvantage and the promotion of science teaching, but fails to adopt a coherent narrative on positive teacher policy. <https://t.co/KPvp6pHLKl> [Tweet]. Retrieved from <https://twitter.com/eduint/status/806140417871724544>

This post linked to an Education International news page on their website. It received the largest number of retweets ($n = 15$) for a tweet by this organisation over the 3-day period.

In total, 63% ($n = 41$) of microblogs authored by the cluster users were original content, with 37% ($n = 24$) being retweets. The OECD cluster group provided the largest amount of original content ($n = 24$, 37%), with the academic cluster group registering 22% ($n = 14$) original content and 25% ($n = 16$) retweeted content.

Limitations

Based on the data gathering process and analytic tools selected, we note the following limitations of our study. The analysis was based on microblogs written in English; therefore, our analysis is not totally representative of all those who chose to participate in the dissemination and debates. The identified categories (large data corpus and smaller cluster users) focused on education and the OECD, and what was deemed relevant by the researchers. Arguably, there were many additional actors involved in the curation and flow of a network of information about the PISA report, including women, and their voices have not been captured here. The selection of actors in the small data corpus was made by the researchers, based on results returned in the top 10% of filtered data. This presents a degree of both subjectivity and objectivity in the process. The selection of other actors may have identified different insights. The grouping of 'other' is an aggregated category that has not been explored. The LIWC (2020) developers indicate that there are limitations to the accuracy of the tool (e.g., words, length of texts) and interpretations of LIWC data should be viewed within this context. The sentiment analysis is limited by the words in the LIWC dictionary, not all of which may be relevant in the context of PISA. Additionally, microblogs are short texts, restricted to 280 characters, which may return less reliable findings than analyses based on larger texts. Finally, while we recognise that sentiment analysis deals with individual words rather than situating clusters of words in their context of usage and in relation to the producers and recipients of such ideas, nonetheless, the analysis we have undertaken provides useful insights.

Interpreting these data: Who participates and what do they say?

Our analysis of the microblogs relating to the dissemination of the PISA 2015 Results and associated debates enabled an understanding of the volume of posts and public engagement with these over a 3-day period, identifying who participated in these debates. We were also able to analyse the content and sentiment of their posts that generated broad understandings of what they had to say. Within the scope of the limitations of this analysis, we discuss our interpretations of these data.

Globally, over the 3-day period, there were 17,260 microblog posts written in English about the PISA 2015 Results, averaging 5,753 posts per day or 240 posts per hour. This volume of posts, across different occupational groups and stakeholders, shows that many people participated in debates about the PISA 2015 Results. We infer that this demonstrates that the education of children and young people is of public interest and that a PISA epistemology has permeated into the household vernacular. Approximately three quarters of the microblog corpus were authored by individuals, with two thirds of the posts published on 6 December 2016, the report's release day. The latter suggests that there are short-lived cycles of information dissemination on social media

platforms, that ebb and flow in real-time. Therefore, maintaining a presence of voice within social media requires regular microblogging.

Media professionals and organisations were active microbloggers and purposeful in the process of distributing the news about PISA outcomes. Research indicates (Hennen et al. 2020; Shehata and Strömbäck 2018) that media professionals and organisations tend to use social media in combination with traditional news media formats, complementing rather than replacing traditional media. This shows the popularity of ILSAs as a means of gauging a nation's educational performance, and that media outlets perceive PISA as newsworthy and likely to generate a great deal of public interest. A tendency to focus on 'bad news' such as declining PISA performance may generate scandal or moral crises, which are likely to be advantageous to the news outlet's revenue.

Individual educators and schools were the most represented group of microbloggers within the larger corpus. This finding is contrary to that of traditional media, across various countries including Australia, China, and Israel, which show educator voices within legacy media were not highly represented in media stories (Baroutsis & Lingard 2019; Hu 2020; Pizmony-Levi 2018). Within the fine-grained analysis of the cluster groups, teachers were represented through the voice of the international federation of teacher unions. The union category within the corpus analysis had mid-range representation across the 3-day period; however, within the teacher union cluster, their voice was the lowest of all cluster groups. This is a significant finding in that our earlier comparative research on social media and legacy media coverage of Australia's PISA performance found that the voice of teacher unions was stronger in social media than in newspapers regarding PISA and that the direct voice of teachers was largely absent in traditional media (Author 1 and Author 2 2019). Our findings in the present study show that the voice of teachers is significant, even though the voice of teacher unions was still not particularly strong. This possibly reflects the situation that PISA constitutes only a minor part of the extensive global work of EI. Additionally, the OECD's Teaching and Learning International Survey (TALIS) which, inter alia, documents teacher workloads in participating nations, is more directly relevant to EI's work and that of teacher unions (Sorensen and Robertson 2020).

Key opinion leaders, the five individuals in the cluster analysis, also participated in debates about PISA. Key opinion leaders are public figures, public intellectuals who are experts in their field, perhaps 'micro-celebrities' rather than celebrities. They draw attention to specific perspectives in a debate or news story and potentially seek to persuade the audience of their perspective (Winter and Neubaum 2016). We are not suggesting they are the Kardashians of the education community who are famous for being famous, and as such, we do not identify them as 'influencers'. Additionally, their intent is not seen to be the accumulation of 'attention capital' (Franck 2019), a popularity gauge observed in the numeric data of social networks that include followers, likes, retweets, shares, views, engagement, and/or comments. Neither are they necessarily focused on self-branding that is used to develop, enhance, and market their public profile, often for commercial gain (Franck 2019; Khamis, Ang, and Welling 2017) or for enhancing their 'reputational capital' (Suh and Amine 2007). Instead, they are likely to have extensive public profiles across all media platforms, and within their respective organisations and networks, and consider their opinions as adding to the debates.

Visibility metrics such as the number of followers, views and comments and social recommendations such as favourites, likes, retweets, and shares, are an important part of the social network. Research shows that those reading social media posts place greater trust in the content and engage with it to a greater degree when it is shared by someone they trust (Sterrett et al. 2019). The profiles of the academic and OECD cluster groups included an audience comprised of a large

base of followers, increasing their visibility on Twitter. More influential individuals or organisations often have larger numbers of followers, this being a heuristic for determining the credibility and legitimacy of a post (Park and Kaye 2019; Eacott, 2020). Both the OECD and academic actors had large follower numbers, with Sahlberg having the largest number of followers across the cluster groups. Sahlberg was a senior policymaker in the Finnish education bureaucracy when the country was the top performer in the early rounds of PISA, and published a monograph explaining the reasons behind Finland's PISA success (Sahlberg 2011). This background is likely to have made him a key opinion leader warranting a large social media following.

Collectively, the OECD cluster had greater public engagement with their posts compared with the academic and teacher union cluster groups. The OECD Education account averaged the highest number of retweets per post (46) with an average of 29 social recommendations (favourites) per post compared with the academic Hargreaves (average of 25 retweets and 20 social recommendations per post). A greater volume of posts tends to generate greater opportunities for the individuals to reach a wider audience. However, this does not necessarily equate to greater voice or higher quality content. Winter and Neubaum (2016, 9) suggest that many convincing individuals and organisations 'might be more interested in the quality than in the mere quantity of their opinion expression acts', as might be the case with Gavrielatos and Education International. As an Education International union report analysing PISA's impact on education policy suggests, education unions are cautious about participating in the dissemination and analysis of PISA data due to the excessive focus placed on them by media and policymakers (Figazzolo 2009). The posts from the five key opinion leaders show their presence in these debates, demonstrating their perceived need, or obligation, to share their perspectives about PISA results, thereby broadening their advocacy base. Many may see their involvement in these public debates as a means of ensuring that their perspectives on the PISA 2015 Results were represented through them, rather than others outside of this field of expertise, and therefore choosing to enter the 'political fray' (Gerstl-Pepin and Reyes 2019).

We explored the question of what is being said within the context of a restrictive social media platform that limits communication to a maximum of 280 characters. Such brevity is unlikely to generate deep engagement with an issue or debate, rather, communication is likely to involve 'sound-byte positioning' that lacks a unified voice across messaging or stakeholders (Thomson and Riddle 2019, 129).

The content of the microblogs authored by the academic and teacher union key opinion leaders predominantly provided commentary (37%) and critique (18%). Drawing on Foucault's (1997) notion of critique, we interpret the academics' and teacher union approach to microblogging about the PISA 2015 Results, as a response to the governmentalizing techniques of ILSA testing. Here, we do not equate critique as the judgemental process of 'fault-finding' (Williams 2011, 74), rather, offering commentary and critique challenges the legitimacy of practices (Butler 2001) such as ILSAs. Foucault (1997) expressed critique in these terms suggesting it is about 'how not to be governed?' (44) and 'a means for a future or a truth that it will not know nor happen to be, it oversees a domain it would not want to police and is unable to regulate' (42). Paradoxically perhaps, at the same time as providing critiques, the strong voice of the academic actors may have inadvertently publicised the education work of the OECD and the significance of PISA. As such, their voices may have given credence to PISA.

We found support for the premise that the commentary and critique by the teacher union actors was not about fault-finding in the sentiment analysis of the tone of the language used in the

microblogs. The teacher union cluster was the only corpus or cluster group to demonstrate a neutral emotional tone, tending towards positive polarity (52%), reflecting the purpose of their social media usage which was to provide information and commentary as well as some critique. The emotional tone of all other corpus and cluster groups was in the negative range (34-46%), which is often associated with judgemental critique. While we understand the negative tone of the microblogs of the academic corpus and cluster groups and the union corpus, we were initially perplexed by the negative tone of the OECD corpus and cluster groups. We would speculate that the negative tone in the OECD corpus and cluster data is an artefact of the LIWC dictionary and the vocabulary included therein. This most likely is also the case because of the somewhat 'bland' and 'descriptive' language of these microblogs as reflected in their function of providing information about PISA and promoting it.

In contrast, the OECD actors provided information (23%) and promoted the PISA report (20%). The marketing of the PISA report through social media is an exercise in building reputational capital (Suh and Amine 2007). The Twitter platform presented opportunities for a cost-free and felicitous way for the OECD to market the report, giving them a direct line of communication with their audiences (Silva et al. 2019). We can infer that the usage of social media, at this significant stage of the policy cycle, was likely designed to reach a global audience. With few exceptions, the OECD's social media content on PISA was mostly self-referential, with 86% of the microblogs being original content rather than retweets, compared with the academic and teacher union actors who predominantly retweeted content (53%, 57% respectively). This usage of social media is just one element of a significant OECD media strategy around PISA and the reporting of results (Addey et al. 2017), including the involvement of a media relations expert at the OECD and the establishing of connections with legacy print media journalists in participating nations around the globe. Unlike the critical approach of the academic and teacher union actors to the dissemination of the PISA 2015 Results, the OECD actors reinforce the legitimacy of the ILSA with a view to a future where the testing regime proliferates as a measure of many more nation's educational performance.

Significance and concluding thoughts

The significance of this paper is threefold. First, we found our data set to be part of a significant point in time associated with social media growth. The Twitter social networking platform became available in early 2006; the first PISA report to be released post-Twitter was in 2007, when the platform had approximately 50,000 users (Statista 2020). It was not until 2016, when the PISA 2015 Results was released, that there were 313 million Twitter users (Statista 2020). The peak number of users came in 2018, followed by a decline in 2019 to 330 million users (Statista 2020). Given this, our data corpus from 2016 represents a significant period in history in respect of the significance of social media, affirming the value of this analysis. Our analysis, drawing on a moment in time when Twitter was close to a peak global uptake, suggests further research about its subsequent usage in relation to other PISA testing cycles (e.g., 2018, 2022) is required.

Secondly, this paper complements our previous comparative analysis (Author 1 and Author 2 2019) of legacy media texts and social media posts through a more specific, fine-grained analysis focused only on Twitter microblogs. We have addressed issues of who chooses to participate in online discussion and debates about PISA, focused solely on social media. An outcome of this study is the development of our methodological heuristic, using simple descriptive statistics, that provides a broad account of the scope of the social network in relation to the dissemination of the PISA

reports and contributes to research about social mediatisation. Our analysis of the social mediatisation of the PISA report enables global conversations, as distinct from legacy media reporting, which largely stresses comparative national test performance.

Finally, the yet, largely unexplored relationship between PISA and social media may be because such analyses require increasingly restrictive ethical clearances and specialised statistical knowledge and expertise with computational software. As such, our approach was driven by the perceived need to analyse social networks in ways that did not require complicated software or comprehensive expertise in statistical analyses. Further, we would be critical of the implicit flat ontology in much network analysis which utilises visualisations but ignores the statistical insights, for example, the connections (homophily, reciprocity, etc.) or distributions (centrality, tie strength, etc.) of relationships within social networks. We have, nonetheless, taken on the conceptual approaches of a social network analysis – a sentiment analysis and a social influence analysis – but draw on computational tools that are low or no cost, and that do not require an extensive period of expertise-building. This hybrid approach enables researchers to analyse social networks to determine a baseline understanding of the interactions, before moving to more detailed analyses involving other more specialised research tools and expertise.

Our analysis shows that the OECD's largely descriptive and informative approach about the PISA results informed social media narratives. The OECD effectively used Twitter to disseminate and promote the PISA report as part of a broader and well-constructed legacy and social media strategy, developed by them to manage the 'receipt and reception' of the reporting of PISA results. Clearly, they see a future where ILSAs continue to be regarded as effective policy devices in assessing a nation's comparative educational performance. The substantial participation by multiple media outlets demonstrates that this group of actors also seek to constitute the PISA results narrative. These interests sit alongside those of businesses, financial organisations, unions, educators, and schools, verifying that more voices are included in social media such as Twitter compared with legacy media. Academic and teacher union influence on the narrative, offering commentary and critique, gained momentum on the day after the report's release, while these actors also used their reputational capital to paradoxically publicise PISA and amplify the metrics-based messages.

We conclude with the questions we started with: 'Who participates?' in the social network and 'What do they say?' about PISA. We could very simply respond by saying, many different actors participate and have many different perspectives that add to the global PISA narrative. But such a response does not capture the complexities of social mediatisation when seeking to understand these phenomena in the context of social media and the conditions of communication they afford. We can only infer what governs choices that are made by the various actors when they engage in the social media fray. We are confident that regardless of the volume of tweets and the number of popularity metrics an actor may possess, policy reception is an important part of this equation. That is, those seeking to exercise influence on education policy are unlikely to do so unless policy actors are open to and willing to listen and consider their claims and critiques. After all, the motivation for ILSAs should be to contribute to improving the lives of children and young people; something that is easy to lose sight of when a nation's educational performance is reduced to PISA metrics.

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