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Abstract

This position paper contributes to the field of critical educational technology (Ed-Tech) research by providing empirical evidence for the qualities of the phenomenon known as Ed-Tech speak. The research question, how Ed-Tech speak in research articles contributes to validating the importance and utility of the iPad, is addressed by applying critical genre analysis to investigate empirical research articles discussing the use of iPads in institutional education. As a result, four categories were formed: the self-evident importance of iPads, overgeneralization of references, the use of strong reporting verbs (to boost weak references), and the use of boosting devices when discussing the findings. Possible explanations for the existence of Ed-Tech speak in research articles are offered.

Keywords: iPad; Ed-Tech speak; critical genre analysis; educational technology; discourse

Introduction

While science tends to show its poker face when operating on society’s frontstage, its other faces – expressing doubt, hesitation, and bewilderment – tend to become visible as soon as one starts looking more carefully at what goes on backstage (where scientific knowledge is actually produced) (Bijker, Bal, and Hendriks 2009, 32–33).

Since iPads were launched in 2010, they have raised an active discussion in educational technology (Ed-Tech) research (Nguyen, Barton, and Nguyen 2015). The iPad has been called ‘the game changer’ (Geist 2011), and concepts such as ‘iPad-classrooms’ (Jankhe 2013), ‘iPad-based teaching and learning’ (Smith and Santori 2015), and ‘iPädagogy’ (Cochrane, Narayan, and Oldfield 2013) have been used in academic discussions.

On one hand, expressions such as the ones above are typical in Ed-Tech research where optimistic claims are common discursive devices (Bigum and Kenway 2005; Selwyn 2011). This feature is often referred to as Ed-Tech speak/discourse (Selwyn 2016; see also Ideland 2020; Mertala 2020) which consists of ‘extensive claims, promotional activity, and imaginative marketing which centers on the idea that technical solutions have the capacity to transform education for the future’ (Williamson 2017, 7–8) and is often certain about events, thus leaving little room for alternate outcomes (Selwyn 2016). Put differently, Ed-Tech speak can be conceptualized as a combination of various (more specific) technology-related discourses, including those of technological optimism (technology is good for education; Selwyn 2011), technological solutionism (technology is the solution for fixing educational problems; Morozov 2013), and technological determinism (technology will determine the nature of societal changes; Hallström 2020).

What makes Ed-Tech speak around the iPad worthwhile to study is that the iPad is not a distinguished form of digital technology but a trademark, one among various tablet computers. Although it is evident that concepts used in scholarly debate should be as accurate as possible, academic discussion should be able to go beyond superficial device-centered discourses and debate the phenomenon in an abstract manner. As argued by Goodyear and Retalis (2010, 3) ‘we need to distinguish between enduring fundamentals of learning and the transient froth splashed up by each new wave of innovation.’ Indeed, the academic vocabulary of Ed-Tech contains concepts such as ‘computer-supported ubiquitous learning’

(Ogata and Yano 2004) and ‘mobile learning’ (Sharpes, Taylor, and Vavoula 2005) that embrace the idea that learning can be supported with types of technology that enable mobility.

This position paper addresses the following question: how does Ed-Tech speak in research articles about Apple’s iPad contribute to promoting and validating the importance and utility of the iPad for teaching and learning? The central argument justifying the research approach is that as educational practice and policy should ideally be based on evidence of research (Slavin 2020), and the way individual products are portrayed in academic discussion must be carefully considered. Although Ed-Tech speak has been the subject of a moderate amount of research (dos Santos et al. 2020; Funes and Mackness 2018; Ideland 2020; Mertala 2020; Saari and Sääntti 2018; Selwyn 2016), the empirical focus has been on texts other than research articles—a gap the present study intends to fill.

The contextual focus is on research conducted in the preschool education context, which refers to institutional education for children from zero to eight years old. Preschool education is an emerging field of technology integration, which makes it a new and profitable market for educational technology companies. This is well illustrated by the fact that 80 percent of the top-selling paid apps in the education category in the Apple App Store are aimed at young children (Vaala, Ly, and Levine 2018).

Critical genre analysis of research articles

The written forms of academic communication—particularly the research article—are a frequent focus of genre research (van Enk and Power 2017; Holmes 1997; Peacock 2002). Genre, as described by Hyland (2008), is a term used to group texts together, representing how writers typically use language to respond to recurring situations. Thus, as Hyland stated, ‘an understanding of the concept [of genre] enables us to look beyond content, composing processes and grammatical forms to see texts as socially situated attempts to communicate

with readers' (2008, 543). Articles reporting empirical research form one genre distinguished from among the variety of scholarly publications (Dobakhti 2016). Although some level of variation exists between different disciplines, empirical research articles typically follow the so-called IMRAD structure consisting of an introduction, methods, results, and discussion (Sollaci and Pereira 2004). Each section serves a different purpose which Wu (2011) outlines as the following questions the researcher must answer: Introduction—Why did you do it in the first place?, Methods—How did you do it exactly?, Results—What did you find?, and Discussion—What does it mean after all, and so what?

The question 'why did you do it?' for example, is about creating and articulating a niche for the research. To draw on Swales' (1990) ideas on creating the research space, pinpointing the niche requires claiming the centrality of the topic and reviewing previous research. The use of references—reviewing previous research—is an indistinguishable part of the rhetorical devices of scholarly writing when claiming the significance of the topic. The purpose of a reference is to support an argument by referencing an authoritative piece of writing and/or research (Eunson 1994 as cited in Taylor 2002), to construct factual reliability (Hyland 2002), and to emphasize that the research is embedded in literature (Hyland and Jiang 2019). Put differently, the strength of an argument, to a notable extent, lies in the cited references. Thus, the question is not only about whether the author uses references but also about the quality of the references: Is the cited literature sufficient to support the claims made? That said, authors can take various stances toward the cited literature (Thompson and Yiyun 1991), and the ways writers position themselves in relation to existing research are typically examined by paying attention to and analyzing the kinds of reporting verbs used (Bloch 2010). Verbs such as demonstrate, prove, and show reveal the writer's agreement with a previous statement (Hyland 2002), while hedges such as suggest, indicate, and imply open up what Thompson and Yiyun (1991, 396) called 'evaluative space.'

Another target of genre research is how implications of the research are presented in the research article (Dobakhti 2016). Implications are typically addressed in the discussion section, in which the authors should

Evaluate and interpret their implications, especially with respect to your original hypotheses Here you will examine, interpret, and qualify the results and draw inferences and conclusions from them. Emphasize any theoretical or practical consequences of the results. (Tavakoli 2012, 177)

Traditionally, scholars of genre analysis have been interested in whether and where implications are provided (Dobakhti 2016; Holmes 1997). The contents of the implications or the correspondence between the findings and the implications have seldom been the research interest. The only exception appears to be medical research, where concerns about authors making claims about their findings that go beyond the data have been expressed regularly (Docherty and Smith 1999; Skelton and Edwards 2000). This notion is perhaps best explained by the fact that in medical research the recommendations given can be—literally—a matter of life and death.

Although the issues around Ed-Tech are less dramatic, pedagogical and policy implications and recommendations in research articles are written explicitly with the purpose of operationalizing the key findings as new policies and practices. Ed-Tech is a multi-billion-dollar business (Wright and Peters 2017). Thus, recommendations made in research articles are of interest to this so-called ‘EdTech industry’ which consists of the educational divisions of Google, Amazon, Facebook, Apple and Microsoft; venture capital-backed EdTech start-ups and newcomers, and legacy EdTech providers such as Pearson (Mirrlees and Alvi 2019), as the opportunity to advertise one’s products as research and/or evidence based is a viable marketing device for Ed-Tech companies. To paraphrase Bhatia (2012), it is not enough to examine the way text is constructed. The way it is likely to be interpreted, used, and exploited

must be examined too. This analytical stance can be referred to as *critical genre analysis*, which merges the perspectives and vocabulary of critical discourse analysis and genre analysis (Tardy and Swales 2014, 172). Critical refers to an attempt at a ‘reduction of illusion’ by illustrating the problems related to influential concepts and/or discourses (Wodak and Meyer 2016, 4). Whereas critical discourse analysis often deploys a wide range of different texts, critical genre analysis focuses on a narrower pool of texts that come from the same genre (Bhatia 2015).

Expanding the analytical focus to cover the ways texts are likely to be interpreted and used (Bhatia 2012) is also about aiming to gain understanding of what the authors are trying to achieve. As put by Gee (2015, 1), ‘to understand what is being said in any deep way people need to know what speakers or writers are trying to do.’ Ideally, in the context of a research article, what the authors try to do is to contribute to the development of the research field and to increase our understanding of the world. That said, active publishing is also considered a requisite for progressing in an academic career (McGrail, Rickard, and Jones 2006). Thus, it is vital to be aware of that

although genres are viewed as conventionalized constructs, expert members of the disciplinary and professional communities often exploit generic resources to express their private organizational intentions within the constructs of professionally shared communicative purposes. (Bhatia 2015, 16)

In other words, the prevalent ‘publish or perish’ culture seduces authors to exploit and use the discursive resources of the genre to express their ideas and findings as undoubted and certain as possible. One way writers can try to enhance their viewpoints is by framing their arguments with boosting devices, which refers to expressions like ‘definitely,’ ‘I am sure that,’ and ‘we firmly believe’ (Vázquez and Giner 2009). Drawing on Hyland’s (1998) work, Vázquez and Giner (2009, 221–222) summarized the purpose of boosters as to ‘create an

impression of certainty, conviction and assurance, and they can be used to instill trust and confidence in academic readers,' all features that are closely aligned with Ed-Tech speak (see Mertala 2020; Selwyn 2016; Williamson 2017). The use of discursive resources, such as strong reporting verbs and boosting devices, is by no means a matter of detail. To be successful in conveying the message, the author must convince the readers in several stages: First, the editor(s) must be persuaded that the initial submission is worthy to send out for external review. In the next stage, the author must convince at least two reviewers about the quality and importance of the study. Only after that will the article be available to the broader academic community to read, evaluate, and debate.

Materials and methods

The text chosen to analyze to answer a particular research question is a crucial aspect in determining the validity of research on texts and discourses (Boreus and Bergström 2017, 18). What genre will be chosen, from what era the texts are chosen, and how the relevant texts will be located are the key questions to be answered. Research articles were chosen for this study as they are 'a high valued genre in building and disseminating knowledge in academic communities' (Dobakhti 2016, 1383) and a popular form of contemporary academic publishing (Johnson, Watkinson and Mabe 2018). Timewise, based on a reading of the research literature (Nguyen et al. 2015) and commercial analyses (Gartner 2010), the hype around iPads in education peaked between 2010 and 2015. Thus, it was decided to concentrate on research articles published during that period.

In traditional genre analysis, research articles are typically chosen randomly across a set of purposefully selected journals, and analysis-wise, deductive reasoning based on the selected linguistic features (e.g., moves and steps, boosters, hedges, the quality of reporting verbs) is a common approach (Bloch 2010; Holmes 1997; Peacock 2002). The present study, however, follows a different approach: Instead of aiming for generalizability, the focus is on

identifying the nature of Ed-Tech speak especially around iPads. Thus, intensity sampling which consists of information-rich cases that manifest the phenomenon of interest intensely (Patton 2002) was used to identify the research articles most relevant to the research objective. The relevant research was located via Google Scholar by using the search string: *iPad AND preschool OR kindergarten* with patents and citations excluded. Google Scholar was chosen because it covers more social science publications than databases like Web of Science or Scopus (Harzing and Alakangas 2016). To ensure the comparability of the data, the focus was put on research articles reporting empirical research conducted in mainstream preschool education. In other words, theoretical articles, review articles, as well as empirical articles conducted in laboratory settings or in special education classes were not included in the analysis.

Due the exploratory research motive, the analysis process followed the principles of abductive approach in which the researcher moves between deductive and inductive reasoning (Grönfors 2011) by practicing the constant comparative method (Suddaby 2006), a common method for critical discourse studies (Wodak and Meyer 2016, 14) under which critical genre analysis can be located. The main theoretical thread was the qualitative features of Ed-Tech speak, namely, the inherent positivity and lack of hesitation (Selwyn 2011, 2016; Mertala 2020; Saari and Sääntti 2018; Williamson 2017). This thread was operationalized to a search for rhetoric devices including, but not limited to, the use of strong reporting verbs (Bloch 2010) and boosting devices (Vázquez and Giner 2009). To acknowledge the importance of referencing in argument-building in academic communication (Hyland 2002; Hyland and Jiang 2019; Taylor 2002), the cited literature was located and reviewed to validate the references used to back up claims. In line with the research motive, the focus areas were the introduction (i.e., how the importance of studying iPads is justified) and the conclusion (i.e., suggestions and proposals provided for pedagogy and policy).

In practice, the analysis was conducted by downloading, reading, and analyzing the search hits one by one and comparing the notions in the articles with the theory (comparison between data and theory), the notions in different articles (comparison between the data), and the arguments made in the different sections of an individual article (comparison within the data). A total of 32 articles were analyzed. As no new categories were identified during the latter stages of analysis, the data was deemed sufficient with respect to the exploratory research motive. In the findings section, the results of this process are presented by concentrating on seven articles which are outlined in Table 1. These articles were chosen as examples because: a) they contain the most useful extracts for understanding the phenomenon under investigation, and b) they convey a wide spectrum of journals, including established Ed-Tech journals (*Computers & Education*, *Journal of Computer Assisted Learning*, *Computers in Schools*) as well as more context- (*Computers in New Zealand Schools*) and discipline-specific forums (*The Reading Teacher*; *Journal of Literacy and Technology*). In other words, the articles are not the only ones containing the issues to be discussed next, nor are they a representative sample of iPad-related Ed-Tech research literature in general. Instead, they are informant-rich cases from which we can learn about the fundamental qualities of Ed-Tech speak in the context of academic communication.

Table 1. Articles used as examples

Article
Brown, M. & Harmon, M. 2013. "iPad intervention with at-risk preschoolers: Mobile technology in the classroom". <i>Journal of Literacy and Technology</i> 14 (1): 56-78.
Falloon, G. 2014. "What's going on behind the screens? Researching young students' learning pathways using iPads". <i>Journal of Computer Assisted Learning</i> 30 (4): 318-336. doi:10.1111/jcal.12044
Hutchison, A., B. Beschorner and D. Schmidt-Crawford. 2012. "Exploring the use of the iPad for literacy learning". <i>The Reading Teacher</i> 66 (1): 15-23. doi:10.1002/TRTR.01090
Khoo, E., R. Merry, N. Nguyen, T. Bennett and N. MacMillan, 2013. "Early childhood education teachers' iPad-supported practices in young children's learning and exploration". <i>Computers in New Zealand Schools: Learning, Teaching and Technology</i> 25 (1-3); 3-20.

Kucirkova, N., D. Messer, K. Sheehy and C. Panadero. 2014. "Children's engagement with educational iPad apps: Insights from a Spanish classroom". *Computers & Education* 71: 175-184. doi:10.1016/j.compedu.2013.10.003

Milman, N., A. Carlson-Bancroft and A. Boogart. 2014. "Examining differentiation and utilization of iPads across content areas in an independent, preK–4th Grade elementary school". *Computers in the Schools* 31 (3): 119-133. doi:10.1080/07380569.2014.931776

Price, S., C. Jewitt and L. Crescenzi. 2015. "The role of iPads in pre-school children's mark making development". *Computers & Education* 87: 131-141. doi:10.1016/j.compedu.2013.10.003

Findings and discussion

The self-evident importance of iPads

The first form of Ed-Tech speak identified from the research articles was the presentation of the importance of iPads as a self-evident fact. In practice, this meant that statements were made about iPads that did not cite references to back up these claims. Khoo et al. (2013, 17), for instance, stated that their study 'was developed because of an interest in the growing importance of iPads in young children's daily lives.' Hutchinson, Beschorner, and Schmidt-Crawford (2012, 15), in turn, introduced their study by stating that

the iPad has unique capabilities that were unparalleled prior to its introduction. It has most of the capabilities of a desktop or laptop computer, but with additional unique affordances, such as a multitouch screen and a seemingly endless variety of applications, that promote previously unseen possibilities for mobile learning.

A look at the broader pool of research literature on iPads in education suggests that such expressions are not limited to preschool education. For instance, Nguyen et al. (2015, 190) started their review of the use of iPads in higher education by stating that 'the iPad is a popular touch screen tablet computer. Since the release of iPads by Apple in 2010, this emerging technology has been quickly adopted all around the world.' In accordance with the previous examples, no references were cited to support the argument. To sum up, the extracts

above serve as examples of how quantitative (e.g., the iPad is a popular touchscreen tablet computer) and qualitative (e.g., the growing importance of iPads in young children's daily lives, and the iPad has unique capabilities) statements about iPads can be introduced as self-evident and established facts that require no further justification or explanation in research articles.

Although the use of references is at the core of academic argumentation (Hyland 2002; Hyland and Jiang 2019; Taylor 2002), there are also guidelines informing authors about situations when referencing is not required. Champion et al. (1997, 166), for instance, argued that 'references are not needed to support obvious or well accepted assertions or techniques.' The utility of Ed-Tech appears to be a built-in starting point in academic communication. As Selwyn (2016) noted, the names of the major Ed-Tech research areas (technology-enhanced learning and computer-supported collaborative learning) convey a statement that learning is driven actively by technology, making the positive relationship between technology and learning a 'well accepted assertion,' to cite Champion et al.'s (1997, 166) exact words.

In a situation where concepts suggesting optimistic causality form the basic vocabulary of the research area, it is the one who questions the importance of iPads (or more broadly, Ed-Tech) who must come up with proof and counter-evidence that shake up the status quo. Although the amount of critical Ed-Tech research increased in recent years (Eynon 2018), it has long been, and arguably, still is, a minor field of research compared to the positively oriented mainstream approaches. The notion that researchers must frame and name their research approach as critical suggests that a critical mindset is not the default in the field.

Overgeneralization of references

The second form of Ed-Tech speak identified from the articles was the overgeneralization of references, which is illustrated next via two examples. The first one is from Brown and Harmon (2013, 58), who began their article by stating that the iPad has become a powerful tool of living and learning; socially, academically, cognitively, and linguistically’, and cited a position statement by the National Association for the Education of Young Children (NAEYC; 2012) to back up this argument. The report, however, does not mention iPads; rather, it discusses digital technology in a more general manner. Additionally, the statement takes a more cautious stance toward technology: it provides a summary of research and concludes that “there is conflicting evidence on the value of technology in children’s development” (NAEYC 2012, 3). In other words, the authors generalized the (debated) evidence of the benefits of different technologies to apply it to iPads as well.

In the second case, overgeneralization was visible as an inductive logic, where isolated cases or anecdotal incidents were represented as general rules. An illustrative example is provided by Kucirkova et al. (2014, 176) who claimed that iPads are used in ‘many Western pre-schools’ and cited Butkus (2012) to support this claim. One would assume that the reference is a state-of-the-art survey about the availability and use of iPads in preschools in Western contexts (North America, Australia, Europe). However, that was not the case. Instead, the reference was a travel report by education consultant Heidi Butkus published on her blog that discusses her visit to one Apple-sponsored Midwestern school, which had implemented a one-on-one iPad program. On her blog, Butkus (2012) wrote:

Last spring, I was fortunate enough to visit Trost Elementary School in Oregon that is using iPads and iPods in one-to-one situations at every grade level! This school has done so much with mobile technology that Apple now sponsors classroom tours through their school for educators. --- Of course, being a

Kindergarten teacher with a special interest in the use of iPads in the classroom, my main area of interest was the Kindergarten classroom and its one-on-one iPad program. So --- I went to the Kindergarten classroom first to check out their program.

In other words, the claim that iPads are used in ‘many Western pre-schools’ was supported by a reference that reports the distribution of devices of one kindergarten classroom only. To draw on the terminology of research sampling techniques (Patton 2002), the logic appears to be that the preschool class at Trost Elementary School is a representative sample of the broader population of Western preschools. Such reasoning is inevitably flawed: Not only do preschool systems vary between and within countries (Bertram and Pascal 2016), but also the fact that the center was sponsored by Apple hardly makes the school a representative case. To conclude, the reference used does not offer factual reliability which Hyland (2002) named as a key tenet of referencing. In addition, the reference used was not a scholarly source but a blog post, a theme discussed in detail in the following section.

The use of strong reporting verbs (to boost weak references)

The third form of Ed-Tech speak identified was the use of strong reporting verbs. They were often accompanied by the use of weak references which, to cite Campion et al. (1997, 166), include ‘professional or trade journals, and similar non-refereed sources’ as well as ‘newspapers and other popular press sources.’ What makes this notion compelling is the mismatch between the quality of the source and the way its validity is framed to the reader. The following extracts serve as illustrative examples of this phenomenon. In both extracts, the importance of studying iPads is justified by stating that iPads have proven to be beneficial for children’s learning and thus, worth further examination. Price, Jewitt, and Crescenzi (2015), for example, framed their research as follows:

A recent review of the role of iPads for learning corroborates this [the ease with which very young children master touch-based interaction], claiming them to be ‘easy to use, have a positive impact on student engagement, increasing motivation, enthusiasm, interest, independence and self-regulation, creativity and improved productivity’ (Clarck & Luckin, 2013, p. 4). (131)

In the extract, two reporting verbs are used to situate the authors’ argument within the literature; ‘claim’ and ‘corroborate.’ Claim is one of the reporting verbs that can be used either to confront or support the argument made in the primary text (Bloch 2010). Thus, as Bloch (2010) emphasized, the meaning of the reporting verbs used can be understood only by reviewing them as part of the broader textual and argumentative context. In this case, the reporting verb ‘corroborates’ is the key to understanding the authors’ stance toward the claims made in the primary text as it signals that the statements made in the cited document are considered valid. Another example is from an article by Milman, Carlson-Bancroft, and Vanden Boogaart (2014). In the introduction, they stated:

Emerging research shows that iPads improve the reading, writing, and content-area skills of students in P–12 general education classrooms (Bebell, Dorris, & Muir, 2012; Kennedy, 2011; Pierce, 2011; Quillen, 2011), develop language skills and augment the vocabularies of English language learners (Demski, 2011), and help children with special needs communicate and learn in ways they previously could not (Herbert, 2010; Shah, 2011). (121–122)¹

‘Show’ (similarly, ‘to corroborate’) is what Bloch (2010) refers to as a strong reporting verb. Unlike weak reporting verbs such as ‘suggests’ and ‘implies,’ ‘show’ leaves from little to no room for hesitation and doubt, a prominent feature of Ed-Tech speak (Selwyn 2016). The use of strong reporting verbs is often boosted by citing various pieces of research (Bloch 2010).

¹ Documents cited in the extract are not included in the list of references.

This was the case with the Milman et al. (2014) paper as well as the seven different references used to support their claim about the pedagogical utility of iPads. Thus, in a sense, the extract contains a dual layer of persuasive discourse: The authors cite numerous supporting sources that they frame via strong reporting verbs.

That said, in both examples the literature framed with strong reporting verbs was not as substantial as the chosen words imply. The review (Clark and Luckin 2013) cited by Price et al. (2015), for example, was a non-peer-reviewed report that provided no information about how the reviewed literature was selected. Only two of the reviewed items, both conference proceedings, were actual academic publications; the others were blog posts, news items, and other non-academic outputs. Accordingly, an examination of the literature cited by Milman et al. (2014) showed that the argument that it is ‘emerging research’ is not convincing. Five of the references were either newspaper articles or short pieces from practitioner journals, and one was a press release about unpublished research. For example, the Pierce (2011, n.p.) reference is an online news piece reporting about

a research paper titled ‘Unlocking Literacy with iPad, [in which] Ohio English teacher James Harmon found that state-compiled statistics indicate that those students with iPad access in the year leading up to the Ohio Graduation Test had a 6-percent greater chance of passing the test’s reading portion than those without, and an 8-percent greater chance of passing the writing portion.

A closer examination of the ‘research paper’ (Harmon n.d.), an openly available web document, reveals that it is a non-peer-reviewed publication based on the experiences of an individual teacher. For instance, no pre-intervention tests were created for the students although such tests are a fundamental prerequisite for comparing intervention and control groups. Even the author admits that the publication ‘does not meet the standards of veritable academic research’ (Harmon n.d., 6). There is nothing wrong with citing popular press or social

media publications in research articles, in principle. On the contrary, they are often useful for framing the zeitgeist and public discussions about a given topic (Campion et al. 1997; see Andrejevic and Selwyn 2020 for a practical example). Although it is understandable that journalists can occasionally mistake a non-peer-reviewed teaching experiment with scholarly research, referring to news pieces about isolated teaching experiments as ‘emerging research’ in peer-reviewed research articles is a questionable practice.

The use of boosting devices in the discussion of the findings

The fourth form of Ed-Tech speak identified was the use of boosting devices (Vázquez and Giner 2009) when summarizing and discussing the findings of the study. This theme is discussed in more detail by using two extracts as examples. The first one is from Hutchinson et al. (2012, 23, italics added), who concluded their paper by stating that

we found that using the iPads for literacy instruction not only supported student learning, but students were also *highly* engaged and able to demonstrate *unique* and creative ways of responding to text using a technology tool that offers some *unique* affordances to users.

The use of the term ‘highly’ to describe the level of students’ engagement can be understood as a booster, as it attempts to convince the reader about the extremity of the phenomenon.

The students were not ‘just’ engaged. The engagement was notably intense. Accordingly, the constant use of the term ‘unique’ throughout the paper (see also the extract in the section ‘The self-evident importance of iPads’) can, in the context of this individual paper, be understood as a boosting device, as it is used to distinguish iPads from other tablet computers.

The most compelling case, however, was found in the paper by Falloon (2014), who reported a study about five-year-old children’s dyadic interactions when performing literacy, numeracy, and problem-solving tasks with iPads. The author found that 11 out of 40 pairs

were able to use the apps as learning tasks. Almost the same number of pairs (9) were identified as displaying ‘minimal cognitive engagement with the learning-oriented demands of the app’ (Falloon 2014, 332) which was reasoned to be due to the poor app design. The remaining pairs (20) typically applied the strategy of repeatedly engaging with a level they had previously accomplished with no desire to move to more challenging tasks. However, although the results were not encouraging in terms of iPad utility in children’s learning, at the end of the paper Falloon (2014) emphasized that

It is important at this point to make clear that this study is not ‘anti-iPad’ [and that the author is] firmly convinced that these devices, and ones like them, hold unrivalled potential as powerful learning tools in the hands of students working with skillful and diligent teachers. Their unique interface, simplicity, intuitive design, portability, connectivity, speed, range of apps and relative affordability mark them as being a significant technological leap forward in the array of digital resources available to support learning at all levels. (2014, 334)

As previously stated, a core tenet of Ed-Tech speak is that it is certain about events, thus leaving little room for alternate outcomes (Selwyn 2016). The negative results of the study were an alternative outcome regarding the inherent positivity of mainstream Ed-Tech research (Eynon 2018; Selwyn 2011). Thus, in the conclusions the author used ‘extensive claims, promotional activity, and imaginative marketing’ (Williamson 2017, 7) to locate the paper within the master narrative of Ed-Tech speak (see also Mertala 2020). To put this point in context, the author is not just convinced, but ‘firmly convinced.’ iPads do not merely hold potential; the potential is described as ‘unrivalled’ by nature. Nor are iPads just learning tools, but ‘powerful learning tools.’ These expressions can be labeled as boosting devices that are used to convince the reader about the message the author is trying to say (Vázquez and Giner 2009). In this case, the message is the claim that iPads are a ‘significant technological

leap forward in the array of digital resources available to support learning at all levels' (Falloon 2014, 334), an illustrative example of the 'heightened language of effect' (Selwyn 2016, 439) suggesting that technology will lead to substantial changes in educational practices and outcomes.

Conclusions

The present study has applied critical genre analysis to explore whether and how Ed-Tech speak (Selwyn 2016), a hesitation-free discourse rich with optimistic claims about the pedagogical utility of technology, is operationalized in empirical research articles. To keep the article focused, the perspective was delimited to the use of iPads in preschool education. As a result, a number of problematical discursive patterns were identified, and the following four categories were formed: 1) the self-evident importance of iPads, 2) overgeneralization of references, 3) the use of strong reporting verbs (to boost weak references), and 4) the use of boosting devices when discussing the findings. The main contribution of the present study is that it has provided empirical evidence that Ed-Tech speak is not restricted to media pieces (Mertala 2020), policy documents (Saari and Sääntti 2018), and the rhetoric of Ed-Tech entrepreneurs (Ideland 2020) but is also practiced within academic communication. Additionally, this study has revealed some of the core qualities of Ed-Tech speak in the context of academic communication.

Despite the critical undertone, this study is not 'anti-iPad' to cite Falloon's (2014, 334) words. What this study criticizes is the naïve way a particular trademark has been endorsed and promoted in scholarly publications. Such discourses are problematic, as academic statements like these create a sense of reality where iPads are more important than they actually are, both culturally and pedagogically. I will end this paper by speculating on why such themes were found in the articles. First, I will approach the question from the viewpoint

of academic communication. In the second subsection, I will briefly discuss the similarities between the findings and the language used in Apple's marketing.

Conventions of academic communication

One explanation for the existence of weak references might be that some of the articles were written in the early stages of educational iPad integration. For example, Kucirkova et al. (2014) submitted their article in August 2013, three years after the introduction of the first generation of iPads. Given the slow pace of academic research and publishing processes, it is possible that at the time of writing there was not much existing research about proliferation of iPads in preschool education to cite. In short, it is possible that weak references are used for the want of better ones. Milman et al. (2014) explicitly commented that the 'research specifically investigating the use of iPads in P-12 settings in its infancy' (p. 120).

This notion, however, does not explain (nor justify) the overgeneralization of individual sources or framing news pieces as emerging research. One explanation for their occurrence is that they are the result of an attempt to convince readers (editors, reviewers, and scholarly community at large) about the importance of the research topic. To clarify this interpretation, let us compare the straightforward statement that 'iPads are used in many Western preschools' with a more cautious version which could be something like

based on the rapid introduction of iPads in other educational sectors (Culen and Gasparini 2011; Rossing et al. 2012), it is justified to assume that they will be brought into use in preschools, too, at least in Western contexts.

The first version messages that the phenomenon under investigation is actual and topical with no hesitation, a typical feature of Ed-Tech speak (Selwyn 2016). Although the second version is more accurate, argumentation-wise it is far less convincing as it talks about possibilities and uses other educational contexts as indicators to predict the (near)future of digitalization

of preschool education. In the same sense, Millman et al.'s (2014) solution to frame their sources as 'emerging research' provides their study firmer ground to stand on than informing the reader that there are mere anecdotal and non-peer-reviewed reports about the utility of iPads in the preschool/primary school context. Although articles are rarely rejected by journals based on the use of a few weak references (and being open about it), contemporary academia is highly competitive, and publications are a key meter in researcher evaluations (McGrail et al. 2006). Last, the question why negative results were framed with boosting devices in the conclusions is perhaps the trickiest one to answer. One reason might be a desire to locate the study in the pro-technology zeitgeist that has long been the dominant field of Ed-Tech research (Bigum and Kenway 2005; Eynon 2018; Selwyn 2011). Pro-technology zeitgeist may also be why on several occasions the importance of studying iPads was augmented without references to any sources.

Similarities with Apple's marketing discourses

It is also worthwhile to acknowledge that the forms of Ed-Tech speak identified from the articles contain notable similarities with the discourses Apple uses for marketing the iPad. For example, as illustrated in Table 2, the way Hutchinson et al. (2013) described the utility of the iPad is close to the language and reasoning used by Apple. Both parties highlight that the iPad has the same capabilities as desktop computers, citing the variety of applications and the multi-touch technology, as well as pinpointing the pedagogical possibilities and affordances brought by its mobility.

Table 2: Similarities between Hutchinson et al.'s (2013) paper and Apple's marketing texts

Hutchinson et al. (2013)	Apple (n.d.)
It has most of the capabilities of a desktop or laptop computer. . .	Does what you'd expect only a desktop could do.

but with additional unique affordances, such as a multi-touch screen and a seemingly endless variety of applications . . .	powerful apps designed for the large multi-touch display
that promote previously unseen possibilities for mobile learning	iPad is designed for complete freedom of expression and freedom of movement

Accordingly, the use of boosting devices is a feature shared by the analyzed articles and Apple’s advertisement: Falloon’s (2014, 334) conclusion that iPads “hold unrivalled potential as powerful learning tools in the hands of students” is almost identical to Apple’s (n.d.) statement that “as soon as you hand out an iPad, you’re putting incredible power in your students’ hands.” These similarities signal that the promotional statements used by Ed-Tech companies have become self-evident truths through the process of factualization, where subjective claims are represented as objective and well-known facts (Juhila 2016), which, as previously discussed, do not require the use of references in academic communication. Unpacking the factualized discourses is crucial, as Apple or any other agent in EdTech industry (Mirlees and Alvi 2019) do not need the academic community to do their marketing.

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