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The inherent tensions of 'instant education'. A critical review of mobile instant messaging

Abstract

This paper critically reviews literature on the role of Mobile Instant Messaging (MIM) applications, such as WhatsApp, in supporting learning and teaching practice. Using formal qualitative synthesis methodology, and dialectical theory as an analytical tool, the main objective was to identify tensions, affordances, constraints, and resolution strategies attendant to educational uses of MIM. In contrast to prior work, the analysis offers a nuanced and complex picture of the use of MIM in learning and teaching settings. Instead of facilitating the creation of educational outcomes in a straightforward manner, the realities of MIM use are socially constructed and the subject of conflicting negotiations. Concretely, the educational use of MIM requires users to navigate the interdependent dialectical tensions of immediacy vs delays (temporal dimension), intimacy vs detachment (relationship dimension) and task vs ludic orientation (intellectual dimension). The findings also reveal a number of behavioural and technical resolution strategies that users deploy to manage these tensions.

Introduction

MIM and Education

The use of MIM applications, such as WhatsApp, Snapchat, iMessage, KaKaoTalk and WeChat, has grown tremendously in the last five years and presents a dominant mode of contemporary communication. For example, WhatsApp, an instance of MIM, is rated as the third most popular social media platform following Facebook and YouTube (Statista, 2017). Contemporary MIM applications typically allow for real-time and asynchronous communication. Perhaps their key features are alert mechanisms, such as popups, sounds or vibration, that immediately notify users of incoming messages.

Surprisingly, there is relatively little known regarding the role of instant messaging (IM) in learning and teaching. A few authors reviewed instant messaging before its proliferation on mobile platforms. For example, Quan-Haase (2008) noted in her review of university students' IM behaviour that they used these platforms predominantly for social purposes, i.e., maintaining and nurturing distant and proximate social ties. Interestingly, in this early and non-mobile-focused analysis, several tensions came to the fore, which included the students' "improper" writing while using IM and the detrimental effects of distraction and multitasking on academic performance (Quan-Haase, 2008).

Also the use of IM on mobile devices is under-researched and the only systematic review on mobile instant messaging is Tang et al.'s (2017) study. What is, however, acknowledged commonly in the literature is the capability of MIM to foster various forms of social presence in educational settings, and its informal use alone points to the relevance it has as part of students' personal learning environments. The value of MIM in enabling knowledge development and cognitive outcomes in more formal education settings is less conclusive. In their review, Tang et al. (2017) identified only a very small number of robust studies (n = seven), five with positive outcomes and two with no or even negative knowledge effects. In essence, and similar to the observations of Quan-Haase's (2008) IM review, Tang et al.'s (2017) review identified a number of constraints. These included improper use of language,

interference with private life and irrelevant, inappropriate and incoherent conversations (Tang & Hew, 2017). In this sense, IM and MIM have ambivalent effects and their use is associated with a number of tensions, ambiguities and opposing characteristics that can support and hinder students' academic work at the same time.

Theoretical Background

To uncover and understand these tensions systematically, we utilised dialectical theory as an analytical tool because it is centred on understanding opposing dynamics. Dialectical perspectives originate from Baxter and Montgomery's dialectical theory. Its original focus was to study the dynamics of contradictions and their resolution in social relationships, such as the dialectical struggle between the relational opposites of being together vs being independent in a romantic relationship. These opposites cannot be seen as either-/or choices of mutually exclusive poles, but rather require the partners to address both ends simultaneously. Moreover, this process is not a one-time decision but rather manifests in the form of a continuous and ongoing negotiation (Montgomery, 1993).

Beyond interpersonal relationships, dialectical approaches have been used in the field of media and information technology. For example, Gibbs, Rozaidi and Eisenberg (2013) studied how the affordances of social media created tensions among distributed workers of an engineering division. Instead of simply increasing open communication and knowledge sharing, Gibbs et al. (2013) illustrated how employees needed to manage dialectical tensions between visibility and invisibility, engagement and disengagement, and sharing and control.

In the field of technology-enhanced learning, dialectical approaches have been applied only to a limited extent. Perhaps the most prominent example is activity theory, which Engeström conceives to be dialectic in that the implementation of technology in a system produces contradictions, which stem from socio-cultural tensions, and which can be identified and addressed using his activity system model (Engeström & Sannino, 2010). However, albeit activity theory, and particularly the elements of Engeström's model (e.g. subjects, rules, community etc.), are popular in educational technology research, the very idea of contradictions and tensions has

been taken up by other researchers only to a very limited extent. Dialectical approaches have also been used implicitly, for example in the form of the concept of technological ambivalence, which was used to explain tensions between the collaborative use of social media and the pressure that it generates to work individually and privately at the same time (Rambe & Nel, 2014). The use of dialectical theory is also related to what Selwyn (2010) describes as the critical study of educational technology. Broadly speaking, mainstream educational technology research tends to conceive digital technology either as a neutral, de-contextualised and value-free medium that produces certain educational outcomes (Surry & Baker, 2015), or, as a space that favours a particular educational direction, which is an approach labelled as soft-determinism (Selwyn, 2012). In contrast, critical approaches do justice to the complex, compromised, constrained and often conflicting realities of education technology use which is socially constructed and negotiated rather than pre-determined (Selwyn, 2010).

Approach and Methods

Research Question and Literature Search

What follows from the above is that the proliferation of MIM, while being potentially beneficial for learning and teaching, brings about considerable tensions and contradictions, which need to be better understood. Accordingly, the following research question was formulated:

> *What are the dialectical tensions in the educational use of MIM; and what resolution strategies do users apply in navigating these tensions?*

The goal of this research was thus not a systematic review of the effects of MIM, which has been carried out elsewhere (Tang and Hew, 2017). Instead, we sought to understand and conceptualise better the underlying and opposing dynamics in the form of dialectical tensions in the sense of a critical review. However, to build the arguments on a solid foundation, a systematic literature search was conducted. The databases PsycINFO, ERIC, Ovid and MEDLINE (via Ovid®) and Web of Science were searched using the key terms 'mobile instant messaging', or concrete applications (WhatsApp, imessage, KaKaoTalk, WeChat, BlackBerry messenger, Facebook messenger and snapchat), in connection with the research area "education and educational research" (in Web of Science only). In addition, selective searches were carried out in Google Scholar and the articles identified were back-searched. In the next step, abstracts were reviewed and eligible studies were retrieved and analysed with reference the four main criteria (Table 1).

Table 1

Eligibility criteria for studies

	Criteria	Description
1.	**Primary data**	Generation of empirical data through qualitative, quantitative or mixed-study designs
2.	**Sound & conceptually grounded**	Results needed to be available, scientifically traceable, plausible and grounded in educational / instructional (or related social science) concepts, theories or frameworks.

3.	**Learning and teaching activities**	Studies were required to focus on the research and evaluation of concrete learning or teaching activities (e. g., exclusion of administrative educational activities)
4.	**Use of mobile instant messaging features**	Studies needed to involve the use of MIM applications; research that examined the application of more traditional text messaging applications, such as SMS or MMS, were excluded.

Data Analysis

The application of the criteria resulted in a body of 21 studies which were then analysed in-depth. To pool and make sense of the predominantly qualitative research data of this emerging field of educational research, thematic analysis was applied as an approach of formal qualitative synthesis methodology. In qualitative synthesis studies, findings are systematically interpreted through a series of expert judgments to represent the meaning of the collected work (Bearman & Dawson, 2013). Thematic analysis involves repeated reading and analysing of texts and the identification of key themes and concepts across diverse studies. Concretely, dialectical tensions, i.e., themes that contradicted or opposed one another and associated tensions (opposing poles), affordances, constraints and resolution strategies were identified by reading and re-reading the papers. The method was inductive in that individual tensions were not derived from previous literature but were identified directly from the data. However, the very concepts of tensions (opposing poles), affordances, constraints and resolution strategies were used in a rather deductive manner borrowed from the theory of dialectical tensions. In other words, while the analysis of the content was inductive, the methods were applied in a deductive manner. By identifying dialectical tensions in the sense of an interpretive review, an analytical layer was construed that extended beyond the themes described in the individual studies (Bearman & Dawson, 2013). The emerging findings were iteratively discussed among the authors (Bearman & Dawson, 2013). Diverging interpretations were resolved upon discussion (Pope, Ziebland & Mays, 2000).

Sample Characteristics

Below we briefly summarise the key characteristics of the sample.

Table 2

Designs, tools and settings of MIM studies

Category	Description
Tools	WhatsApp was predominantly used (n=19); other tools: KakaoTalk (Kim, Lee & Kim, 2014), Mxit (Botha & Butgereit, 2012; Butgereit, 2007; van Rooyen, 2010) and MSN and Skype (Timmis, 2012).
Social formation	Most common social formation: group learning designs (n=19) where peers interacted in joint spaces among themselves and with educators (n=17) or exclusively among themselves (n=2). In addition, in 4 cases bilateral conversations were reported between educator and learner; and in one study between individual learners.
Degree of formality	In most cases (n=19) the MIM activity formed an explicit part of formal education settings. In 4 cases the educational MIM use was informal, i.e., not directly integrated with formal education activities.
Media integration	MIM learning and teaching activities were mainly linked with face-to-face teaching, which resulted in blended learning designs (n=16). Exclusively digital / mobile learning settings were only researched in 3 cases
Course / module	The most dominant subjects were computer sciences (n=7), business, education and health with 4 each, and mathematics and research methods with 2 each.
Education level	MIM was predominantly researched in higher education environments (n=19). Only 2 cases (reported in 4 studies) involved students from secondary education (Botha & Butgereit, 2012; Bouhnik & Deshen, 2014; Butgereit, 2007) and one study focused on the nature of learning and supervision in work-related education (Henry et al., 2015).
Location	Broad geographical scope: most cases (n=14) were from one country (South Africa); other cases from Europe (Castrillo, Martín-Monje & Bárcena, 2014; Timmis, 2012), the Middle East (Aburezeq & Ishtaiwa, 2013; Alabbasi, 2016; Bouhnik & Deshen), and Asia (Kim et al., 2014; Lam, 2015; So, 2016).

Results

Three central pairs of oppositions emerged in the analysis of the data: immediacy vs delays, intimacy vs detachment and task vs. ludic orientation. These are summarised in Table 3, which also presents affordances and constraints as well as the resolution strategies that learners and educators applied to attend to these tensions.

Table 3

Overview of tensions, affordances, constraints and resolution strategies

Tensions	Affordances	Constraints	Resolution strategies
Immediacy vs delays *Temporal dimension*	Immediacy enables logistical qualities: quicker access to learning resources; and mediates development of shared goals, actions and understanding; Delayed conversations allow ongoing engagement and widen opportunities for participation	Immediacy creates pressure on users to respond quickly Delays cause frustration if learning conversations are interrupted	*Behavioural*: foster immediacy through guidelines on response times; develop schedule for synchronous discussions; Educators enforce delays by postponing answers *Technical*: educators and learners mute the alert signals
Intimacy vs detachment *Relationship dimension*	Intimacy involves creation of closer relationships between learners and educators. Detachment reflects demands for private spaces and non-educational commitments	Intrusion of privacy, e.g., through obtrusive pop-up features and late discussions; Educators challenged by intimacy of informal language Pronounced detachment (in the form of disengagement) perceived critically	*Technical*: learners use distinct channels for personal and education discussions; *Behavioural*: Language rules and sanctions to avoid intimate/ inadequate conversations; adherence to office hours /pre-determined schedules;
Ludic vs task orientation *Intellectual dimension*	Ludic orientation: critical for immersion in focused use of MIM; performativity in the form of playfulness and enactment of existing relations assist in the creation of shared experience. Task orientation results in focused collaborative learning	Abundance of playful and socializing messages not related to content criticized by students and educators	*Behavioural*: Definition of specific posting requirements and evaluation criteria regarding the quality of content *Technical:* educators "flagging" key content

Immediacy vs Delays: Timing Communication

The communicative tension that learners and educators needed to negotiate is situated on the continuum between immediacy and delays. This tension is rooted in the capacity of MIM to allow for both near-to-synchronous communication as well as for asynchronous and delayed communication.

Immediacy. One of the most salient quality of instant messaging is to enable ad-hoc and real-time learning conversations, which are facilitated by visual (pop-up), acoustic (sound) and oscillatory (vibration) alerts. Accordingly, the affordances of MIM to provide instantaneous learning communications were emphasised in many studies, mostly stressing its logistical qualities (Aburezeq & Ishtaiwa, 2013; Bere, 2012; Kim et al., 2014; Lam, 2015; Rambe & Bere, 2013a; Ramukumba, 2015; Willemse & Bozalek, 2015).

These involved the quick access to educator and peer-assistance (Aburezeq & Ishtaiwa, 2013; Bere, 2012; Willemse & Bozalek, 2015), as a student illustrates in the following statement: *"[The use of a WhatsApp group] alerts you to […] ideas from classmates instantly"* (Bere, 2012, p. 10). This was deemed to be particularly important in work-based learning settings where learners received immediate advice from their tutors in solving more complex problems (Willemse & Bozalek, 2015). Also the mixed-method case study of Rambe and Bere (2013b), emphasised the potential of the MIM environment to provide South African IT students with prompt feedback in question-based consultations from peers and lecturers which helped to solve problems and to discuss academic issues. Groups of students from an educational technology course who used the MIM application KakaoTalk to solve pedagogical problems reported that the application provided opportunities to arrange ad-hoc learning conversations and to make communication among distributed mobile actors happen (Kim et al., 2014). These students were contrasted with groups who used desktop applications and who deemed it difficult to find time for all team members to log into the PC at any one time. In addition to logistical benefits, Timmis (2012) identified the co-temporality of MIM-based learning conversations as a relevant mediator for the development of joint goals and actions and a shared understanding.

Although immediacy was conceived to be an advantage in learning and teaching settings, it also created pressures on learners and educators to respond quickly. In this sense, "instant education" does not only allow but demands immediate responses. For example, Bouhnik and Deshen (2014) described the expectation of students regarding the availability of educators 24/7. Another demand for immediacy was voiced by educators who reported correcting mistakes as soon as they occurred as a means to prevent them from "striking roots" and spreading in the digital spaces (Bouhnik & Deshen, 2014).

Delays. Immediate responses were often not possible due to situational and technical constraints, and users were required to balance their communication continuously between immediate and delayed responses. In other words, a considerable number of learning conversations were interrupted by users who dropped in and out, and who sometimes took up conversations after short breaks and sometimes after several hours (Timmis, 2012). Interrupted educational discourse was described to be annoying in some studies, e.g. learners were often concerned about instructors' lack of immediate feedback (Aburezeq & Ishtaiwa, 2013) or frustrated with the lecturer's unavailability during certain times (Rambe & Bere, 2013b). In contrast, asynchronous features that allowed users to retrieve messages at a later point in time also created benefits (Rambe & Bere, 2013a; Willemse, 2015). It was observed that delayed participation afforded multiple and temporally distributed interaction modes and thus widened the opportunities for student involvement (Rambe & Bere, 2013a). Delays also allowed for a deeper reflection on the writers' utterances (Aburezeq & Ishtaiwa, 2013; Rambe & Bere, 2013a). For example, Aburezeq and Ishtaiwa (2013) describe how a student exemplifies the way in which access to past conversations can encourage critical engagement and reflection: *"[…] I had to access previous discussions on WhatsApp platform to review some ideas before formulating my final answer. It is burdensome, but it is beneficial" (p. 171).*

The ambivalent ways in which learners perceive the interplay of immediacy and delays to create a different sense of connectedness is illustrated in the following statement. The student characterises the communication patterns of his/her group on KakaoTalk by using the seemingly contradictory statements of "all day long" vs

"short time", which nicely showcases the perceived duality of communication practice:

> *"I think our team discussed the topic all day long (!) because we talked whenever we are available. Although it's short time (!) .... ". (Kim et al., 2014, p. 38)*

Resolution strategies. In balancing the poles of immediacy vs delays, different behavioural and technical resolution strategies were developed and deployed. To keep conversations fluent, learners were asked to respond to instructor and peer questions within a given period of time (Aburezeq & Ishtaiwa, 2013), or as quickly as possible (Rambe & Bere, 2013a). Also teachers sought to adhere to reasonable response times (So, 2016). Moreover, lecturers developed schedules with sessions dedicated to synchronous discussions and information exchange as another approach to promoting immediate interaction (Ramukumba, 2015; So, 2016). In contrast, and as a means to develop temporal distance, educators were also reported to delay their answers deliberately and to define specific times to respond to learners' questions. To do so, technical measures were also used, which included the muting of alert signals of MIM applications (Bouhnik & Deshen, 2014; Gachago, Strydom, Hanekom, Simons & Walters, 2015).

Intimacy vs Detachment: Negotiating Social Relationships

The second duality spans the continuum of intimacy (in the sense of social proximity) vs detachment, i.e., distancing oneself from the educational community.

Intimacy. The observation that mobile instant messaging affords high levels of intimacy, especially in contrast to other social media such as social network sites (Karapanos, Teixeira & Gouveia, 2016), is a predominant theme in many of the studies examined in this review. MIM use was found to be conducive to the development of intimate, affective and emotional learning spaces (Bere, 2012; Bouhnik & Deshen, 2014; Castrillo et al., 2014; Henry et al., 2015; Kim et al., 2014; Timmis, 2012; van Rooyen, 2010), even in anonymous tutoring services (Butgereit, 2007). For example, Bouhnik and Deshen (2014) highlighted in their qualitative study that the advantages of WhatsApp groups reside in nurturing the social

atmosphere and improving interpersonal relationships between educators and students. The interviewed high school teachers felt that they would get to know their students better and learn about "what bothers them, what helps them" (Bouhnik & Deshen, p. 226). Similarly, Castrillo et al. (2014) found several indicators of the development of group solidarity in their discourse analysis of WhatsApp-based language learning, including the reduction of social distance and the declaration of group membership. Kim et al. (2014) also identified emotional closeness as a key construct in the qualitative part of their study. The facilitation of social proximity was deemed to be especially relevant in settings where learners suffered from professional isolation, such as in-service teachers in South Africa (Gachago et al., 2015).

The association between the co-construction of intimacy and MIM use was also identified in informal, 'student-only' conversations. Timmis (2012) observed that intimacy and affective behaviour which were nourished from shared history and co-produced social relations, were nearly exclusively found in MIM (compared with other digital communication tools).

Feelings of intimacy and closeness were, in part, rooted in the perception of MIM platforms as a personal space that afforded the use of informal language (Bere, 2012; Castrillo et al., 2014; Kim et al., 2014; Rambe & Chipunza, 2013). In the quote below, a student illustrates this connection. "*On WhatsApp I am free to express myself in anyway meaning that street language is acceptable and the platform is very informal*" (Bere, 2012, p. 13). This feeling was particularly evident in comparison with the formal language tied to the use of traditional learning management systems in Bere's (2012) study. However, in contrast to learners who tended to associate the day-to-day language used in instant messaging with intimacy and closeness, some educators felt challenged by their students' informal ways of expression, raising questions about whether to intervene, and, if so, how often (Bouhnik & Deshen).

Detachment. In opposition to intimacy, users and educators also perceived the use of MIM as an intrusion into their personal lives. While intrusive communication patterns did not present a burden to all users ("*I allowed my private space to be invaded but I did not mind [... educator]*" (Ramukumba, 2015), many

studies revealed users' need for detachment from increasingly ubiquitous learning communities (Aburezeq & Ishtaiwa, 2013; Bere, 2012; Bouhnik & Deshen, 2014; Rambe & Bere, 2013a; Smit, 2015; So, 2016; Willemse & Bozalek, 2015). One reason that triggered users' needs for detachment were discussions that reached into their very private time zones. For example, Bere and Rambe (2016) observed that most of the interactions, i.e. twice the number of message exchanged during daytime, took place between 6 and 11pm. Moreover, and in contrast to the pull mechanisms of classic learning environments where learners decided when and how to engage, the push messages associated with MIM use were perceived to be intrusive (Bere, 2012).

Intrusion also manifested in terms of inappropriate content, perhaps most dramatically in the South African Dr Math project in which online tutors received numerous sexual propositions from the pupils in the anonymous conversations (Butgereit, 2007). The tension between intimate conversations and the need for withdrawal was especially observed in more mature learners (Aburezeq & Ishtaiwa, 2013; Bere, 2012; Rambe & Bere, 2013a; Willemse & Bozalek, 2015) and in teachers, especially if they had many groups to moderate and if conversations took place during late hours (Bouhnik & Deshen). However, it was also perceived to be critical if users' detachment was too pronounced, especially if some of the learners did not engage at all in the conversations (Aburezeq & Ishtaiwa, 2013).

Resolution strategies. Some users managed the tensions of intimacy and detachment by implicitly restricting their conversation times to office schedules (Castrillo et al., 2014) or to pre-arranged conversation times (Willemse & Bozalek, 2015). This strategy is not only reflective of the users' need to distance themselves from the learning community but also discloses the perception of MIM-based learning activities as explicit and formal educational practices. Intimacy and detachment were also managed by the selection of digital channels (Henry et al., 2015; Timmis, 2012). For example, Timmis (2012) observed that students tended to use separate spaces for their university and private communications to maintain these pre-established boundaries. Another way to protect the privacy of learners and educators was the establishment of guidelines and sanctions. In the Dr Math project, the tutors were not allowed to reveal any information regarding their age, sex and

location. The students were also warned and even removed from the system if they used inappropriate language (Butgereit, 2007). As an additional control, textual conversations were recorded and spot-checked by administrators (Botha & Butgereit, 2012).

Task vs Ludic Orientation: Managing the Depth of Intellectual Engagement

The third tension that was reinforced through the educational appropriation of MIM and that needed to be addressed by learners and educators was the opposition between task orientation, in the sense of focused cognitive or meta-cognitive reasoning, and ludic orientation, a less profound intellectual engagement that resembles forms of playing and socialising.

Task orientation. A number of studies revealed concrete forms of focused learning in MIM spaces, mostly based on conversation analysis and interviews (Henry et al., 2015; Kim et al., 2014; Lam, 2015; Rambe & Bere, 2013a; So, 2016; Timmis, 2012; Willemse, 2015). For example, in their content analysis, Rambe and Bere (2013a) identified critical engagement with learning resources. This finding was corroborated through the post-surveys, in which the majority of students associated the academic use of WhatsApp with knowledge creation and deep reflection (Rambe & Bere, 2013a). Students deemed MIM conversations to allow for sufficient time to review the contributions of other learners and to provide thoughtful feedback, especially compared with face-to-face discussions (Kim et al., 2014). Even in peer-to-peer learning settings not prescribed by educators, students engaged in MIM to discuss content and task-related issues (Lam, 2015; Timmis, 2012), for example carrying out mathematical calculation exercises (Lam, 2015). In some studies, focused engagement resulted in enhanced levels of cognition and knowledge, as highlighted in Tang and Hew's review (2017). One example is So's (2016) experimental work, which examined the effects of a WhatsApp group used to provide short multimedia materials and to facilitate interaction between learners and the lecturer in addition to classroom-based lectures. The intervention group scored significantly higher in the post-test compared with the control group, which used WhatsApp only for administrative purposes (So, 2016).

Ludic orientation. In contrast to promoting cognitive and metacognitive learning activities, considerable parts of the conversations in other studies tended to be lightweight, involving socialising and playing (Aburezeq & Ishtaiwa, 2013; Bouhnik & Deshen, 2014; Gachago et al., 2015; Kim et al., 2014). The tension was especially evident in Gachago et al.'s (2015) study, where, despite the efforts of the educator to keep the conversations strictly academic, the space became increasingly social. Also Aburezeq and Ishtaiwa (2013) noted that nearly half of all postings had less than 20 words and were based on brief and quick interactions rather than on reflective, critical or deep thoughts. Kim et al. (2014) confirmed these tendencies towards playfulness and socialising in the quantitative content analysis of their mixed-method study. They found that MIM (and also desktop-based IM) groups were associated with higher levels of social and affective communication and with less cognitive and metacognitive interactions compared with the bulletin board groups (Kim et al., 2014). In addition, in the qualitative part of their investigation, Kim et al. (2014) also noted a lack of recursive and convergent utterances, because some of the learners in the MIM groups tended to state their opinion without reviewing or considering other members' postings.

One reason for this tension is the implementation of a private tool, which is often used for hedonic purposes, in formal education (Aburezeq & Ishtaiwa, 2013; Willemse & Bozalek, 2015) . This is illustrated by a learner with reference to WhatsApp: *"a toy for socializing and having fun, it is not for learning*" (Aburezeq & Ishtaiwa, 2013, p. 173). In addition, learners underlined the distractive potential of MIM due to its tempting proximity to other entertaining mobile phone applications, such as social network sites (Aburezeq & Ishtaiwa, 2013). Another reason for lightweight conversations lies in the learners' ubiquitous use of MIM. Instead of concentrating on the learning activity, MIM is embedded in everyday life, and the associated multitasking is likely to result in a less focused cognitive engagement, as the following quote from a student suggests:

> *"These days I can easy post and get answers on WhatsApp even when I am shopping if I see or hear anything confusing related to my studies."* (Bere, 2012, p. 11).

The educational implications of messages with playful and socialising content were perceived ambiguously. In part, messages that were not directly relevant to education were criticised by learners (Aburezeq & Ishtaiwa, 2013) and deemed by educators to be upsetting (Bouhnik & Deshen, 2014). However, drawing on content analysis, some authors observed that playful and lightweight discussions, albeit lacking strong intellectual qualities, can be viewed as a necessary social immersion in the productive use of MIM and can thus lay a foundation for its more intellectual use (Rambe & Bere, 2013b). Similarly, Timmis (2012), who found significant indictors for playfulness and socialising in her discourse analysis, concluded that the creation and maintenance of a shared social experience is a relevant component of collaborative learning.

Resolution strategies. Behavioural resolution strategies that educators used to strike the balance between ludic and task orientation, and particularly, to orient learners towards a more focused and productive engagement, were the development of specific posting requirements and evaluation criteria (Aburezeq & Ishtaiwa, 2013; Gachago et al., 2015). In Aburezeq and Ishtaiwa's (2013) study, the messages of the learners needed to reflect the course content and include new ideas, reflections, opinions and critical thinking beyond mere description or summary. The interview study revealed that learners deemed the established criteria to be relevant and tied them to deeper levels of reflection and critical thinking. A technical strategy involved educators who flagged key discussions with emoticons. This allowed learners who did not participate in the socialising discussions and who accessed WhatsApp only occasionally, to review the content and identify central information in an efficient manner (Gachago et al., 2015).

Discussion

This review has revealed a nuanced picture of the use of MIM in learning and teaching settings. By describing the conflicting dynamics of educational use of MIM, it adds to prior work which simply conceives the affordances of MIM to be "*temporal, user-friendly, minimal cost, and multi-modality features*" and which explains its convenience with users who can "*easily chat with peers or teachers anytime and anywhere they prefer*" (Tang & Hew, 2017p. 100). In contrast, the findings of the present review suggests that instead of learning in a convenient and "straightforward" manner, both learners and educators need to navigate dialectical tensions that relate to time, relationship and intellectual depth. This research has shown how the idiosyncrasy of MIM shapes, affords and confines the ways in which learning and teaching plays out, and, in the same way, how educational benefits are realised. What follows is that, despite the perception of MIM platforms as hugely popular low threshold applications (TLT group, 2015), MIM is certainly no 'low hanging fruit' that just can be picked - or in educational terms – used easily in more formal learning and teaching settings.

The effective navigation of tensions and opposing forces identified in this study requires users to develop a new set of skills that reaches far beyond the technicalities of handling mobile devices and applications. Balancing issues of timing, managing social distance and weighing task against ludic engagement necessitates competencies which are not considered in classic media literacy definitions that typically incorporate the access, analysis, evaluation and creation of content (Livingstone, 2004; Redecker, 2017). The skills to manage these tensions in the use of MIM spaces do not only play out at an individual level but need to be negotiated and calibrated collectively (e.g. in a group space), which can be a complex and conflicting process. For example, it was found that one of the prevailing challenges in the use of WhatsApp groups was the ongoing negotiation and reconciliation of users' divergent expectations regarding the social vs task oriented use of the space (Pimmer, Mhango, Mzumara & Mbvundula, 2017). What complicates this process further is that the poles which create these tensions are neither valuable nor damaging by themselves. Instead, they have unique qualities that cannot be played off against one another.

Contrasting MIM with the broader field of mobile learning, in which instructionist, transmissive and non-conversational educational approaches have prevailed to date (Frohberg, Göth & Schwabe, 2009; Pimmer, Mateescu & Gröhbiel, 2016), the main route for learning and teaching in the MIM settings studied in this review was centred on social interaction. Given its strong capacity to develop and maintain a social presence in learning and teaching settings, MIM can be especially valuable in contexts in which the development, strengthening and maintenance of social ties is central, as in the initial phase of online learning described in Salmon's (2003) five step model of e-moderation. At this stage, moderators should familiarise students with the online environment through socialisation and provide bridges between social-cultural aspects of offline and online learning environments in ways that increase familiarity with peers and reduce social distance among them. Beyond a "sequential" perspective, socialising can be conceived as an inherent part of effective learning itself. This is reflected, for example, in the "social presence" dimension of the Community of Inquiry theory (Rourke, Anderson, Garrison & Archer, 2007), and, even more so, in the "participation" metaphor, in which the main route of learning is understood as growing into a community of practice (Lave & Wenger, 1991; Paavola, Lipponen & Hakkarainen, 2004).

The consideration of the current body of literature on the educational use of MIM technologies suggests several directions for future research. The rapid transformation of MIM technology and associated communication practices alone make the current findings a snapshot in time and show the need for future research. For example, calling and voice notes are new functionalities that were recently added to a number of MIM applications, but which have not been addressed in the corpus of studies examined in this review. Another area that requires further exploration is the professionalisation of MIM-based tutoring. A recent BBC report describes an emerging tutoring industry based on "WhatsApp-style instant messaging environments". They highlight the example of "Snapask", which connects about 5,000 tutors with 100,000 students from Hong Kong, Taiwan, and Singapore. Students raise questions and the software matches them immediately with a tutor for an instant learning session (Jackson, 2016).

From a methodological perspective, the current body of literature consists primarily of qualitative research, some descriptive quantitative investigations and a very limited number of studies that incorporate experimental designs. We thus agree with Tang and Hew (2017) who argue that there is an obvious need for more rigorous quantitative research designs that compare, for example, the differences between MIM and other communication modes more systematically and rigorously. However, in line with dialectical theory, we argue that there is also a need for more thick and rich descriptions (Geertz, 1973), which further the understanding of the dialectical dynamics, especially how, in the course of MIM use, the relationship between the oppositional forces may change. This could, for example, play out in the sense of a helical model, whereby the response to one dialectical pole creates pressure to attend to the opposite pole and, in consequence, the relationship pair cycles back and forth over time but never reaches precisely the same place as before (Baxter, 2003). Applied to MIM, this can be addressed for example by an examination that explores how the relationship between ludic and task orientation changes over time.

Conclusions

This study has sought to contribute to the conceptualisation of a more fine-grained understanding of the conflicting and negotiated realities of the use of mobile instant messaging in learning and teaching settings. One of its main contributions is the establishment of a framework that shows how the educational affordances and constraints of MIM unfold in the ways in which learners and educators navigate the dialectical tensions of immediacy vs delays, intimacy vs detachment and task vs ludic orientation. This framework might not only help readers to make sense of learning in current *mobile* instant messaging environments, but it could also help to inform our understanding about the emerging practice of ubiquitous messaging, as several large tech companies are in the process of offering unified mobile and desktop messaging applications.

Moreover, the dialectical theory, as borrowed from (Baxter & Montgomery, 1996), turned out to be a helpful means to analyse and problematize the use of educational technology in a critical manner , an approach that might also help scholars in the exploration of other fields of technology enhanced learning.

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