Facebook *as a learning tool? A case study on the appropriation of social network sites from mobile phones in developing countries.*

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Abstract

This exploratory research investigates how students and professionals use social network sites (SNSs) in the setting of developing and emerging countries. Data collection included focus groups consisting of medical students and faculty as well as the analysis of a Facebook site centred on medical and clinical topics. The findings show how users, both students and professionals, appropriate social network sites from their mobile phones as rich educational tools in informal learning contexts. First, unlike in previous studies, the analysis revealed explicit forms of educational content embedded in Facebook, such as quizzes and case presentations and associated deliberate (e-)learning practices which are typically found in (more) formal educational settings. Second, from a socio-cultural learning perspective, it is shown how the participation in such virtual professional communities across national boundaries permits the announcement and negotiation of *occupational* status and *professional* identities.

Introduction and background

Technologies for development and health in "resource-limited" environments

Technological innovations have given hope that new ICT tools will result in the overall progress and well-being of developing countries, in particular with respect to health and education services. Great expectations are attached to the spread of mobile communication technologies. The number of mobile cellular subscriptions worldwide is currently 4.7 billion and increasing. This includes people in remote and rural areas and "resource-limited" settings (The World Bank, 2011). To a much lesser extent there is also a discussion on affordances of social network sites (SNSs) in such contexts (Marcelo, Adejumo, & Luna, 2011). Discourses and projects on ICT(4)D (information technology for development) or mHealth (mobile technology for health) tend to be based on techno-centric and deterministic approaches where learning materials, either software or hardware, are distributed by central authorities or knowledge is "delivered" according to "push-strategies"; or, using the words of Traxler, information is pumped through the infrastructure, often in "educationally naïve" ways (in press). Similarly, the main direction of techno-centric and transmissional approaches appears to be from developed to "developing" countries, respectively from experts to novices. In spite of all efforts the situation is still problematic and ambitious visions have been only realised to a limited extent. For example, the goal of providing every person worldwide with access to an informed and educated healthcare provider by 2015 is unlikely to be realised. In particular, little progress has been made in meeting the information needs of frontline healthcare providers and ordinary citizens in low resource settings (Smith & Koehlmoos, 2011). Very often it is basic knowledge that is needed, related for example to the treatment of childhood pneumonia or diarrhoea, which cannot be accessed by healthcare providers such as family caregivers or health workers (HIFA Report, 2010).

With this research we attempt to shed light on aspects of technology use, such as engagement with SNSs and mobile phones, in the context of health education in developing countries which, we would argue, have been widely neglected. In doing so, we hope to contribute to the academic discourses on SNSs and mobile learning. Since our approach follows the principles of case study research, the remainder of this paper is structured as follows. We continue with a brief and, admittedly, selective characterization of two underlying academic discourses that can inform this research, namely mobile learning and research on SNSs. After presenting our methodological approach and results we discuss the findings in the light of multiple theoretical concepts and empirical studies from these fields. We conclude with some practical considerations, limitations and directions for further research.

Educational discourses on mobile learning and social network sites

In the field of mobile learning, a small, yet rapidly growing research community, recent work has considered the (educational) use of mobile phones as an appropriation of cultural resources (Pachler, Cook, & Bachmair, 2010). In contrast to the classical binary and quantitative model of adoption, appropriation is centred on the question of *how* people use mobile phones once they have adopted them (Wirth, Von Pape, & Karnowski, 2008). Researchers define appropriation as the emerging "*processes of the internalization of the pre-given world of cultural products*" by the engagement of learners in the form of social practices with particular settings inside and outside of formal educational settings (Pachler, et al., 2010). While mobile learning research tend to focus on learning in schools, universities, workplaces or on life-long learning in industrialised countries (Frohberg, Göth, & Schwabe, 2009; Pachler, Pimmer, & Seipold, 2011; Pimmer, Pachler, & Attwell, 2010), some attention has also been paid to developing countries (see for example Traxler & Kukulska-Hulme, 2005).

Research on SNSs is becoming increasingly popular not only in industrialised nations (boyd & Ellison, 2007) but, to a lesser extent, also in developing countries (Kolko, Rose, & Johnson, 2007). Increasing importance is attached to educational aspects of SNSs (Selwyn, 2009), though there is relatively little theoretical and empirical attention paid by social researchers to the form and nature of that learning in general (Merchant, 2011). Socio-cultural approaches to learning in general, and to social networks and mobile learning in particular are based on the notions of participation, belonging, communities and identity construction. It was suggested, for example, that such networks create a "*sense of place in a social world*" (Merchant, 2011) and can be considered as "*multi-audience identity production sites*" (Zhao, Grasmuck, & Martin, 2008). By documenting daily episodes by means of mobiles and social networks, such tools are said to contribute to the formation of (multiple) identities related to the live-worlds of users. In this sense, learning is considered as situated meaning-making and identity formation (Pachler, et al., 2010). The influence of SNSs on community practices was also discussed. An empirical study suggested, for example, that social network sites helped maintain relations as people move across different offline communities (Ellison, Steinfield, & Lampe, 2007). Also in formal educational environments, when social networks were deliberately used in order to support classroom-based teaching and learning, (unintended) community building was observed (Arnold & Paulus, 2010). However, research has little to say with respect to vocational and professional aspects of the use of SNSs. One study reported that a company's internal social network site supported professionals in building stronger relations with their weak ties and in getting in touch with professionals they did not know before (DiMicco et al., 2008). Another study that observed the use of mobiles and social software for the compilation of e-portfolios witnessed influences on identity

trajectory according to the concepts of belonging to a workplace, becoming and then being a professional (Chan, 2011).

Methods

Research approach and methods

This study was conducted as part of a broader research project that explored the role of information and communication technologies in the context of higher education in developing countries, using the example of Nepal as one of the world's poorest nations; in position 157 out of 187 nations according to the Human Development Index (2011). During this project our attention was drawn to the meaning and role of Facebook along with mobile devices for students' private lives and for their learning. Accordingly, with this exploratory research we attempted to address the guiding question of whether and how the use of SNSs can contribute to the users' learning and competence development. In our analysis we drew from two different data sources. First, we used data that we gained from eight focus groups of four to eight participants each (n=43) including medical undergraduate (us) and postgraduate students (ps) as well as teachers and faculty members (tf), as well as data from on-site visits and informal talks with university management in two different universities in Nepal. Data collection was conducted by two of the authors, CP and SL, in April 2011. In the conversations the researchers addressed the use of ICT for learning in general and the role of SNSs and mobiles. Second, we contrasted the material with the analysis of a Facebook site centred on medical and clinical topics, namely *Medical Profession, wow I Love it* (http://www.facebook.com/Medicalprofession); a site which several of the interviewees along with many other users (fu) indicated that they participated in. While we were not able to track the exact behaviour of the interviewees on that site, the analysis allowed for a much broader exploration of learning and teaching practices of a large number of medical students and doctors mostly from developing countries or emerging nations. The interviews were audio-recorded, transcribed verbatim and entered along with the field notes in the qualitative data analysis software NVivo8 (Lewins & Silver, 2009); the data of all activities of the indicated Facebook site from October to December 2011 were also downloaded and analysed: In accordance with inductive principles of qualitative data analysis (Pope, Ziebland, & Mays, 2000), one researcher read and reread the data sets to identify themes. The other researchers independently read parts of the data set. Then, insights and findings were jointly discussed, contrasted and interpreted until consensus was reached.

Ethical considerations

As there was no formal framework for ethical approval available, consideration of ethical issues was

given by an expert outside the research group, a professor for ethics at a Swiss university who was part of a Swiss ethical review board. With respect to the perceptual data (focus groups), it was his expert opinion that our work did not contravene the Declaration of Helsinki (World Medical Association). He did, however, identify questions related to *Ethical Legal and Social Issues* (ELSI) such as quotations where participants reported documenting and re-using patient-related data by means of private technologies. He emphasized that anonymity must be ensured so that no plausible harm can arise from the study to the interviewed groups/participants. He suggested concrete measures to make it impossible even for persons involved in the research project (others than the interviewers) to link any statement to individuals and groups. Accordingly, information such as the organization, group size and dates of the focus groups, which we originally included, was removed.

Upon advice from the expert we took the following approach regarding the analysis of the Facebook site. We deemed the information to be public as the site was publicly available to everyone without any restrictions. We did not consider any material from the users' personal sites such as profile information, wall sites or photo pages. Instead, we only extracted data from the site indicated. Similarly to MacDonald, Sohn, & Ellis (2010) we did not participated covertly, and we did not claim to be, or attempt to become, "friends" of members of the site. In quoting text from the site we did not disclose (user) names of individuals so as to protect confidentiality (Moreno, Fost, & Christakis, 2008). Similarly, we made persons' faces unrecognizable on the photographs. As we made all the data anonymous and as we could not envisage any harm for users, we did not obtain the participants' informed consent.

Results

First, we analyse how Facebook and mobile phones have influenced the daily routines of the interviewed students and have thereby affected their media-related practices. In the main part of the analysis we show how such technologies were used for learning purposes.

Use of Facebook and mobiles

Mobile Facebook use - a daily practice

The analysis of the interviews showed that, apart from a few exceptions, nearly all of the interviewed students used Facebook on a daily basis. In addition, Facebook was reported to be broadly accessed also by the interviewees' friends and relatives, by people across (nearly) all age groups. Most of the students use Facebook by means of their mobile phones and to a lesser extent via laptops.

- *Most of us [students] use Facebook (us)*

- *We use mobile phones for Facebook. (us)*

- *We use it all day from the wireless [mobiles] not from the laptops. (us)*

Facebook was said to be the most intensively used tool - in comparison to other platforms and communication tools. Many of the interviewed students indicated accessing Facebook several times a day, and some even associate the use of Facebook with a state of dependency: "*All day. Every day. It's an addiction.*" (us). In updating their status, uploading images and writing comments, the students used Facebook predominantly for entertainment and communication with their social environment:

- *"We update the status and comment." (us)*

- *"To be in touch with our friends. [...] Also friends who are abroad [...] . In Facebook we can send and receive messages through that we keep in touch." (ps)*

Mobile Facebook as a catalyst for changing communication practices

The empirical analysis revealed the considerable extent to which Facebook use impacted on information and communication practices. Interviewees considered Facebook as a catalyst for using (mobile) Internet, and, similarly, for a radical and quick transformation of media practices. It was reported that Facebook motivated them to activate the Internet on their mobile phones. Upon activation, Facebook was deemed as one of the main reasons to access the Internet.

- *The reason why most of the people have activated the internet on their SIM card is because of Facebook. (us)*

- *We use it [Internet] for Facebook, mostly. (ps)*

- *[I use the internet] every day. For Facebook, for the status. (us)*

- *As far as I have seen, things have changed a lot. Before, people used [other tools]. Nowadays, Facebook has brought up a revolution. People are more interested. I see it myself that people are more into getting internet. [...] There are fast changes and improvements if you go back to the last few years. (us)*

Facebook as a learning tool

During the focus groups some of the students indicated using Facebook for learning purposes. They reported accessing specific sites and groups on Facebook and engaging in discussion on medical and clinical topics.

- *A group "Medical profession, I love it." That's a group. I'm part of the group. (ps)*

"Medical Profession, wow I Love it" is a relatively popular Facebook site which sees more than a thousand interactions per week which were mostly created by users, medical students and professionals, from developing and emerging countries such as Nepal and India. The analysis of this site revealed, amongst a few non-medical topics and non-education-centred postings, a considerable number of interesting themes that directly related to learning. In the following sections we will

present and exemplify major findings from the analysis of the site and contrast them with data from the focus groups.

Explicit educational content and deliberate learning practices

Many of the site's active users used the "wall" and associated posting and commenting functions to engage in quiz questions. We identified a considerable number of postings with open and closed quiz questions from a broad spectrum of medical topics. Typically, the following course of action was observed. A user, often the convenor of the site, posted a question. Then, other participants provided their answers in the form of comments. After a little while the initiator of the question posted the "correct" answer, also in the form of a comment. Figure 1 (left image) shows such a question that relates to a new medication for children with diarrhoea. The interviewed students described these practices in the following way:

- *He [convenor of the site] asks questions to medical students. […] I answer by myself. […]Finally he used to give the right answers. (ps)*

- *I open the Facebook each day and […] there is the homepage where I can see the questions and if there is an interesting question I go through that (ps)*

- *And then you see the answer. So it's like a quiz. (us)*

As the analysis of the site showed, many questions received a great deal of feedback and were, accordingly, answered, commented and recommended by a large number of users. Questions where learners were uncertain about the correct answers, or questions of a high level of interest were reported being shared with other users:

- *If we have questions and we are not sure about the correct answers we can share it with our colleagues. (ps)*

Figure 1: Two forms of quiz-questions on Facebook walls

Beyond the engagement with quizzes, the site was also used for the discussion of short case presentations considered as "*interesting cases*" (ps). There, a case including anamnesis, diagnostic findings, etc. is briefly introduced with an invitation to post possible diagnostic and/or therapeutic

decisions. Pictures are also uploaded so as to illustrate cases and quizzes (Figure 2). Again, learners posted their answers and recommendations in the form of comments. These activities were followed by the initiator posting the "correct" answer.

A 19-year-old man presents to the emergency department (ED) after an episode of shortness of breath and syncope while at home. He reports having experienced recurrent episodes of irregular heartbeat and fatigue in the week before presentation. ECG obtained at the time of arrival in the ED and showed 3rd degree heart block .He noticed classic skin lesions on his entire body as shown .He reports that he had been on a hiking trip 1 month before this visit to the ED, and he remembers being bitten by a tick. What could be the possible diagnosis and treatment course ?

Like · Comment · 21 October at 20:11 ·

this is bull's eye rash from lyme disease , because he shows 3rd heart block he should be treated with cefteriaxone...
22 October at 00:52 · Like · 1 person

.. classic ECM lesion(s) described as a red patch with central pallor..caused by spirochete Borrelia burgdorferi that is transferred by the Ixodes (dammini) scapularis deer tick..n First-choice treatment for early localized infec...

Figure 2: Case presentation

Interviewees did not consider quizzes and cases, which included a broad range of basic clinical knowledge, as particularly complex, "*Usually there are not tough questions*" (ps). They deemed the engagement with educational content in the form of questions and images as relevant for their learning and considered it as a learning opportunity in addition to their formal medical education or more specifically, their textbooks.

- *Yes, [we can learn something] there are pictures and questions. (ps)*

- *It's very beneficial. We can know many things from it. (us)*

- *There are so many things we don't know from the textbooks. G: Even some simple things (us)*

In addition to the embedded educational content we also identified a number of links to medical information resources outside Facebook such as e-books or videos.

Socio-cultural aspects: participation and expression of professional identity

In addition to explicit forms of educational content the analysis of the site also revealed a number of aspects centred on participation and professional identity, which relate to a socio-cultural understanding of learning. Yet the name of the site "Medical Profession, wow I Love it" indicates a positive connotation to the medical profession. Further examples included discussions, cartoons and jokes that related to the understandings of medical students and doctors of their own professional identities. This is exemplified, for example, by the feedback and responses provoked by the question, *"Proud to be in this profession, what about you*? This comment was posted by the convenor of the site, and received more than 60 comments and 200 "likes". In addressing the questions, users mostly showed agreement and demonstrated high professional identification and professional membership "*I'm proud*". In doing so they also pointed to professional challenges "*nt easy*", emphasized professional norms and professional codes of conduct such as "*should be polite*", as shown in these three statements:

- *yesss.bt its nt be easy thre way iz vry tough whn u make a good doct. othrwise itz the best profession in the world.bt doct should be polite,gentily care and serious […] (fu)*

- *i'm very proud and love this profession very much...though very tired and many problem we have to solve.. but still.. I'm proud and love it... (fu)*

- *yup........... i m proud to be a med. student..... (fu)*

On the site observed the discussion of professional themes was not a singular phenomenon, as also alluded to by the following posting: "*how many times this question is asked on this page...any idea?lol*". Similarly, cartoons and jokes provoked reflection on and engagement with the users' professional identities and their occupational self-perceptions and status. They caricatured medical disciplines or, as illustrated by Figure 3, medical doctors in general:

Figure 3: Cartoon triggering discussion on professional identity and occupational status

The comments of more than 90 users on this cartoon (Figure 3, 11.01.2012) demonstrate the high level of feedback and illustrate how medical students and professionals compared and negotiated their professional self-concept - on the basis of their professional experiences – referring to the messages from the cartoon. Some of the users fully agreed with the message of the cartoon. For example, a user appreciated the opportunity provided by professional identification and deemed it as valuable support in a difficult occupational situation "*feeling crap*". Other users only partly agree and signal differences to their own professional (self-)understanding.

- *sure im proud and love my work and in good relation with my patient (fu)*

- *This pic pretty much describe my life, thanks […] for making me realise I am not the only one feeling crap right now. (fu)*

- *very funny & very true though. (fu)*

- *no life...i agree...no money i dont agree :) (fu)*

Level of participation and interaction

As indicated, considerable interaction was observed on this site. Some posts received a few hundred comments and even more recommendations in the form of "like". Statistics show that since the creation of the site in May 2010 it has been recommended by more than 36 000 users and that in the last 7 days there was a total of 1750 interactions on the site (24.12.2011). The convenor fostered participation and interaction also in the form of nominating a "fan of the week", a user who shows particular engagement with the site. As indicated, a few users, often the convenor of the site, made initial contributions, while the majority responded and provided feedback. In the same way the interviewed students perceived their role as mainly reactive, including answering and commenting on statements from others. This is interesting as, from a technical standpoint, every user was enabled to make initial contributions.

- *I haven't contributed to questions. I only answer questions. […]I think that we are only allowed to answer. (ps)*

- *I just consume it. I read and comment. (us)*

In the interviews, younger teachers and younger faculty members also reported regularly using Facebook for professional learning purposes, and deemed the platform as an appropriate tool to share medical information with (professional) colleagues.

- *We share a lot of medical information on Facebook. We share videos. And sometimes some of our friends get free downloads of books. So we share that. Facebook is a good medium to share much medical information.(tf)*

This view was also confirmed by the analysis of the Facebook site, as we have already indicated that

beside students, mostly medical doctors participated. We also found occasional questions by patients asking doctors for diagnostic or therapeutic advice.

Discussion

In the following sections we discuss the use of Facebook sites along with mobile phones as educational tools through different theoretical and conceptual lenses and, lastly, we conclude with some practical considerations, limitations and directions for further research.

Appropriation of Facebook and mobiles for deliberate (e-)learning practices

Drawing on the work of Merchant, who distinguishes learning *about*, *from* and *with* SNSs (2011), the way learners used technologies in the manner observed clearly relates to the last form. Empirical studies identified different forms of learning with, or, as we would prefer, "through participation in" social networks such as developing and demonstrating new literacies (Greenhow & Robelia, 2009). However, the exchange of factual and more academic forms of knowledge was reported to a limited extent. For example one fifth of university students, typically "newcomers", exchanged information *related* to their studies by seeking contact with other students as well as orientation in their new environment (Wodzicki, Schwämmlein, & Moskaliuk, 2011). In the field of medical education a study revealed that one quarter of the students used Facebook for educational reasons (Gray, Annabell, & Kennedy, 2010). Another study that also reported education-related aspects in the use of SNSs by students found factual and more academically-oriented information, although to a lesser extent (Selwyn, 2009). Similarly, it was observed that students' Facebook engagement were for social reasons, sometimes for informal for learning purposes, but not for formal teaching (Madge, Meek, Wellens, & Hooley, 2009).

Surprisingly, in the site explored there was much evidence for explicit forms of educational and academic content and associated learning and teaching practices such as the engagement with quizzes, case presentations or the exchange of external multimedia learning resources via links; These were deliberate practices and explicit representations of knowledge and learning which we would typically expect in e-learning platforms or learning management systems and associate with classic approaches to (higher) education in formal learning contexts. This might to some extent confirm the findings of Gray et al. who reported that medical students used Facebook groups to interact with university colleagues in educationally conservative ways. However, there, the students did not interact across their institutional boundaries and did not connect to more professionally-oriented communities (2010). As discussed, in the context of our on-site research as well as in developing countries in general, information and communication technologies tend not be integrated in (medical) curricula or in teaching practices (see for example Kommalage &

Gunawardena, 2008). In view of these affordances medical students and professionals have quickly appropriated SNSs as (e-)learning platforms in informal learning contexts in ways beyond those for which such technologies were originally designed.

Participation in professional communities and formation of professional identity

Aspects related to *expression* of *professional* identity, belonging to and participation in *professional* communities appeared to be inherent parts of the site observed. We have shown how engagement and participation in such wider, virtual *professional* communities by means of mobiles allowed for the announcement of *professional* identities (Zhao et al., 2008) and, at the same time, included discussion and negotiation of professional identities as part of the (professional) self-concepts. Similarly to Chan (2011), who conducted research on the use of mobiles along with e-portfolios in social network environments, we suggest that such sites can provide opportunities for expressing and negotiating individuals' professional identity. Chan also found such technologies suitable to enhance self-recognition of transformation and trajectories of vocational identities. In addition, she considered the collection of evidence by means of these tools as affordances for the research of such trajectories, and, more in general, for the exploration of situated learning. The Facebook site which we observed was, however, rather centred on the unsystematic presentation of topics than on the development of individual users and did, accordingly, not allow for the exploration of longer identity trajectories. It did, however, enable spontaneous forms of announcement, discussion and negotiation of occupational status and professional identities in in the context of a wider community of medical students and doctors across national boundaries. There, the meaning of community differed considerably from the classic notion established by Lave and Wenger (1991). While they concentrated on "real-world" communities, and only at a later point in time discussed how information technology might support existing communities (Wenger, White, Smith, & Rowe, 2005), the observed social network site was mainly based on virtual relations (without an offline community) where learning and participation appeared to be far more short-lived. There, participation can be characterised as ephemeral and, putting it in the words of Lave and Wenger, most of the members would rarely move from peripheral to more central (respectively active or instructive) forms of participation. Also, participation observed on the site cannot be considered as belonging to workplaces (Chan, 2011) but rather to (other), less intense professional communities. However, we would definitely interpret the participation of learners in multiple professional communities as one characteristic of an "expansive" (and learning rich) environment (Fuller & Unwin, 2004).

Blurring educational boundaries and the re-distribution of knowledge and power?

The practices observed also illustrate blurred boundaries between different cultural practices such as entertainment and learning, noted by Pachler et al (2010). In the focus groups it became clear, however, that knowledge and expertise developed outside educational settings (for example on Facebook) was not taken into account in the context of formal (medical) education. Teachers and faculty did not integrate the Facebook activities of the students into formal learning practices. In this sense, the blurring of boundaries (still) occurs in a rather unidirectional way. Our research has also shown that formal educational institutions are "*no longer the gatekeepers of* [what we would consider "formal"] knowledge" (Pachler et al., 2010). We would attach even greater importance to this transformation in resource-limited settings, where access to formal forms of knowledge and learning resources has been typically restricted to teachers and (a few) books in libraries. Our data also supports the view that social mobile learning practices can, according to Pachler, Bachmair, & Cook (2010), be characterized by distributed resources, power and practices across life-worlds and lifestyles. Practices were also distributed across local and even national contexts, as most of the participants of the observed Facebook site appeared to be located in developing und emerging countries. However, power in terms of structuring interactions on the site appeared not to be equally distributed across the users: The rather reactive behaviour of the interviewed students ("*I think that we are only allowed to answer*") may reflect to a certain extent, existing cultural and educational patterns, which are characterized by a relatively large power distance (Lemone, 2005). This also reflects the findings of Zhao, et al. who suggested that in Facebook individuals tended to behave according to established norms (2008).

Pedagogical, ethical and practical concerns and further research

Mobile phones and SNSs are technologies that are reaching more and more people also in developing countries. We have shown how learners in such contexts appropriate (and do not solely adopt) technologies for their learning. They take part in (ephemeral) professional communities and access basic medical knowledge according to pull-strategies (they select when and how to engage). We have revealed interesting and, to date, to some extent underexplored aspects of technology use for (health) education in developing and emerging countries, and we hope and believe that this might also provide fresh perspectives on development approaches, which tend to distribute technology or "transmit" knowledge and thereby are inclined to neglect socio-cultural characteristics.

Nevertheless, from a practical perspective, these considerations by no means permit the seemingly obvious conclusion that such technologies should be recommended without reservations or that they

might even be used more broadly and systematically. On the contrary, in view of ethical, legal and privacy issues, and against the background of a number of pedagogical limitations we deem the (systematic) use of commercially-oriented software in the context of health education in developing countries as highly problematic. A critical aspect is, for example, the question of quality control. In Facebook there are no mechanisms provided that help to ensure the quality and trustworthiness of learning contents presented. Accordingly, there is, apart from critical peer feedback, no protection against problems inherent in poor or wrong advice being given and followed. And, if such educational material is simply copied from other sources (for which we found some evidence), copyright laws are likely to be violated. From a learning perspective, knowledge was presented unsystematically (compared to formal learning contexts) and was not linked to any specific curriculum or to the learners' previous knowledge. Also, we would argue that Facebook did not facilitate deep engagement of learners in the form of interactive in-depth discussions: "Walls", which were used as discussion boards, only allowed one level of interaction, i.e., it was not possible to re-comment on existing comments and, accordingly, to build threads. Similarly, Friesen & Lowe argued that Facebook, as a commercial tool, does not foster disagreement and debate but produces interactivities characterised by conviviality and 'liking' and is, therefore, a questionable tool for education. (There are a number of other pedagogical and ethical limitations, whose discussion would go well beyond the scope of this paper). Our analysis has also provided no solutions regarding how the "informal" practices might be aligned with learning in formal contexts. We suggest that such learning should not be ignored but explicitly addressed in the classroom and critically discussed with respect to media literacy. Both learners and teachers should be systemically supported in considering opportunities, risks and limitations. Harnessing such affordances for learning strongly depends on (the development of) broad media literacies with respect to evaluation as well as creation of content (Livingstone, 2004).

From an academic perspective, very little is yet known about the phenomena explored. For example, even if the site observed shows considerable interaction, we do not know how many Facebook users engage in educational practices. It has to be acknowledged that we only analysed one of many Facebook sites that are centred on clinical and professional topics. Examples of other sites are "Faculty Of Medicine" an even more active community, or sites with users from special cultural and regional backgrounds like "Arab Medical Doctors" or "Medical Jokes", a site explicitly dedicated to cartoons and jokes about the medical profession. Accordingly, future research should analyse such sites more broadly and may also consider sites centred on other professions in platforms other than Facebook. In view of the pedagogical limitations identified, we also suggest more in-depth research addressing the extent to which the engagement with such sites impacts on learning and can inform (clinical) practice. Also, the underlying motives of users, those of both learners and "teachers" on

such sites should be researched. Accordingly, we are fully aware that with this research we have neither been able to explore the topic in great detail nor to provide definitive accounts of the phenomena observed. We hope, however, that we have been able to provide a rich jumping-off point for future explorations.

Conclusion

The interviewed medical students in resource-limited environments consider the use of Facebook from their mobiles as a daily and highly popular practice. Some of them also appropriate these technologies as educational tools, along with many other users, students and medical professionals, from across developing and emerging nations. The analysis of the interviews and of a Facebook site centred on medical and clinical topics revealed rich (e-)learning and (e-)teaching practices in informal learning contexts. First, unlike previous studies, we identified explicit forms of educational content such as quizzes and case presentations which were embedded in Facebook and associated with deliberate (e-)learning practices. One would typically expect this type of learning in (more) formal educational settings. Second, from a socio-cultural learning perspective, we have shown how the participation in such virtual *professional* communities across national boundaries also allows for the declaration and negotiation of professional status and professional identities. In pointing to the importance of exploration and the acknowledgment of existing "technology-enhanced learning" practices, we hope that this research might also provide fresh perspectives to development projects, which tend to disseminate technology and "push" knowledge to learners. However, research on the phenomena at hand needs to increase in both depth and breadth. It requires a number of ethical issues to be considered before any definitive accounts related to the effectiveness of such tools on health, education and development in "resource-limited" settings can be given.

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