Technology and Language Технологии в инфосфере.
2021. 2(3). 75-88
https://doi.org/10.48417/technolang.2021.03.06

Special Topic: ***Technology and the Media Environment of the Information Society***

Messengers and Chats – Technologies of Learning

Daria Bylieva[1] (✉) and Laurent Moccozet[2]
[1] Peter the Great St.Petersburg Polytechnic University (SPbPU), Polytechnicheskaya, 29, 195251 St.Petersburg, Russia
bylieva_ds@spbstu.ru
[2] University of Geneva, 24 rue du Général-Dufour, 1211 Genève, Switzerland

Abstract
Technology-mediated communication has expanded the possibilities of communicative support of the educational process. Even 10 years ago, students used communication for social and entertainment purposes, but today e-communication related to education is widespread. This research is based on a qualitative analysis of the content of the peer-discussion and survey of Swiss and Russian students (N=1069). Peer-communication serves many purposes, from clarifying work/duty and sharing useful information to collaborative activity. When a student faces a problem while completing an assignment, seeking help from other students prevails over communication with the teacher. Students in Russia communicate more often with fellow students (68% do it at least once a week) on a wide range of issues, Swiss students communicate less often (44% – at least once a week) primarily on the assignment topic. Swiss students prefer to use for peer-communication messengers (76% "definitely" and 13% "likely" choose it) and Russian ones like social media chat (61% "definitely" and 12% "likely"). Some activities require specific features of communication channels, in particular, some students prefer a videoconference for active joint interaction, and emails for a file transfer. Taking into account the fact that students are united and ready to work together for learning purposes can help in building a new collaborative educational environment, where communication technologies play an important role.

Keywords: Technology-mediated communication; Higher education; Peer-communication; Out-of-class communication

Аннотация
Технологически опосредованная коммуникация расширила возможности коммуникативной поддержки образовательного процесса. Еще 10 лет назад студенты использовали интернет-общение только в социальных и развлекательных целях, но сегодня в нем присутствуют образовательные цели. Данное исследование основано на качественном анализе содержания студенческих полилогов и опроса швейцарских и российских студентов (N = 1069). Общение служит многим целям, от разъяснения заданий и обмена информацией до совместной проектной деятельности. Когда студент сталкивается с проблемой при выполнении задания, обращение за помощью к сокурсникам преобладает над общением с учителем. Студенты в России чаще общаются с сокурсниками (68% делают это не реже одного раза в неделю) по широкому кругу вопросов, швейцарские студенты реже общаются (44% – не реже одного раза в неделю) преимущественно по теме учебных задания. Швейцарские студенты предпочитают использовать для взаимного общения мессенджеры (76% "определенно" и 13% "вероятно" выбирают его), а российские – чат в социальных сетях (61% "определенно" и 12% "вероятно"). Некоторые активности требуют специфических каналов связи, некоторые студенты предпочитают видеоконференцию для активного взаимодействия и почту для передачи файлов. Так как готовы работать вместе в учебных целях возможно создание новой совместной образовательной среды, в которой коммуникативные технологии играют важную роль.

Technology and Language Технологии в инфосфере.
2021. 2(3). 75-88
https://doi.org/10.48417/technolang.2021.03.06

Messengers and Chats – Technologies of Learning

INTRODUCTION

Technology-mediated communication has become widespread. Personal meetings, and even phone calls and videoconferences, and other synchronous channels require special reasons. Written correspondence becomes the predominant channel of social relations. However, correspondence can pass through different channels. Usually, instant messengers and social media chats (and other text-messaging platforms) are more suitable for quick exchange of remarks. E-mail is a more formal and time-consuming communication channel. A forum inside a Learning Management System (LMS) such as Moodle can be considered as a formal educational communication space. It serves as an online continuation of the university environment. Communication on a forum of MOOC (Massive open online course) also has an obvious learning purpose, but can be less formal, since, most likely, the teacher has no obligation to answer all the students' requests. At the same time, students' activity on forums of online courses is a rare phenomenon and the teacher should facilitate discussion (Dennen, 2005; Martinho et al., 2014; Mazzolini & Maddison, 2007). But student-led discussions on forums lead to peer involvement (Seo, 2007; Zulfikar et al., 2019). Videoconference platforms (such as Zoom, Microsoft Teams, etc.) have become part of the e-learning environment during the pandemic 2020-2021 and can be used not only for lessons but also for additional communication.

Now use of social media in the learning process has become common practice (Chugh & Ruhi, 2018; Thai et al., 2019). There are some contradictions on this topic. In the 2010s, no Singapore students reported using Facebook for educational purposes (Hew & Cheung, 2012) and only a few British students did so (Madge et al., 2009). Analyzing the content of the Facebook pages of undergraduate students (Selwyn, 2009) revealed university-related topics reflecting on the university experience, exchange of academic information), but no learning questions. Some researchers claim that students, as usual, do not want to use social network sites for formal academic relationships (Taylor et al., 2012), students see Facebook as their "closed territory" (Hershkovitz & Forkosh-Baruch, 2013), Facebook is not considered as an educational tool for building connections with instructors, professionals, companies or brands (Neier & Zayer, 2015). Teachers also do not perceive receiving a "friend request" from a current student as appropriate (Chretien et al., 2011). The use of online social networks for interpersonal interactions between teachers and students may be even prohibited as it is in Israel (Hershkovitz et al., 2019). Dilemmas revolved around the potential blurring of boundaries: privacy (vs intimacy), authority (vs friendship), and availability/responsibility (Asterhan & Rosenberg, 2015).

Nevertheless, since mobile communication has become common practice, it is used for educational issues among others. The researches of the positive effect of out-of-class communication (OCC) have received a new direction in the digital era. In the late 20th century (Fusani, 1994) "extra-classroom communication" was described as student-initiated visits during office hours, conversations before or after class, and informal meetings on campus between students and instructors. According to Milem & Berger (1997) "involvement with faculty" consists of a talk with faculty outside of class,

lunch/dinner with faculty, being guest at the professor's home, coffee/soft drink, etc. Endo & Harpel (1982) encouraged students "to be more persistent in seeking opportunities to be involved with faculty members outside the classroom" and "be open to interaction with responsive faculty whenever they may be found" (p. 133). At the same time students reported the limited frequency and nature of face-to-face interactions with faculty (Cotten & Wilson, 2006). Endo & Harpel (1982) indicated an average office hours' visit length of 2.4 minutes, and an average informal exchange length of 1.4 minutes. According to other data, 50 percent of students reported never visiting their instructor's office (Jaasma & Koper, 1999).

Technology has expanded the possibilities of educational communication, without limiting it to a specific place and time. At first, emails mostly replaced face-to-face communication in teacher-student interaction (Duran et al., 2005; Waldeck et al., 2001; Young et al., 2011). The term "out-of-class communication" (OCC) began its widespread diffusion around 2015 and has been associated, first of all, with different forms of computer-mediated communication that makes this form of interaction easier (Faranda, 2015; Goodboy et al., 2015; S. Khan et al., 2015; Sidelinger et al., 2015). Recent researches highlight the benefits of using Whatsapp for OCC (Elhay & Hershkovitz, 2019; Hershkovitz et al., 2019; Rosenberg & S. C. Asterhan, 2018). For educational purposes, special messengers were developed (e.g., Remind) (Chang & Pearman, 2018; Nkhoma et al., 2018).

There are a lot of researches devoted to OCC as teacher-student communication. But peer-communication deserves not less attention but for the most part remained unnoticed. Ongoing online communication assumes that educational issues and problems are discussed and resolved by students in an online environment in an informal way regardless of the teachers' desire. Moreover, the perceived effectiveness of a student-led content may be higher than a teacher-led one (Tugrul, 2017). Janus Aaen (2015) studies the content of self-governed students' Facebook groups and reveals that about one-seventh of posts and comments are devoted to academic content and subjects. Chen et al. (2019) find that 'collective intelligence' (pooling knowledge with others) is one of the most popular topics in the Facebook group. Peer-communication is not limited to social media. For example, Israel and Omani students are more likely to use Whatsapp for educational purposes (Al-Qaysi et al., 2020; Hershkovitz et al., 2019). But, for example, Jordanian students use Whatsapp only for personal and social purposes (Gasaymeh, 2017).

Having faced a learning problem, a student can either independently look for a solution on the internet, or seek help from other people: a teacher, colleagues, or others. Skills of seeking and analyzing online information are in demand in everyday life, but the university environment provides unique opportunities for collaborative interaction on solving common problems. Lev Vygotsky (1978) highlighted that learning occurs best in social settings involving interpersonal interactions. Kuh et al. (2011) states the importance of active and collaborative learning for success (when students collaborate with others in solving problems or mastering difficult material). Khan et al. (2014) reveal that students who reported higher grades were more likely to engage in class-related Facebook academic collaboration.

SOCIAL MEDIA AND MESSENGERS

The popularity of social media and messengers has been growing all around the world. In Switzerland, 81,8% of the population are active social media users and 97,7% apply a social network or a messaging service , including 86% population aged 16 to 64 use WhatsApp, 68,7% use Facebook (Kemp, 2021b, p. 17, p. 46, p. 47). In 2021, social networks are used by 67.8% of the population of Russia or 99 million people. VKontakte is a very popular Russian social net (78%), WhatsApp is a little less popular (75,8% population) (Kemp, 2021a). Thus, although there is some preference for messengers over social media in Switzerland, in general, both communication platforms are quite popular in both countries, especially among young people.

The most obvious difference between the two channels is that using social media chats, a communicator can see the public profile of an interlocutor with all photos, posts, music, video, etc. Also, WhatsApp is a technology more related to a smartphone than to a computer. Some researchers even see them as descendants of SMS communication (Dürscheid & Frick, 2014; Schnitzer, 2012). Modern channels have significantly expanded communication possibilities, allowing to transmit audio, visual, video, text information, attach files to messages, use non-verbal symbols, and also communicate not only with one but also with many interlocutors. The feature of technical feedback makes it possible to see if the other person has read the message. From the point of view of motives and perceptions, messengers offer benefits such as cost, sense of community and immediacy (Church & de Oliveira, 2013).

Messengers and social media communication can be distinguished by the speed of answering. The order the user will check for new messages on various communication channels depends not only on individual habits but also on what forms of notification are used. Messengers usually have more possibilities for a notification sound, vibration, or an optical signal (flashing, symbol) than social media communication. Smartphones offer the immediate reading of the message on the display when a pop-up window appears showing the text.

Researchers note that despite the same functionality a user perceives communication by Facebook and WhatsApp differently: “Facebook's better support for multitasking affords asynchronous communication practices, while in WhatsApp's restricted environment users experience a heightened sense of presence in the communication” (Karapanos et al., 2016). Anabel Quan-Haase and Alyson L. Young also highlight that an instant messenger is used to provide and receive social and emotional support, here students can engage in more intimate conversations while Facebook provides more social information (Quan-Haase & Young, 2010).

METHODS

The study surveyed students’ communication in May/June 2020 during a forced transition to distance education due to the Covid-19 breakdown. At this time, the use of technology-mediated communication was at a maximum, since all face-to-face communication was terminated.

Students from the University of Geneva (Switzerland) and Peter the Great St. Petersburg Polytechnic University (Russia) took part in the research. At the preliminary

stage, a qualitative analysis of technology-mediated peer-communication provided by students was carried out, which made it possible to identify the features and main purposes of communication related to learning. Further, a questionnaire was developed and a survey of students was conducted. 233 Swiss and 836 Russian students answered the proposed questions about technology-mediated learning communication (tab. 1).

Table 1 Gender distributions

Swiss students		Russian students	
37% female	58% male	48% female	52% male

The respondents took part in the study voluntarily and were invited to it through a mass e-letter. The results of the study are anonymized in terms of the students' names and any other links that may identify the individual.

STUDENTS' PEER-COMMUNICATION IN SWITZERLAND AND RUSSIA

For educational peer-communication Swiss and Russian students have different pronounced channels preferred. Swiss students prefer the messenger, Russians like social networks. 76% of Swiss young people "definitely" choose a messenger to communicate for studies, and only 2% never use it for this purpose. Almost 50% of Swiss students never use social media for peer learning communication, and 7% like this channel (fig. 1).

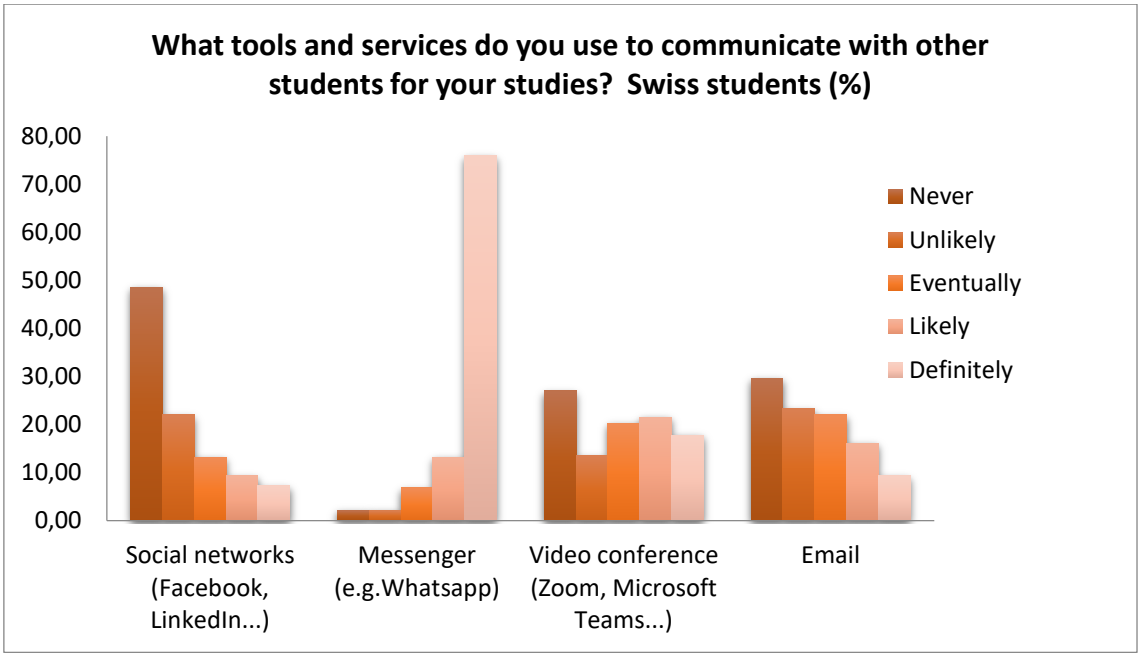

Fig. 1. Peer-communication channels preferred for educational purposes (Swiss students) (%)

2021. 2(3). 75-88
https://doi.org/10.48417/technolang.2021.03.06

Russian students are a little less univocal in their choice. Their preferred channel is social media chats (definitely – 61%, never – 8%), the messenger is "definitely" used by 16% of students (fig. 2). E-mail is not a very popular form of communication, but in Russia approximately a quarter of students definitely use it, in Sweden only one-tenth do it. Channels used for online studying during the pandemic (Zoom, Microsoft Teams) have a similarly small popularity among students – 18% of Swiss and 14% of Russian students definitely use them for peer learning communication.

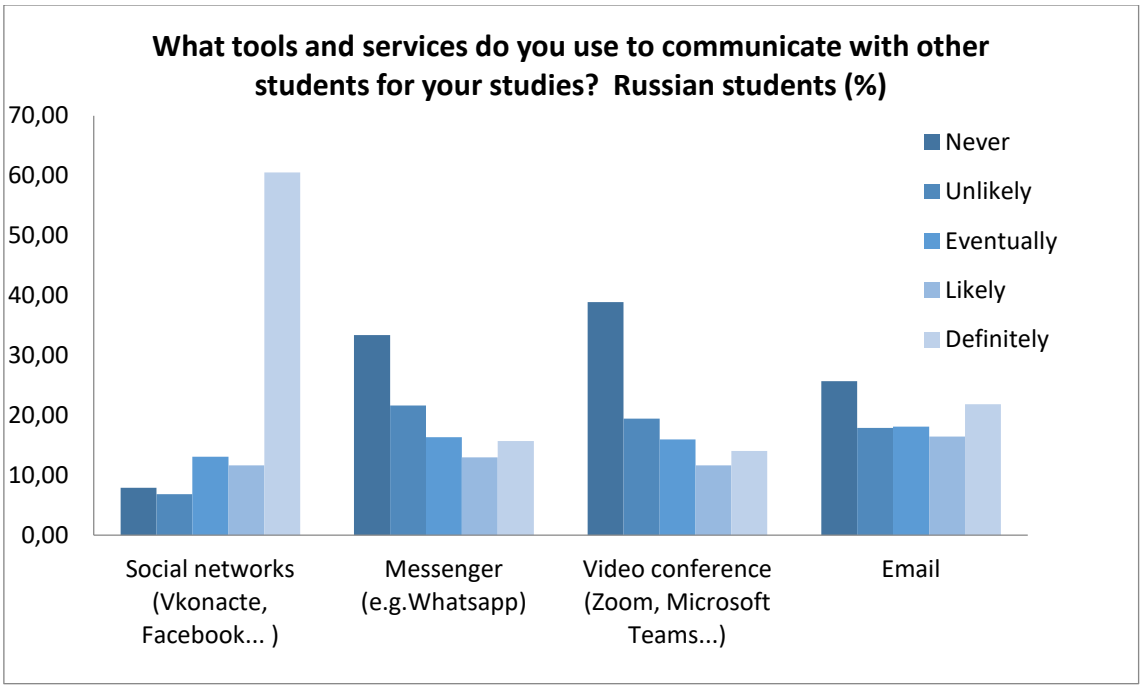

Fig. 2. Peer-communication channels preferred for educational purposes (Russian students) (%)

As part of the picture, one should also consider which communication objectives are more appropriate for which communication channels. Based on the analysis of the peer-communication content of chat samples submitted by students, the following main communication purposes related to learning were identified (fig. 3).

Communicative learning activities can be divided into requests (for information and related to the accomplisment of tasks), sharing (information or completed work), and cooperation in preparing for an exam, lessons, etc., or when doing a joint project.

In general, the students were loyal to their favorite communication channels, Swiss students most often prefer instant messengers (47-91%), and the Russian ones like chats on social networks (58-78%) (fig. 4). The most appropriate action for the preferred channel is "*asking how others accomplished a task*" (Swiss messengers), and "*asking others for work/duties*" (Russian social media). The second most popular communication channel among students from Russia is the messenger (14-23%). The Russian youth more often use the messenger if they specify information regarding the instructions of the teacher (23%), ask to send or to share materials from the teacher, complete the training task together (all activities – 22%).

2021. 2(3). 75-88
https://doi.org/10.48417/technolang.2021.03.06

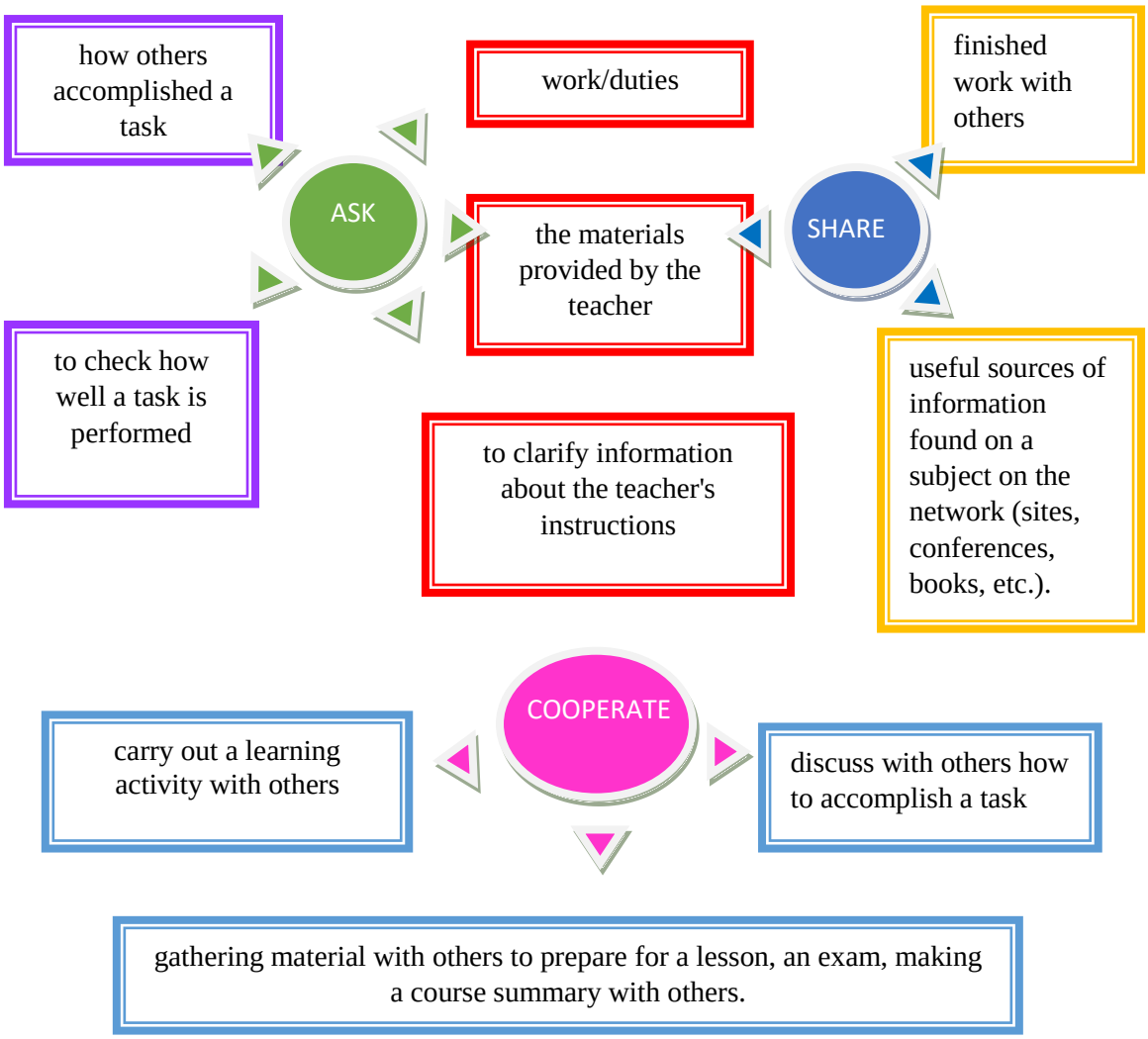

Fig. 3. Main leaning-related activities during peer-communication

For Swiss students, the second most popular option is to use an e-mail or video conferencing service. The latter will be popular in case of collaboration (when carrying out a learning activity with others, 42% prefer a videoconference, when discussing with others how to accomplish a task, 24% have this preference). For sharing the finished work or the material given by the teacher with others 36% and 33% accordingly of Swiss students use e-mail. It seems that messengers are not always the most suitable option for Swiss students to attach files, so they use other variants, primarily e-mailv.. Russian students use e-mail less frequently – for specifying information regarding the instructions of the teacher (15%) or ask to send materials given by the teacher (16%) or share it (11%). Russian students may give up their favorite chat on a social network in favor of email when the problem that needs to be solved is simple and concerns or can be solved by a student working alone.

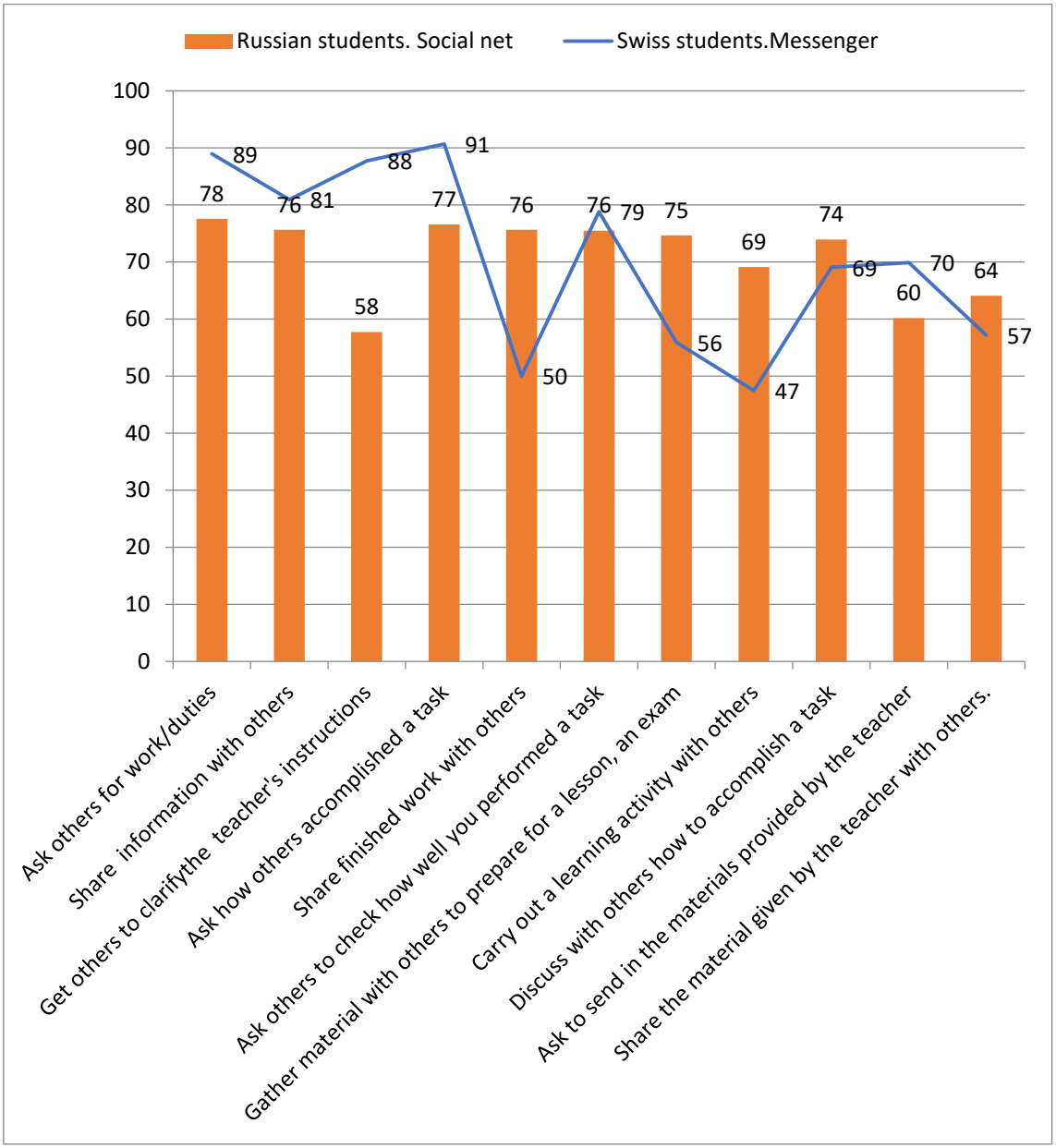

Figure 4. The communication channels preferred for different educational purposes (%).

We also considered and isolated for investigation the situation when students face a problem while completing an assignment – whom do they contact then and how (fig. 5). The student can remediate a lack of understanding with the help of fellow students or the teacher, can try to solve the problem by her- or himself, or seek help outside the university. For peer-communication we specify three variants: a private message, group chat, or phone/face-to-face communication. The teacher can be asked for an explanation during the course, by a private message, or in an established online-forum for the course. The Question has a 5-point Likert-type response format, the values of which range from "Definitely" (5) to " Never" (1).

2021. 2(3). 75-88
https://doi.org/10.48417/technolang.2021.03.06

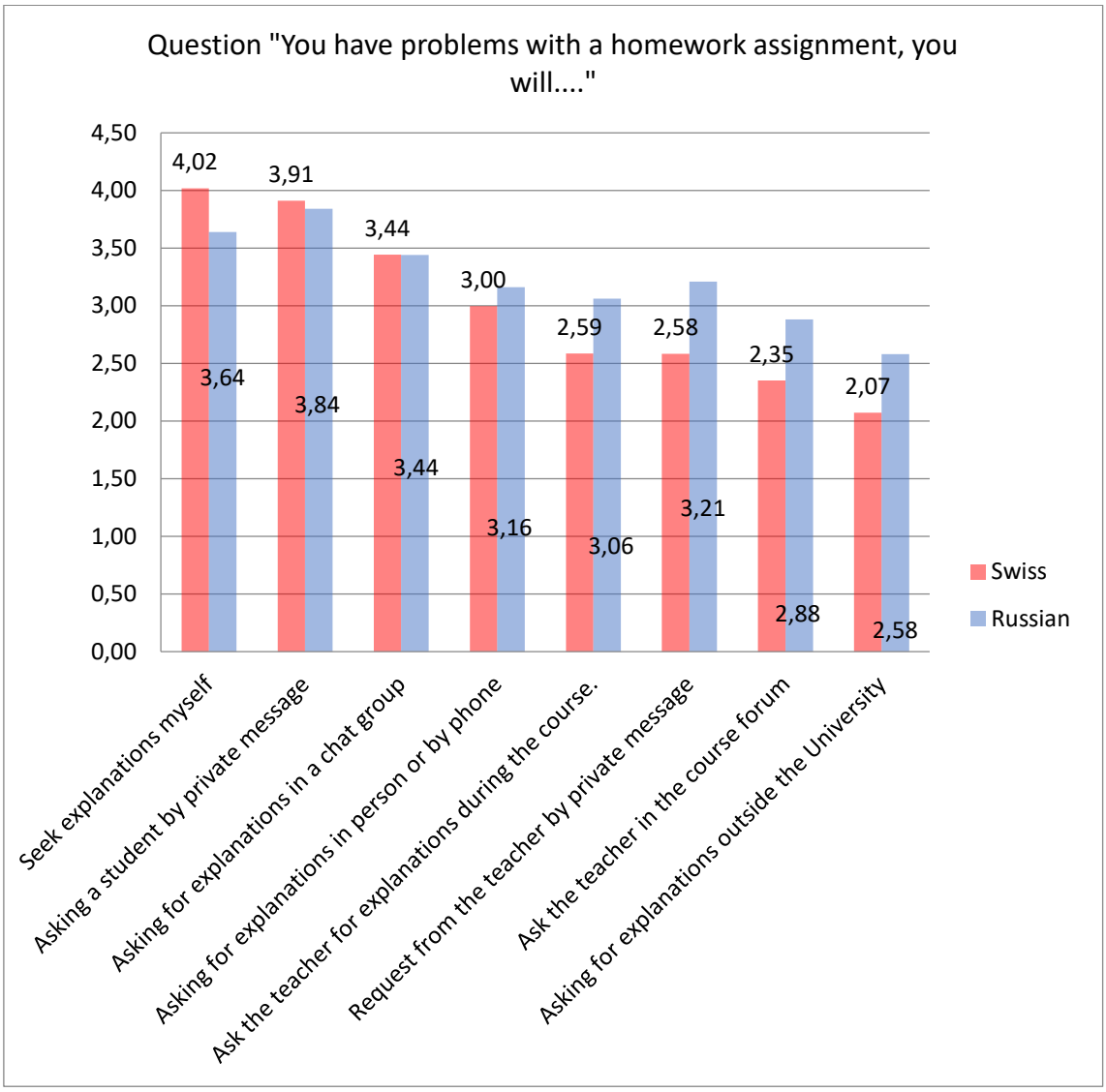

Figure 5. Variants of communication behavior in case of learning problems (%).

Seeking help from other students clearly prevails over communication with the teacher. The majority of all the students prefer to seek information themselves and ask another student for explanations in a private message. Swiss students are a little more inclined to find information on their own (49% – Definitely, 24% – Likely (for the Swiss students) versus 42% – Definitely, 30% – Likely (for the Russians students)), while Russian students are more likely to ask a colleague (33% – Definitely, 28% – Likely (for the Russians students) versus 26% – Definitely, 27% – Likely (for the Swiss students)). Slightly less often students ask for help in a group chat.

The least popular option for all the students is to ask someone not related to the place of study (41% of Swiss and 31% of Russian young people never use it). Also, both for Russian and Swiss students, the most unpopular way of communication is contacting the teacher in the forum. 19% of Russian and 32% of Swiss students never

use it. Swiss students are more specific in their preferences. The Russian ones are less univocal and use most variants (fig. 5).

The next question is dedicated to the frequency of technology-mediated communication for different variants of learning-related activities (fig. 3). In general, Russian students are more likely to communicate with fellow students on academic issues, 13-15% of the students ask or share something several times a day, while 1-5% of Swiss students do it so often (fig. 6).

Swiss students rarely ask to send material handed out by the teacher (41% – never) and ask for duty (37% – never). They prefer to discuss how to accomplish a task (26% – several times a week, 30% – once a week), ask how others do it (18% – several times a week, 34% – once a week), and share with other useful information (24% – several times a week, 29% – once a week). Russian students have no main priorities on activities, participating in them with approximately equal intervals (21-29% – several times a week, 25-30% – once a week). Less often they ask fellow students to see how well they completed the task (17% – never).

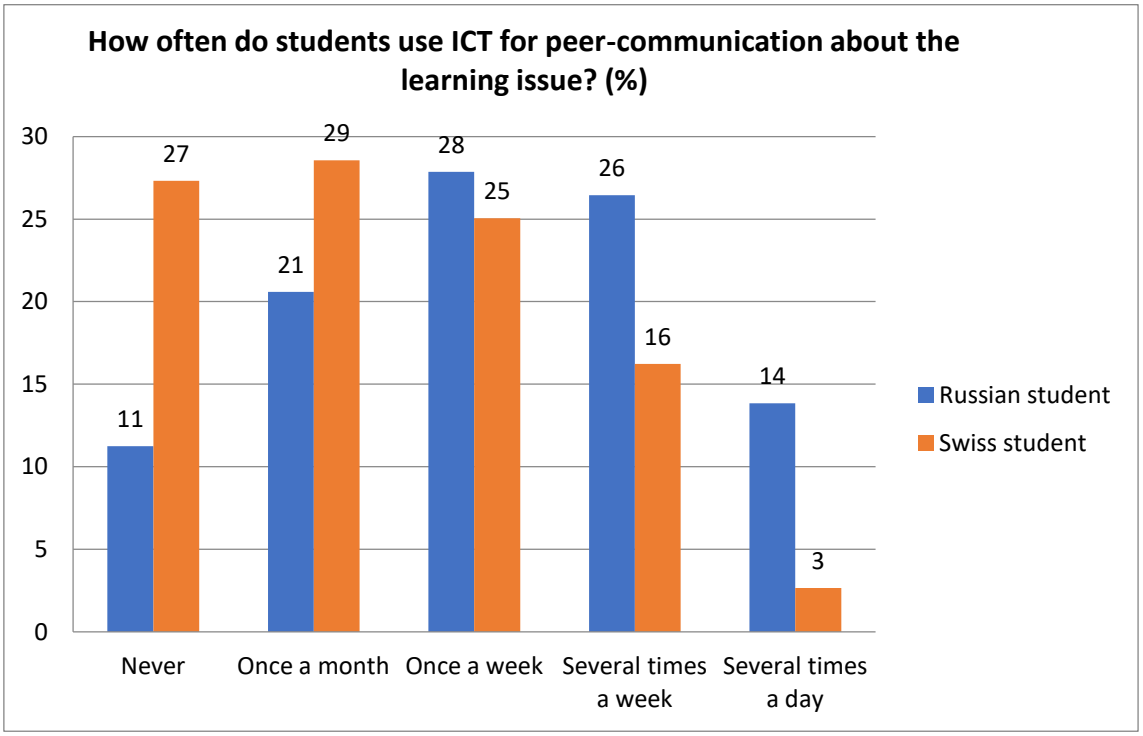

Figure 6. The average value of frequency of technology-mediated communication used for all activities (%).

CONCLUSION AND DISCUSSION

Technology-mediated communication has become an important part of higher education, which is increasingly immersed in an electronic environment. This research proves the important place of peer-communication in the educational process. Today communication with the teacher using ICT is widely researched, while peer-communication has remained outside the scope of scientific interest. At the same time,

we see that fellow students constitute powerful educational support, young people communicate with each other in case of learning difficulties. Peer-communication serves many purposes from clarifying homework to collaborative projects. Regardless of whether joint student activities are initiated by the teacher, students still communicate with each other, providing help and support. It is noticeable that some activities require specific features of communication channels, in particular, in the case of active joint interaction, file transfer, etc. Taking into account the fact that students are united and ready to work together for learning purposes can help in building a new collaborative educational environment, where communication technologies play an important role. Observed differences in frequency and content of communication (e.g., students in Russia communicate more often with fellow students on a wide range of topics, Swiss students are somewhat more self-reliant, and communication is used primarily in case of problems with completing an assignment), show the need to differentiate approaches.

The question raised in the study about the channels of technology-mediated communication most suitable in the educational context turned out to have different answers depending on the country. It is believed that communication by way of social media chats (preferred in Russia) better suits multitasking e-immersion, and a messenger is better for personal conversations. This study is limited to two universities in the two countries, the results obtained on the preferences of social media chats in Russia and instant messengers in Switzerland require further research, explanation, and confirmation. It will also be interesting to investigate what changes in communication will take place once learning conditions become more traditional again after the forced suspension of face-to-face communication during a lockdown.

REFERENCES

Aaen, J. (2015). Making sense of Facebook: A mixed methods approach to analyzing online student groups. *International Journal of Media, Technology and Lifelong Learning*, *11*(1), 1-7.

Al-Qaysi, N., Mohamad-Nordin, N., & Al-Emran, M. (2020). An Empirical Investigation of Students' Attitudes Towards the Use of Social Media in Omani Higher Education. In *5th International Conference on Advanced Intelligent Systems and Informatics, AISI 2019. Advances in Intelligent Systems and Computing. Vol .1058* (pp. 350–359). Springer. https://doi.org/10.1007/978-3-030-31129-2_32

Asterhan, C. S. C., & Rosenberg, H. (2015). The promise, reality and dilemmas of secondary school teacher–student interactions in Facebook: The teacher perspective. *Computers & Education*, *85*, 134-148. https://doi.org/10.1016/j.compedu.2015.02.003

Chang, C. W., & Pearman, C. (2018). Instant reminder: The impact of e-communication on first year college students. *International Journal of Technology in Teaching and Learning*, *14*(1), 42–54.

Chen, S.-Y., Kuo, H.-Y., & Hsieh, T. C. (2019). New literacy practice in a facebook group: The case of a residential learning community. *Computers & Education*, *134*, 119-131. https://doi.org/10.1016/J.COMPEDU.2019.01.008

Chretien, K. C., Farnan, J. M., Greysen, S. R., & Kind, T. (2011). To Friend or Not to Friend? Social Networking and Faculty Perceptions of Online Professionalism.

Academic Medicine, *86*(12), 1545-1550. https://doi.org/10.1097/ACM.0b013e3182356128

Chugh, R., & Ruhi, U. (2018). Social media in higher education: A literature review of Facebook. *Education and Information Technologies*, *23*(2), 605-616. https://doi.org/10.1007/s10639-017-9621-2

Church, K., & de Oliveira, R. (2013). What's up with whatsapp?: comparing mobile instant messaging behaviors with traditional SMS. *Proceedings of the 15th International Conference on Human-Computer Interaction with Mobile Devices and Services – MobileHCI '13*, 352. https://doi.org/10.1145/2493190.2493225

Cotten, S. R., & Wilson, B. (2006). Student–faculty Interactions: Dynamics and Determinants. *Higher Education*, *51*(4), 487-519. https://doi.org/10.1007/s10734-004-1705-4

Dennen, V. P. (2005). From message posting to learning dialogues: Factors affecting learner participation in asynchronous discussion. *Distance Education*, *26*(1), 127-148. https://doi.org/10.1080/01587910500081376

Duran, R. L., Kelly, L., & Keaten, J. A. (2005). College Faculty Use and Perceptions of Electronic Mail to Communicate with Students. *Communication Quarterly*, *53*(2), 159-176. https://doi.org/10.1080/01463370500090118

Dürscheid, C., & Frick, K. (2014). Keyboard-to-Screen-Kommunikation gestern und heute: SMS und WhatsApp. im Vergleich. In A. Mathias, J. Runkehl, & T. Siever (Eds.), *Sprachen? Vielfalt! Sprache und Kommunikation in der Gesellschaft und den Medien. Eine Online-Festschrift zum Jubiläum von Peter Schlobinski* (pp. 149-181). Networx 64.

Elhay, A. A., & Hershkovitz, A. (2019). Teachers' perceptions of out-of-class communication, teacher-student relationship, and classroom environment. *Education and Information Technologies*, *24*(1), 385-406. https://doi.org/10.1007/s10639-018-9782-7

Endo, J. J., & Harpel, R. L. (1982). The Effect of Student-Faculty Interaction on Students Educational Outcomes. *Research in Higher Education*, *16*(2), 115-138.

Faranda, W. T. (2015). The Effects of Instructor Service Performance, Immediacy, and Trust on Student–Faculty Out-of-Class Communication. *Marketing Education Review*, *25*(2), 83–97. https://doi.org/10.1080/10528008.2015.1029853

Fusani, D. S. (1994). "Extra-class" communication: Frequency, immediacy, self-disclosure, and satisfaction in student-faculty interaction outside the classroom. *Journal of Applied Communication Research*, *22*(3), 232-255. https://doi.org/10.1080/00909889409365400

Gasaymeh, A. M. M. (2017). University students use of WhatsApp and their perceptions regarding its possible integration into their education. *Global Journal of Computer Science and Technology*, *17*(1), 1-10.

Goodboy, A. K., Booth-Butterfield, M., Bolkan, S., & Griffin, D. J. (2015). The Role of Instructor Humor and Students' Educational Orientations inStudent Learning, Extra Effort, Participation, and Out-of-Class Communication. *Communication Quarterly*, *63*(1), 44-61. https://doi.org/10.1080/01463373.2014.965840

Hershkovitz, A., Abu Elhija, M., & Zedan, D. (2019). WhatsApp is the Message: Out-of-Class Communication, Student-Teacher Relationship, and Classroom Environment. *Journal of Information Technology Education: Research*, *18*, 073-

095. https://doi.org/10.28945/4183

Hershkovitz, A., & Forkosh-Baruch, A. (2013). Student-teacher relationship in the Facebook era: the student perspective. *International Journal of Continuing Engineering Education and Life-Long Learning*, *23*, 33e52.

Hew, K. F., & Cheung, W. S. (2012). Use of Facebook: a case study of Singapore students' experience. *Asia Pacific Journal of Education*, *32*(2), 181-196. https://doi.org/10.1080/02188791.2012.685560

Jaasma, M. A., & Koper, R. J. (1999). The relationship of student-faculty out-of-class communication to instructor immediacy and trust and to student motivation. *Communication Education*, *48*(1), 41-47. https://doi.org/10.1080/03634529909379151

Karapanos, E., Teixeira, P., & Gouveia, R. (2016). Need fulfillment and experiences on social media: A case on Facebook and WhatsApp. *Computers in Human Behavior*, *55*, 888-897. https://doi.org/10.1016/j.chb.2015.10.015

Kemp, S. (2021a, February 10). Digital 2021: The Russian Federation. *Datareportal*. https://datareportal.com/reports/digital-2021-russian-federation

Kemp, S. (2021b, February 11). Digital 2021: Switzerland. *Datareportal*. https://datareportal.com/reports/digital-2021-switzerland

Khan, M. L., Wohn, D. Y., & Ellison, N. B. (2014). Actual friends matter: An internet skills perspective on teens' informal academic collaboration on Facebook. *Computers & Education*, *79*, 138-147. https://doi.org/10.1016/J.COMPEDU.2014.08.001

Khan, S., Shah, A., & Ahmad, S. (2015). The Role of Out-of-Class Communication in Instructor's Verbal/Non-Verbal Behavior, Trust, and Student Motivation. *Business & Economic Review*, *7*(1), 81-100. https://doi.org/10.22547/BER/7.1.5

Kuh, G. D., Kinzie, J., Schuh, J. H., & Whitt, E. J. (2011). *Student success in college: creating conditions that matter*. Jossey-Bass.

Madge, C., Meek, J., Wellens, J., & Hooley, T. (2009). Facebook , social integration and informal learning at university: 'It is more for socialising and talking to friends about work than for actually doing work.' *Learning, Media and Technology*, *34*(2), 141-155. https://doi.org/10.1080/17439880902923606

Martinho, M., Almeida, P. A., & Teixeira-Dias, J. (2014). Fostering Students Questioning through Moodle: Does it Work? *Procedia – Social and Behavioral Sciences*, *116*, 2537-2542. https://doi.org/10.1016/j.sbspro.2014.01.607

Mazzolini, M., & Maddison, S. (2007). When to jump in: The role of the instructor in online discussion forums. *Computers & Education*, *49*(2), 193–213. https://doi.org/10.1016/j.compedu.2005.06.011

Milem, J. F., & Berger, J. B. (1997). A Modified Model of College Student Persistence: Exploring the Relationship Between Astin's Theory of Involvement and Tinto's Theory of Student Departure". *Journal of College Student Development*, *38*(4), 387-400.

Neier, S., & Zayer, L. T. (2015). Students' Perceptions and Experiences of Social Media in Higher Education. *Journal of Marketing Education*, *37*(3), 133–143. https://doi.org/10.1177/0273475315583748

Nkhoma, C. A., Thomas, S., Nkhoma, M. Z., Sriratanaviriyakul, N., Truong, T. H., & Vo, H. X. (2018). Measuring the impact of out-of-class communication through

instant messaging. *Education + Training*, *60*(4), 318-334. https://doi.org/10.1108/ET-12-2017-0196

Quan-Haase, A., & Young, A. L. (2010). Uses and Gratifications of Social Media: A Comparison of Facebook and Instant Messaging. *Bulletin of Science, Technology & Society*, *30*(5), 350-361. https://doi.org/10.1177/0270467610380009

Rosenberg, H., & S. C. Asterhan, C. (2018). "WhatsApp, Teacher?" – Student Perspectives on Teacher-Student WhatsApp Interactions in Secondary Schools. *Journal of Information Technology Education: Research*, *17*, 205-226. https://doi.org/10.28945/4081

Schnitzer, C.-V. (2012). *Linguistische Aspekte der Kommunikation in den neueren elektronischen Medien SMS – E-Mail – Facebook*. Grin Verlag.

Selwyn, N. (2009). Faceworking: exploring students' education-related use of Facebook. *Learning, Media and Technology*, *34*(2), 157-174. https://doi.org/10.1080/17439880902923622

Seo, K. K. (2007). Utilizing Peer Moderating in Online Discussions: Addressing the Controversy between Teacher Moderation and Nonmoderation. *American Journal of Distance Education*, *21*(1), 21-36. https://doi.org/10.1080/08923640701298688

Sidelinger, R. J., Bolen, D. M., McMullen, A. L., & Nyeste, M. C. (2015). Academic and Social Integration in the Basic Communication Course: Predictors of Students' Out-of-Class Communication and Academic Learning. *Communication Studies*, *66*(1), 63-84. https://doi.org/10.1080/10510974.2013.856807

Taylor, S. A., Mulligan, J. R., & Ishida, C. (2012). Facebook, Social Networking, And Business Education. *American Journal of Business Education (AJBE)*, *5*(4), 437. https://doi.org/10.19030/ajbe.v5i4.7121

Thai, M., Sheeran, N., & Cummings, D. J. (2019). We're all in this together: The impact of Facebook groups on social connectedness and other outcomes in higher education. *The Internet and Higher Education*, *40*, 44-49. https://doi.org/10.1016/j.iheduc.2018.10.001

Tugrul, O. T. (2017). Perceived learning effectiveness of a course Facebook page: teacher-led versus student-led approach. *World Journal on Educational Technology: Current Issues*, *9*(1), 35-39.

Vygotsky, L. S. (1978). *Mind in society: the development of higher psychological processes*. Harvard University Press.

Waldeck, J., Kearney, P., & Plax, T. (2001). Teacher e-mail message strategies and students' willingness to communicate online. *Journal of Applied Communication Research*, *29*(1), 54-70. https://doi.org/10.1080/00909880128099

Young, S., Kelsey, D., & Lancaster, A. (2011). Predicted Outcome Value of E-mail Communication: Factors that Foster Professional Relational Development between Students and Teachers. *Communication Education*, *60*(4), 371-388. https://doi.org/10.1080/03634523.2011.563388

Zulfikar, A. F., Muhidin, A., Pranoto, S. W., Trisetyarso, A., Abbas, B. S., & Kang, C. H. (2019). The Effectiveness of Online Learning with Facilitation Method. *Procedia Computer Science*, *161*, 32-40. https://doi.org/10.1016/j.procs.2019.11.096