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From Facebook Toward the Metaverse – How the Future Educators Build Interpersonal Relationships Using Social Media

Abstract

At the threshold of emerging parallel immersive environments and metaverse worlds, the use of social media to build interpersonal relationships is a common phenomenon. This study aimed to diagnose, describe, and compare the use of social media to build and sustain interpersonal contacts and to refer to the level of interpersonal competences among students of pedagogical courses in two selected universities in Poland and Portugal. The studies were quantitative and employed the Interpersonal Competence Questionnaire by D. Buhrmester, W. Furman, M.T. Wittenberg and H.T. Reis, as well as the author's own questionnaire. The analyses show that social media play a major role in building interpersonal relationships for Polish and Portuguese students in areas such as establishing new contacts, maintaining offline relationships, mutual learning and self-presentation. Non-face-to-face relations may interfere with establishing contact face to face. The analyses also show that the level of interpersonal competences among the respondents in terms of the skills and readiness to provide emotional support to others is differentiated by the way and scope of social media usage in the area under consideration. It can be assumed that in the group of respondents, the more they are willing and able to provide emotional support to others, the more effective and balanced way they use social media in building interpersonal relationships.

Keywords: *COVID-19 pandemic, internet, interpersonal connection, social media, teacher training*

Introduction

Today, social networked immersive environments are becoming a space for building social relations, education, business creation and other areas of human activity. Technologies have been present in education for a long time, but the evolutionary changes in the use of Web 2.0 and then Web 3.0 (Jiang, 2014; Lal, 2011) assisted by the implementation of social media and the entire digital tools instrumentation, as well as blockchain technology in education (Oyelere et al., 2020), have started to take the form of revolutionary changes in recent years. Not without significance was the COVID-19 pandemic, which shifted human activities to the online environment in many countries. In this context, VR, AR, and AI technologies have been increasingly used, and communities of people learning from each other, working together and developing online social relations have emerged around these tools. The concept of metaverse was created. Four trends and types of technologies that build the metaverse have been identified: augmented reality, lifelogging, mirror world, and virtual reality (Kye et al., 2021). “Metaverse is a virtual world where humans, as avatars, interact with each other in a three-dimensional space that mimics reality” (Cambridge Advanced Learner’s Dictionary & Thesaurus, 2020). In the context of creating one or more parallel metaverse environments, it should also be mentioned that although the concept itself appeared as early as 1992 in the context of Nel Stephenson’s novel, it is Mark Zuckerberg’s declaration of 2021 that the “Metaverse is the next evolution of social connection” (Meta Motto, 2021) and changing the name of Facebook to Meta was considered significant.

“(…) the Metaverse is a post-reality universe, a perpetual and persistent multiuser environment merging physical reality with digital virtuality. Regarding online distance education, Metaverse has the potential to remedy the fundamental limitations of web-based 2D e-learning tools” (Mystakidis, 2022). In education, interpersonal relationships are very important, especially concerning the vision of education of the future, which could be pursued using the metaverse (Suh & Ahn, 2022).

At present, it is too early to talk about the practical use of the metaverse in building relationships, but the author’s own study examined how future teachers and educators build relationships using social media, which is also reflected in previous scientific research (Taylor, 2020; Lee et al., 2016; Davis et al., 2015).

Our study aimed to diagnose, describe, and compare the use of social media to build and sustain interpersonal contacts and to refer to the level of interpersonal competences among the respondents.

Research Methodology

The study results are part of a broader quantitative scientific research that compares the characteristics of the community trained to be a teacher and educator in Poland and Portugal (Frانيا & Correia, 2022).

After Creswell (2009), we adopted the formulation of research questions and working hypotheses. The following research questions were formulated:

- Are social media used, and to what extent, to build relationships with other people among the Polish and Portuguese future educators?
- What differences are demonstrated by the respondents from Poland and Portugal regarding the use of social media to build relationships?
- Is the level of interpersonal competences with regard to skills and readiness to provide emotional support among the respondents differentiated by the use of social media?

Statistical hypotheses were also formulated, which are presented in Tables 1 and 2, specifying the null and the alternative hypothesis in the mathematical notation.

The study was conducted among students of full-time teaching and pedagogical courses at the University of Silesia in Katowice (Poland) (N=172) and at Universidade de Madeira in Funchal, the Autonomous Region of Madeira (Portugal) (N=104). The sample selection was purposive due to the nature of the research. The selection of universities was deliberate due to the nature and purpose of the research. Then, the analysis of groups of student pedagogical fields from the first to the third year, treated as a cluster due to the level of advancement in the study process, was performed. Then purposive sampling based on the researchers' judgment about the required sample set was used. Most respondents were women (PT 87.5% and PL 98.8%). In Portugal, the age of the respondents was as follows: 18 years – 14.4%; 19 years old – 20.2%; 20 years – 21.1%; 21 years old – 10.6%; 22 years old – 11.5%; over 22 years old – 22.1%. In Poland, the age of the respondents was as follows: 19 years – 17.4%; 20 years – 27.3%; 21 years old – 5.8%; 22 years old – 40.7%; over 22 years old – 8.7%.

The study employed a diagnostic survey based on a questionnaire drawn up by the authors and a test based on the Interpersonal Competence Questionnaire by Buhrmester, Furman, Wittenberg, and Reis – in the Polish version: Kwestionariusz Kompetencji Interpersonalnych ICQ-R 2017 as adapted by Klinkosz, Iskra, and Dawidowicz (2017) and in the Portuguese version O questionário de competência interpessoal (QCI) 2010 as adapted by Assunção, Ávila, and Mena Matos (2010).

The level of interpersonal competences was determined on a five-point scale in 5 domains, which were designated in the author's own study by the following

abbreviations: IR: Initiation; AO: Negative Assertion-Asserting Influence; US: Disclosure; EW: Emotional Support; RK: Conflict Management and Resolution (Klinkosz et al., 2017). The normalised results for interpersonal competences were given in the T-score with a standard deviation of 10T. A result below 40T was interpreted as significantly low, and above 60T – as significantly high. The results between them were referred to as medium (average) (Frانيا & Correia, 2022). At the next stage, only the dimension in which one or the other group of students had a significantly increased level was chosen to compare the use of social media in building relationships. These were competences in terms of skills and readiness to provide emotional support to others (EW), as the Madeira group achieved a high result in this dimension (Frانيا & Correia, 2022).

The questionnaire was written in Polish, Portuguese, and English and referred to the use of social media, mutual learning in relation to the Online Collaborative Learning (OCL) model (Harasim, 2017) and interpersonal competences. For this article, the results regarding social media were distinguished, and the answers to the 8 decisive questions were compared for each of the five interpersonal domains among the Polish and Portuguese respondents. In the second stage, only the dimension in which the group of respondents obtained a significantly increased level of competences was analysed.

Statistical tests were used to analyse the results, where a decision to reject or not reject the hypothesis under verification was allocated to each random sample. The test statistic for testing the difference in two population proportions, that is, for testing the null hypothesis, was:

$$U = \frac{P_1 - P_2}{\sqrt{\hat{p}(1 - \hat{p})\left(\frac{1}{n_1} + \frac{1}{n_2}\right)}}$$

The hypothesis under verification was marked with the symbol H_0 . If hypothesis H_0 under verification was rejected, then an alternative hypothesis marked with H_1 was assumed true (Tables 1 and 2).

Research Results

In the questionnaire, the respondents from both countries were asked to respond to the following eight declarations as decisive questions:

1. Do you use social media (e.g., Facebook, Instagram, etc.) to establish new contacts with people?

2. Do you use social media to sustain offline friendships (established outside the Internet)?
3. Do you have friends on social media whom you have never met in the offline world?
4. Do social media interfere with making friends offline?
5. Can social media replace face-to-face contact for you?
6. Can social media help you present and express yourself?
7. Do social media help you build your own identity?
8. Can social media platforms help to learn from each other?

After analysing the answers, the probability of a positive answer in both countries was estimated. The results are shown in Table 1.

Table 1. Verified probability of positive answers given in the questionnaire by the students from Poland and Portugal (N=276)

Study of YES answers in both countries								
ques- tions	1	2	3	4	5	6	7	8
hypotheses	Ho: ppor1= ppol1	Ho: ppor2= ppol2	Ho: ppor3= ppol3	Ho: ppor4= ppol4	Ho: ppor5= ppol5	Ho: ppor6= ppol6	Ho: ppor7= ppol7	Ho: ppor8= ppol8
	H1: ppor1≠ ppol1	H1: ppor2≠ ppol2	H1: ppor3≠ ppol3	H1: ppor4≠ ppol4	H1: ppor5≠ ppol5	H1: ppor6≠ ppol6	H1: ppor7≠ ppol7	H1: ppor8≠ ppol8
p [^]	0.83	0.88	0.15	0.63	0.09	0.81	0.08	0.96
statistics value U	7.3659	4.8105	5.9391	4.4145	1.7872	6.1644	4.9119	0.9004
u _{1-α/2}	1.9600	1.9600	1.9600	1.9600	1.9600	1.9600	1.9600	1.9600
p-value	0.0000	0.0000	0.0000	0.0000	0.0808	0.0000	0.0000	0.2660
Designations: ppor i – probability of a YES answer to question i in Portugal ppol i – probability of a YES answer to question i in Poland								

The respondents from Poland and Portugal acknowledged that they use social media to establish interpersonal contacts (PL 96%; PT 62%). Based on the analyses, H_0 was rejected, and H_1 , stating that ‘yes’ answers are more probable in Poland, was accepted. Also, among the Polish students, there was a statistically higher probability that via social media, they sustain relationships with other people established

in the offline world (95%). However, most Portuguese peers (76%) do that too. The majority (85%) of the study group of future educators do not have friends in social media with whom they have never met in the offline world, but in this case, following the statistical analyses, it should be noted that the probability of continuing such friendship is significantly higher in statistical terms among the Portuguese students (PL 5%; PT 32%).

The respondents were asked to comment on the statement that social media interfere with making friends in the offline world. Based on the analyses, hypothesis H_0 was rejected, and hypothesis H_1 was accepted. Hence, the probability of a positive answer is significantly higher in terms of statistics in the Polish group. In this case, a big difference was observed since as many as 73% of the Poles believe that social media interfere with making friends outside cyberspace, while only 46% of the Portuguese respondents approved of this opinion.

The students were asked to respond to the statement that social media can replace direct face-to-face contact for them. As shown in Table 1, the statistical analyses do not give rise to the rejection of hypothesis H_0 , which means that the probability of a positive response in the two groups is the same. It should be pointed out that the probability is low, as in the general group of the respondents, only 9% of the subjects approve of this opinion, and thus relationships via media cannot replace face-to-face contact, even though, as the previous answers suggest, the initial contact can be made easier.

There is no statistical basis to reject hypothesis H_0 , also for the eighth item. Hence, the probability of obtaining an answer is the same for Polish and Portuguese students. In this case, however, the probability is very high because as many as 94% of the Portuguese students and 97% of the Polish students think that users can learn from each other in virtual spaces and on platforms offered by the widely understood social media. In general, 96% of the subjects recognised and confirmed such a possibility. It is a very high result in the group preparing for the profession of a pedagogue, educator, and teacher.

Items 6 and 7 referred to a similar matter. These were questions as to whether, on the one hand, social media facilitate self-presentation and self-expression and, on the other hand, whether they help future educators build their own identities. In both cases, the difference between the groups is statistically significant. The probability that the students from Poland use social media, which makes them easier to present and express themselves, is statistically higher. In the Polish group, this is true in 92% of cases and 63% in the Portuguese group. As for the impact of social media on identity building, the situation is the opposite, and a higher probability is in the Portuguese group, although it should be stressed that only

a small percentage of the respondents from both universities emphasised that it is true for them (PL 2%; PT 18%).

The next stage of the study identified the probability of a 'yes' answer to the eight items in relation to the five dimensions of the interpersonal competences measured with the Interpersonal Competence Questionnaire by Buhrmester, Furman, Wittenberg, and Reis (1988) as adapted for Poland and Portugal. In the first phase of the study, the level of competences in each dimension was diagnosed and classified as low, medium or high. Then, the level of interpersonal competences was compared in both countries. It turned out that in the case of Madeira pedagogical and educational course students, the highest level of competences is in terms of skills and readiness to provide emotional support to others (EW), conflict resolution without fighting (RK) and assertive behaviour in relation to others (AO). In the group of future Polish educators, these were: conflict resolution without fighting (RK), disclosure (US) and initiation of interaction and relations (IR). It should be noted that among the three highest dimensions of interpersonal competences in the Portuguese group, EW was statistically high, and the other two were statistically medium. The Polish group's three highest dimensions (RK, US, IR) were statistically at the medium level (Frانيا & Correia, 2022).

Therefore, further analyses focus on using social media to build relationships (8 items) depending on the level of interpersonal competences that relate to the ability to provide emotional support to others (EW), broken down into the students from Poland and Portugal. The results of the analyses are shown in Table 2. The answer to the decisive question was examined for the eight questionnaire items with a possible yes/no option. Next, the statistical analysis examined the probability of a 'yes' answer to questions 1, 2, 4, 6, and 8 and a 'no' answer to questions 3, 5, and 7. The probability was differentiated according to the level (low/medium/high) of the competence EW in the entire group of subjects (N=276).

In each case, the working hypotheses H_0 and H_1 , as shown in Table 2, were formulated, and relevant analyses were carried out. Among the Polish respondents, competences in terms of skills and readiness to provide emotional support to others are generally lower than in the Portuguese group. Among the respondents from both countries that demonstrate a significantly increased level of competences described, Portuguese future pedagogues and educators more willingly and more frequently admitted to using social media to establish social contacts and sustain the friendships started offline, as well as to learn from each other. On the other hand, the statistical analyses showed accepting as true hypothesis H_1 , stating that there is a higher probability that the Portuguese may find social media interfere

Study of answers in both countries by level of COMPETENCE IN TERMS OF SKILLS AND READINESS TO PROVIDE EMOTIONAL SUPPORT TO OTHERS (EW)								
high level								
questions	Q1 YES	Q2 YES	Q3 NO	Q5 YES	Q6 NO	Q7 YES	Q8 NO	Q9 YES
hypotheses	Ho: p1= p2	Ho: p1= p2	Ho: p1= p2	Ho: p1= p2	Ho: p1= p2	Ho: p1= p2	Ho: p1= p2	Ho: p1= p2
	Ho: p1≠ p2	Ho: p1≠ p2	Ho: p1≠ p2	Ho: p1≠ p2	Ho: p1≠ p2	Ho: p1≠ p2	Ho: p1≠ p2	Ho: p1≠ p2
p1 Portugal	0.48	0.532	0.423	0.458	0.467	0.462	0.482	0.490
p2 Poland	0.04	0.042	0.025	0.032	0.019	0.031	0.036	0.042
p [^]	0.67	0.860	0.500	0.456	0.500	0.614	0.500	0.965
statistics value U	2.32	10.294	5.598	5.049	6.799	6.009	6.721	19.129
p-value	0.03	0.0000	0.0000	0.000	0.000	0.000	0.000	0.000
u1-α/2	1.96	1.96	1.96	1.96	1.96	1.96	1.96	1.96

in some way with establishing new relationships offline and that the virtual world, cyberspace or the specific metaverse will not replace contacts in the world outside the Internet.

In the case of the pedagogical course students who demonstrate a medium level of competences related to presenting emotional support to others in the case of the seven statements contained in the questionnaire, the probability of receiving a 'yes' answer to statements 2, 4, 6, and 8, and a 'no' answer to items 3, 5, 7 can be considered the same. Only in the question concerning the use of social media (item 1) to establish new relationships the probability of a 'yes' answer is higher in Portugal.

In the case of the group with a significantly lower level of EW competence, hypothesis H₁, as defined in the Table, should be regarded as true in each case.

Discussion

The studies show that social media play a major role in building interpersonal relationships for Polish and Portuguese students preparing for the profession of an educator, pedagogue or teacher. It is also confirmed in other studies where the students: considered social media an important part of their life and accepted

the challenges they created. They primarily used social media to stay connected: 'Facebook and Twitter provide people with a space to share experiences, connect with friends and family' (...). Students also used social media to expand their friendship base, and for 'spreading the word about events or social issues' (...) (Blakemore & Agllias, 2020).

In the authors' research, the vast majority of the subjects in both countries use them to establish new contacts with people and sustain the relationships they previously established in the offline world. At the same time, most Poles claim that using social media in building relationships may make it difficult to sustain friendships in the offline world. In the Portuguese group, a minority of the respondents approve of this opinion. Other studies have shown that time spent on social media with our friends does not negatively affect the level of closeness in this friendship (Pouwels et al., 2021). It should be assumed that balance is important, as its absence may lead to a situation where the social media world is treated much more seriously than the "face-to-face" world.

Previous studies of 2017 conducted among students mainly majoring in business in Oman showed that most respondents preferred to establish new contacts via social media than in the offline world (El Khatib & Khan, 2017). It is believed that the difference may be due to the specific nature of the course of study, as education courses are chosen by those who plan to work strictly with other human beings.

In both countries, most students admitted that social media make it easier for them to present and express themselves, but at the same time, they do not affect the building of a sense of identity. Other studies have shown that what we present about ourselves on social media depends on our bond with a given audience (Zheng et al., 2020).

Social media also serve as a space where you can learn from each other. Social media can help build a social learning environment (Faizi et al., 2013). It can be assumed that in the study group, the people surveyed can maintain balance because only a small percentage in both countries have friends online and believe such relationships can replace face-to-face contact.

The level of interpersonal competences with regard to skills and readiness to provide emotional support to others is differentiated by the way and scope of social media usage in the area under consideration. The higher the level of competences in this area (EW), the more probable it is to get the answer 'yes' (the respondents' agreement with the statement included in the item) to questions 1, 2, 4, 6 and 8 in Portugal. The higher the level of competences (high level) for EW, the higher the probability of obtaining the answer 'no' (disagreement with the statement included in the item) to questions 3, 5, and 7. In general, it can therefore be assumed that in

the group of respondents, the more they are willing and able to provide emotional support to others, the more effective and balanced way they use social media in building interpersonal relationships. The link between social media use and emotional support perception was examined in 2016 in the USA. The results are quite ambiguous, although, from the point of view of the subject of this article, the most important conclusion is that being at the highest quartile in terms of the frequency of using social media was not significantly linked to perceived emotional support (Shensa et al., 2016). Other researchers (Wright, 2012) also emphasise another important aspect, namely that social media – such as Facebook – can contribute to the expansion of the support network, while computer-based emotional support reduces the perceived life stress of the supported person. Therefore, what can be assumed is that interpersonal skills of emotional support can result in the use of social media not only in a balanced way but also in the use of these platforms to build up modern digital forms of technologically-assisted support. It would be a quite optimistic thesis about the educator-student relationship in the case of the respondents taking part in the author's own research.

Future studies will be designed to examine the respondents' inclination to use social media in building a teacher-student relationship and the readiness to educate young people on the use of social media in building peer-to-peer relationships, including the potential development of the metaverse worlds.

Conclusions

Nowadays, social media are largely used in building relationships and interpersonal interactions in the group of future educators and pedagogues in Poland and Portugal. It can be assumed that such a strong presence, together with the belief that mutual education is possible in this environment, provides the basis for believing that in the future, these people will implement social media in their education and training processes to build a social learning environment, which brings many benefits. Perhaps, the dissemination of the immersive trend, which focuses on virtual reality (VR) and augmented reality (AR) tools, will also be part of building a master-student relationship in the context of teachers and students in the world of tomorrow. Future teachers and educators from the surveyed group certainly use social media to build such relationships today. This article is a significant part of the broader research on interpersonal competences among Polish and Portuguese students (Frانيا & Correia, 2022). The above considerations present a part that concerns the use of social media in relation to the interpersonal competences held.

The authors' research can contribute to further explorations of the changing world of social media in various countries and, over the years, to the evolution toward immersive metaverse social worlds.

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