

PAPER

A Review of Empathy Education with Digital Means among College Students

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The prevalence of the Internet and the development of digital technology have enabled people to communicate with each other easily and instantly. Yet the physical distance in virtual communication may inhibit intimacy and the expression of empathy towards each other. This paper has carried out a review study on the experiments of empathy training for college students, aimed at finding out the effective strategies for intervention activities. The review shows that educators incorporated various digital means into the curriculum design so that students may interact with each other online or with computer programs. In addition, self-reflection through writing and digital stories plays an essential role in the cultivation of empathy. Finally, the paper points out that further research should raise more concerns about the full-view assessment of empathy training results and the sustained development of empathic ability. The paper argues for the inclusion of more diversified subjects in the experiments.

KEYWORDS

empathy education, digital means, pedagogical strategy, assessment, college students

1 INTRODUCTION

Empathy, considered a psychological condition [1], is given varied definitions according to different research interests and discipline backgrounds. Though disagreements and debates are common for the definition of the concept [2], empathy is generally believed to include three parts: an affective component, a cognitive process, and a behavioral response [3–4], which manifest the stages of experiencing, understanding, and responding to others' pain and suffering.

Empathy is vital in human interactions, and it contributes to personal relations and career success [4]. While modern technological advancements have replaced traditional face-to-face communication with virtual interactions, it is noted that the ease and speed of technology may lead to the decline of empathy [5]. The increasing use of digital devices has changed communication patterns and people's expressions of empathy. In cyberspace, exposure to too many reports of pain and suffering might

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produce a numbing effect among people [6], or ways of expressing empathy might be obstructed due to distance in virtual interactions, as “cues-filtered-out” theories suggested [7]. It seems that a price has to be paid while people are wandering in this magic garden of cyberspace [6].

Nevertheless, with the concerns for decreasing manifestations of empathy, the concept of digital empathy has been put forward by researchers and educators. Terry and Cain [8] highlighted the education of “digital empathy,” which was defined as “the traditional empathic characteristics such as concern and caring for others expressed through computer-mediated communications.” This term is also defined by Friesem [9] as the “cognitive and emotional ability to be reflective and socially responsible while strategically using digital media.”

Empathic ability is an individual asset, yet it may bring both individual and public benefits in its promotion of “unity and cooperation” [5]. Thus, empathy is an essential skill that needs to be cultivated with specific orientations.

2 EDUCATING FOR EMPATHY

Though empathy is an important interpersonal skill, the declining tendency of empathy among college students has been noticed by researchers. Dolby [10] has pointed out the urgency of empathy education in the description of her case study “Toys for Haiti,” in which the undergraduates in Multiculturalism and Education class resisted considering the perspectives of the orphanage director when told that not all the toys they donated were suitable for the kids in the orphanage. Many of the students insisted on the success of their toy drive and ignored the Haitian perspectives. One of the possible explanations for this apparent ignorance of a different viewpoint Dolby [10] proposed was the decrease of empathy among students today. Dolby’s findings [10] in this case study echo a slightly earlier study [5], which demonstrated a 40% decline of empathy among college students from 1972 to 2009 in a meta-analysis of 72 studies on empathy.

In order to address the issue that “people today are not as empathic as previous generations” [5], educators have attempted various strategies with a focus on improving students’ empathy. Digital devices were employed as a teaching tool and pedagogical programs for empathy education were conducted in university classrooms. Digital means may offer ingenious and effective approaches in its flexibility in design and suitability for young men. Nevertheless, with the help of modern technology and the general belief that empathy is a “learnable skill” [11], empathy education is still a challenging task and requires “creative and focused” [8] methods because it is in the affective domain and does not contain knowledge-based content [8].

A review of studies on empathy training via digital means can offer an overall look towards the factors promoting the development of empathy and offer suggestions for future research on the trainability of empathy. There are two reasons we focus on digital approaches. One is that digital technology qualifies for the purpose of training in its creativity and flexibility in program design. The other reason is that it can help students engage empathically in a digital environment when online communication has become a prevailing mode in modern life. Our goal of research is to synthesize findings from empathy training studies and identify effective strategies adopted by educators so that the findings can be generalized. Our review is concerned with two major questions:

1. *In the empathy training of college students, what are the key features of pedagogical strategies and how is digital technology employed?*
2. *What are the assessment methods used to evaluate the pedagogical strategies?*

In this paper, we first present the digital strategies used to train empathy in universities, and then we discuss who is in the focus of the training attention. Finally, we draw our conclusions and offer opinions regarding the validity of the evaluation methods and the sustained effects of empathy after training.

3 METHOD

For our research data, we searched Google Scholar, Elsevier ScienceDirect, and Medialink and limited the search to English language studies. A combination of query words “empathy” and “digital” was conditioned to appear either in the title or keywords of the studies under the subject of education, and the research field was set in social sciences if the search requirements were allowed to do so. After we have got all the studies that met our search requirements, we read the abstracts and manually removed the papers irrelevant to our research focus, which centered on the primary data studies aimed to improve the empathy of college students. Unfortunately, our later intensive reading of the papers discovered that two of the papers were similar in every way, so the paper published in a later time was deleted from our data. In the end, we have obtained 10 research reports that described the digital intervention strategies and observed changes associated with aspects of empathy. Then we reviewed all the papers in detail.

4 DISCUSSION

Table 1 lists briefly the intervention measures and intervention results. In the table, the studies are listed in the sequence of qualitative studies, quantitative studies, and the unspecified one. Authors of all reviewed studies concluded that the digital strategies employed in the class contributed to the cultivation of students’ empathy in one way or another. Four of the 10 studies reported qualitative outcomes, and five studies proved the effectiveness of the intervention measures with a quantitative approach. While one study has mentioned that students took an online test “which determines the level of forming a culture of empathic behavior” [12], yet no specific statistics appeared in the discussion of the experiment. In the following sections, we are going to review the education strategies for empathy and the issues of assessment and sustainment in the collected study reports.

Table 1. Intervention measures, assessment and results

Author(s)	Year	Major Digital Measures	Assessment Techniques	Intervention Results
Blakemore and Agllias	2020	reflected on the contents of podcasts and composed a response (350 words) to a prompt statement.	qualitative analysis of students’ writings	social media awareness and understanding of empathy, a high level of confidence and ease during online interactions
Chen, W.	2018	made videos to express the understanding of digital empathy	qualitative analysis of answers in questionnaire	teamwork, active listening, learning about different perspectives by watching other groups’ videos
Şimşek, B. et al.	2024	listened to digital stories told by patients, their parents or doctors	qualitative analysis of answers in survey	understanding of the perspectives of patients, the hardships of patients’ lives and the fear the families felt

(Continued)

Table 1. Intervention measures, assessment and results (*Continued*)

Author(s)	Year	Major Digital Measures	Assessment Techniques	Intervention Results
Reyes, C. et al.	2016	shared digital literacy autobiographies and reflected upon the stories	qualitative analysis of digital stories and reflection responses	stories foster empathy and help new teachers deal with diversified students
Anishchuk, S. et al.	2022	involved in virtual learning including MOOC, online case-based discussion and role-modelling through videos	quantitative analysis of JSE	a rise in JSE scores, more specifically in “perspective-taking,” “compassionate care”, and “walking in the patients’ shoes”
Cole, R.F.	2022	watched virtual reality videos about current social issues and discussed their reactions to the videos in blackboard course room	quantitative analysis of EQ scores	significant differences in EQ scores between before and after the exposure to videos
Duke, P. et al.	2015	wrote about personally meaningful experiences (2-3 paragraphs), discussed during the group session in virtual classroom	quantitative analysis of JSE and GRAS results	preservation of JSE scores, a statistically significant increase in GRAS scores, reflective ability was improved, students valued peer support
Stavroulia and Lanitis	2019	watched the scenario showing multiculturalism and verbal bullying of students through VR system	quantitative analysis of the questionnaire	effective in encouraging reflection and understanding of different views
Yu, Juping et al.	2021	listened to patients’ digital stories while following the patients’ journey in the university’s Clinical Simulation Suite	quantitative analysis of JSE scores	empathy was significantly higher in intervention group, but the significant difference disappeared at follow-up test
Yu, S.	2019	engaged in computer interactive programs, “Mind Reading”, “Eyes Reading Mind”, “Himself a Director”	an online test, details not specified	computer technology is as effective as active and interactive teaching methods in forming a culture of an empathic behavior

Notes: JSE, Jefferson Scale of Empathy; EQ, Empathy Quotient; GRAS, Groningen Reflection Ability Scale.

4.1 Digital means for (digital) empathy

The digital technology has not only changed drastically how young men share ideas and interact with each other, but also provided new educational opportunities for educators [13]. Modern technology has provided teachers with convenient means to create scenarios in a virtual world. Stavroulia and Lanitis [14] used the VR system to present tailor-made scenarios to the preservice teachers, and Cole [15] adopted Google Cardboard viewers to expose students to unfamiliar situations for the observation of their ability to show empathy. With Google+ Hangout social networking technology and the Blackboard learning management system, Duke et al. [16] were able to operate a virtual classroom for peer small groups to meet and post their narrative responses to trigger questions on each group’s private blog. Other approaches via the Internet and social media, e.g., podcasts [17], digital stories [18–19], and video production projects [11], proved helpful in the cultivation of empathy as well.

The use of digital technology emphasizes the interactions among students in a simulated environment with an aim to cultivate empathy. Chen [11] assigned freshmen students to an EFL course video project in which students work in groups to shoot videos expressing empathy after the scaffolding instructions on different shooting styles and effective script writing. Students were involved in the interactive activities in every step of video production. Cooperation among group members

in the process of video production and peer review of scripts and videos of other groups enabled students to learn the importance of active listening, appropriate response, and perspective-taking, which were demonstrated in students' survey answers after the project. The effectiveness of video production, leading to a higher level of empathy, as Friesem [20] has argued, contributes to its status as a favored means in classrooms.

In Chen's study [11], students performed face-to-face interactions and learned to convey empathy in the production of videos about anger and aggression in online communication, while Duke et al. [16] used small group virtual hangout technology to create an online classroom for third year medical students to reflect and discuss their own narratives of meaningful experiences. The students met regularly in the virtual classroom in groups and carried out discussions on the themes closely related to their professional career, such as stress, unethical behavior, burnout, and death. With each session lasting 75 minutes and 9 students at most in each group, the students possibly have ample opportunity to listen and respond to other group members' views. In the survey on feedback on the course, a majority of students (74%) expressed their appreciation of the peer-peer interaction and "being heard or acknowledged" [16]. The virtual discussion, according to the survey, helped the medical students gain insight into coping strategies and solutions, as well.

In the same way, Anishchuk et al.'s virtual learning module [21] consisted of MOOC learning and online case-based discussion, in which students were encouraged to ask questions and post comments in the discussion board. When students were asked to rate the valuable practice in their learning, videos (provided on MOOCs and YouTube) and discussion groups were considered most valuable in the post-module survey.

Learning to convey messages through videos and discussions with classmates via online platforms helps students understand, feel, and learn to interact in a simulated virtual environment, which was guided by ground rules and made safe for them to learn and practice [16]. Besides the online human-human interaction in the education practice for empathy, some educational strategies were designed to interact with computer programs.

Podcasts, videos, and digital stories are useful tools in the design of empathy education, with which students are able to listen, watch, and reflect on the relevant issues. Blakemore and Agllias's students [17] listened to podcasts about online communication and the consequences of anonymity in communication. Digital stories of patients recounting their treatment experiences [18], [22] offered medical students a chance to stand in the patients' shoes and feel their fear and pain. The VR system presented the students with videos on poverty, women's access to education [15], or verbal bullying [14]. Yu's method [12] integrated recognition of feelings in pictures and editing of videos featuring conflicts and bullying into classroom education strategy. By way of interaction with the digital recordings and videos that were carefully selected by teachers and relevant to typical social problems, students could witness and feel the problems and conflicts presented by the digital device and learn to respond empathetically.

Two of the studies explicitly aimed for the improvement of students' digital empathy, as "digital empathy" and "social media empathy" were included in the title of the studies [11], [17]. Nevertheless, there is not a clear dividing line between training strategies for digital empathy and traditional empathy, since the underlying principles of both types of empathy are the same [8]. With the help of digital technology, the communication training, either through human-human interaction or human-computer interaction, and self-reflection activities "could theoretically

prompt learners to question and examine their interactions” [8] in the process of communication, online or offline. The digital means of empathy education provide convenience and effectiveness, but without self-reflection, the education is half-done.

4.2 Self-reflection as an important means for empathy

Self-reflection is included in the education strategies in our data and implemented in different ways. Interactive discussion described in Section 4.1, during which students express opinions on a specific topic, provides one channel for self-reflection. Nevertheless, discussions bring more benefits to interpersonal communication skills, including attentive listening and promotion of perspective-taking. On the other hand, writing is an essential means for self-reflection and has been adopted in several studies as an intervention strategy.

In Blakemore and Agllias’s study [17], students were asked to critically reflect on the content of the podcasts they have listened to and compose a response to a prompt statement: “Online communication is killing connection: (the Facebook Like symbol) does not equal empathy.” In students’ writing, even though they expressed confidence and ease in online communication, they admitted that social media decreased face-to-face interactions. The writings also expressed the opinion that “empathy online is a rarity” [17] and showed skepticism towards people’s motives for “likes” on social media posts.

Duke et al. [16] asked the 3rd year medical students to write about “personally meaningful experiences,” the requirements of which made it particularly self-reflective in that the experiences should be challenging and inspiring and the narratives should go together with response and analysis of the experiences. Consequently, the process of writing is also the process of self-reflection.

Writing may take the form of answering survey questions as well. In Şimşek et al.’s study [18], the undergraduate dentistry students filled out a reception survey consisting of six open-ended questions in order to find out how students receive and relate to the digital stories recorded by patients or their parents. The fact that “the majority of the students answered the questions in detail” [18] has to some extent turned the survey into a writing assignment. The thematic analysis of the answers in the survey [18] revealed the empathy-provoking results as students demonstrated understanding of the hardships individual patients have to undergo. One student expressed his awareness of the patients’ sufferings after watching the digital stories, since he realized that he used to hold only a doctor’s point of view. Şimşek et al. [18] argued that answering the reception survey is a reflective process for the students who have watched digital story videos.

In addition to writing, digital storytelling is also “a powerful vehicle for reflection” [23]. The use of first-person perspective in narratives gives digital stories an advantage; as Şimşek et al. [18] pointed out, “first-person narratives are helpful tools to trigger empathy.” Three out of 10 studies collected in our data have made use of digital storytelling as an education strategy for empathy. The stories came from varied sources, ranging from patients recounting their treatment stories [18], [22], to preservice teachers’ literacy autobiographies [19]. Yu et al. [22] have offered a “compelling immersive experience” for the 2nd year nursing students while they listened to the digital stories recorded by a cancer patient. The students walked around the Clinical Simulation Suite and listened to clips of recordings narrating the patient’s journey in the hospital in chronological order. The digital stories were posted in nine different spots in the Simulation Suite, and the “story walk” could create a feeling of being

“inside it and part of it,” according to Yu et al. [22]. In addition to those digital stories shared by patients and used for empathy training of medical students [18], [22], in Reye et al.’s study [19], the preservice teachers performed both the roles of creator and listener of their literacy stories. Thus, the self-reflection may take place in the process of recounting their own development into the present literate beings and in the process of listening to others’ stories.

4.3 Validation of data analysis and the sustained improvement

Education strategies are important routes to improving students (digital) empathy, in the same way assessment approaches to empathy changes are essential to discovering the effectiveness of these strategies. Roughly half of the studies collected in our data employed the qualitative method and carried out thematic analysis on the students’ reflection journals, writings, and survey answers. These studies have described the effects intervention strategies exerted on students but “did not set out to measure changes in empathy” [17]. The qualitative analysis revealed students’ awareness of indifference in online communication [17], importance of teamwork [11], gaining an insight on the patients’ hardships [18], and understanding for the varied literacy experiences [19]. These descriptions of changes in beliefs and attitudes display the impacts brought about by the intervention measures in the same way as the quantitative studies, even though the former do not present the results in numbers as the latter.

Data for quantitative analysis in the studies were obtained via the established measurement tools, including Jefferson Scale of Empathy (JSE) designed to measure empathy of medical professionals [16], [21], [22], Empathy Quotient [15] designed to measure empathy in adults, and Groningen Reflection Ability Scale (GRAS) for the assessment of self-reflection ability [16].

One study [16] has done a qualitative analysis of answers to two open-ended questions in the post-test questionnaire, in addition to the JSE assessment for the students’ empathy. Yet, the survey answers under qualitative analysis aimed to elicit students’ feedback on the course design, rather than information related to students’ empathy changes.

A mere quantitative or qualitative method for the assessment might not constitute a solid way for the assessment of the intervention results. Compared with quantitative data drawn from the standard measurement tools, authentic and complete qualitative data obtained from multi-aspects are a demanding task. Friesem [9] described their way of measuring the changes of students’ empathy. The quantitative data from survey results were triangulated with qualitative methods, including the examination in students’ products like videos, storyboards, and posts, conducting interviews, and conducting ethnographic observations to discover students’ empathic practices. A single measurement, either quantitative or qualitative, might not be able to offer a full view of the achievements students have made in the process of empathy education. What’s more, interview answers are also associated with students’ willingness to cooperate. Therefore, it takes some time for educators to know the students and build relationships of trust.

Another issue is the sustained development of students’ empathy. In Yu et al.’s study [22], the results of three JSE tests, pre-test, post-test (immediately after the intervention), and follow-up test (8–12 weeks after the intervention)–raised the question of empathy sustainment. According to Yu et al. [22], no significant difference was found between the intervention group and control group in the pre-test,

while the intervention group achieved significantly higher scores in the post-test. The follow-up test scores revealed no significant difference again between the two groups, even though there was a slight increase in the scores, respectively, compared with their pre-test scores. The findings of failure in sustained improvement of empathy [22] resonate with previous studies [24], too. Positive test results after the interventions prove the immediate effectiveness of the education strategies, yet the endurance of the effects over time still needs further design of pedagogical activities and long-term research.

4.4 Who were studied in the experiments?

Table 2 shows the details of participants in the experiments of the studies. They can be categorized into three types: medical students, preservice teachers, social work students, and school counseling students. They share future career similarities in that they will get into contact with many people on the job, and their job performance will possibly leave an impact on others.

Table 2. Participants in the experiments

Author(s)	Participants
Anishchuk, S. et al.	dental undergraduate students (n = 37)
Duke, P. et al.	3rd year medical students (n = 259, 31 groups)
Şimşek, B. et al	undergraduate dentistry students (n = 65)
Yu, Juping et al.	2nd year nursing students (n = 238, 22 groups)
Reyes, C. et al.	preservice teachers (n = 48)
Stavroulia and Lanitis	with/without teaching experience (n = 33)
Yu, S.	2nd year college students (n = 36) getting qualifications in Education
Blakemore and Agllias	2nd year social work students (n = 19)
Cole, R.F.	school counseling students (n = 93)
Chen, C.W.	freshmen (n = 46, 11 groups), majors not identified

Four of 10 studies investigated approaches to help develop medical students' empathy, which is believed to augment their professional skills by actively responding to patients' cues of emotions as well as symptoms [25]. Educators developed resources to incorporate empathy teaching into the medical school curriculum. They intended to create emotional resonance between medical students and their patients by vivid simulations of various kinds, including digital stories of patients [18], [22], small virtual group hangouts [16], and role-modeling through videos [21]. Clinical empathy is an effective means of enhancing patients' experiences of treatment [12] and plays an auxiliary role to facilitate the medical staff's communication with the patients, eliciting information of disease history and recommendation of treatment, to name a few. Meanwhile, empathy expressed and rapport built with the patient may also benefit the medical practitioners with a sense of work satisfaction and low levels of burnout [25]. Though empathic ability brings benefits to doctors' professional practice, personal wellbeing, and patients' treatment experiences in hospitals the research showing decline of empathy in senior years of medical training [26]

demonstrates the necessity and urgency of empathy training among students in medical schools.

Three of the studies focused on the empathy training of the preservice teachers. Empathy is an essential component in teachers' professional development and the high-quality expertise is believed to maximize the quality of education [14]. Empathic teachers are able to effectively create a more motivating environment and inspire students to develop an interest in learning [4]. Research has found that teacher empathy was positively correlated with student test scores [27–28].

If being empathic serves as a supporting role for those who would take up teaching or medical profession in the future, empathic ability is even more essential for social work students [17] and school counseling students [15], who turned out to be the focuses in two of the studies in our data. Empathy is considered a foundational skill for school counseling students [29], and higher levels of empathy enable the school counselors to work with diverse populations [30]. Blakemore and Agllias [17] have also valued empathy as the core of social work and argued for its importance for social workers to exert professional roles in multiple contexts.

5 CONCLUSION

We have analyzed 10 experiments of empathy training, in which educators employed manifold digital strategies in university classrooms. Educators have employed social networking technology, VR technology, MOOC, podcasts, digital stories, and video production projects to provide a communicative and simulative context in which students may either interact with one another or respond to the simulated environment via digital means. The pedagogical activities prompt students to understand, feel, and take the perspectives of others, e.g., teachers in students' role or doctors in patients' role.

Self-reflection is another intervention strategy shared by empathy studies. Students reflect on the materials teachers have presented to them or on their own experiences by way of group discussion and writing.

To find out the effectiveness of these digital strategies and classroom activities, educators adopted qualitative descriptions of students' changes in awareness of others' perspectives and responses to the related issues and quantitative analysis of students' answers in standardized tests for empathy. Nevertheless, some factors might influence the validity of the results. For example, the qualitative analysis of students' reflection journals and questionnaire answers should be complemented with careful observations of students' performance in the classroom in order to get a complete view of the changes that are taking place in students. What's more, the answers in the empathy tests might also be influenced by students' attitudes towards the experiment or their familiarity with such tests. In addition to the evaluation validity, the sustained development of empathy is more or less ignored in the studies, though the short-term targeted strategies are proved effective among students. Thus, how to maintain the acquired empathic ability demands further research.

We hope our discussions regarding strategies for empathy training can help educators design proper classroom activities, make good use of digital technology, and extend their research subjects to more fields in this technology-oriented world of communication.

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