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The Effectiveness of Technology to Improve Educational Counseling Services: A Systematic Literature Review

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Abstract

There is a scarcity of research that documents the use of technology-based educational counseling services specifically targeting students. This study's aim is to compile and conduct a comprehensive review of the literature on the efficacy of technology in enhancing educational counseling services. Searches were conducted using the Publish or Perish (PoP) method throughout, along with Scopus, Crossref, PubMed, ACA, Web of Science, Springer, Emerald, as well as the Taylor and Francis databases. Data gathering was done in October and November 2023. The evaluation included a total of 19 papers, and the results indicated that technology has been proven to improve educational counseling services, where it is used in mental health that is dominated by MHAs, mobile well-being apps, mHEALTH, SMS, FER, and mindfulness apps. Computer-assisted and CD-ROM tools are used in personal counseling, while CAI is used in providing learning counseling. Social counseling used two technologies: a safety decision-aid smartphone app and a virtual message app. Counseling for learning was used with CAI, MCO, and video modeling. Career counseling employed a mobile-based career counseling app along with career counseling websites. The investigation included the countries of Indonesia, the United States, the United Kingdom, Türkiye (Turkey), the Philippines, and Iran.

Introduction

To assist their clients, counselors and counseling teachers can use technology. Its utilization in educational counseling is the most optimal approach for facilitating students' progress in their academic pursuits, while also fostering the capacity to enhance communication efficiency through collaborative efforts (Rahiem, 2020). Digital information technology aids in improved relationships with pupils who are raised in a digital environment (Abdillah et al., 2020). Additionally, it assists students who have a propensity for utilizing electronic communication as a means of learning, through the implementation of digital multimedia tools. According to research (Dores et al., 2020), digital information technology is favorable, due to its ability to meet the

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expectations of clients and produce desired outcomes. Additionally, the greatest number of services were retained by counselors with the most years of practical experience. The attitudes of those with intermediate experience toward the utilization of technology, and web-based interventions, were the most receptive.

Utilizing contemporary digital technology in counseling offers several benefits, such as accessibility, flexibility, convenience, adaptability, compatibility, as well as the development of a rapport between the counselor and the counselee. Essentially, it eases the implementation and supervision of therapy, maintains client anonymity, and incurs little expenses, among other benefits (Feijt et al., 2018). For school counseling, digital information and communication technology is essential, because it has the potential to enhance efficiency and effectively address job requirements in a unique manner. It also decreases expenses, enables direct interaction with people, and enhances cooperation, communication, and coordination procedures (Abdallah Altarawneh & Awwad Alomoush, 2022). A technological revolution is currently underway in the counseling profession, as counselors are afforded more opportunities to cater to the diverse requirements of clients, counselor educators, and trainee counselors (Layne & Hohenshil, 2005). The American Counseling Association Code of Ethics (ACA, 2014) include provisions on distant counseling, technology, and social media, acknowledging the fact that within the counseling field, services may now be delivered via many technological methods.

The proponents of using varied technical techniques in practice have raised doubts about conducting practice sessions in person (NBCC, 2016). Due of its accessibility, advantages, and broad variety of uses, an innovative framework that includes technology into counselor training and practice is supported (Venne & Doerr, 2018; Watts, 2002). Counselling services are expanding with computer and internet technologies (Watts, 2002). Clients may get professional services via email, chatting areas, cybertherapy, online self-help, support groups, and counseling-information sites, and may access these services anytime, anyplace (Barak & Grohol, 2011). Internet-based counseling provides several benefits for clients, such as improved access to resources, decreased intimidation for specific client demographics, cost-effectiveness, and suitability for individuals living in remote areas, or who are unable to participate in in-person counseling due to various circumstances (de la Varre et al., 2010; Krist, 2011).

The progress in technology has made it easier to provide mental-health services via online platforms (Ritterband et al., 2003). In addition, counseling has used computer-based career evaluation, help tools, web-based counseling, and supervision (Baker & Bufka, 2011). The advancements in computer technology have led to the emergence of several novel modes of communication, each of which has significant implications and practical uses in the field of counseling and psychotherapy (Mallen et al., 2005).

Progress in counseling has reached the integration of technology, which is commonly known as the cyber-counseling method, which is defined as the delivery of counseling services via the internet, where the counselor and counselee/client are not in the same physical area, and interact using computer-mediated communication innovations (Baker & Ray, 2011). A wide variety of modalities have become known as cyber counseling, including, but not limited to, instant messaging, synchronous chat, text messaging, video conferencing, and asynchronous email. One of the benefits of these methods is increased access to counseling services provided by online media (Barnett, 2005).

Many cyber-counseling analysts have found evidence supporting its viability for a wide variety of mental problems, including social anxiety, eating disorders, depression, panic conditions, and post-traumatic stress (McBain et al., 2023; Skinner & Zack, 2004; Sloan et al., 2011). Apart from mental problems, cyber counseling also supports improvement in student

learning (Hernawati et al., 2018). Its effective use has been identified in improvement of counseling services on self and identity, social interactions, and relationships. This includes greater anonymity, as well as the reduced importance of physical appearance and physical distance as "limiting characteristics" for relationship development, along with greater control over time and speed of interaction between meetings for the counselor (McKenna & Bargh, 2000).

The qualitative study by Hayden et al. (2008) found that 49 school counselors used technology to meet American School Counselor Association (ASCA) National Model objectives. These findings imply that school-counselor training technology may improve student learning and efficiency. School counselors may connect with stakeholders and join virtual professional development groups on X, Facebook, Instagram, and LinkedIn (Carpenter & Krutka, 2015). Only a few empirical studies have been undertaken on internet counseling, but most of them show positive results. Furthermore, the extensive field of computer-assisted psychology has produced a plethora of studies that support the beneficial ability to provide psychological support via online and remote methods (Marks et al., 2007).

Continuing research is crucial for exploring novel approaches to delivering services in the field of educational counseling via the use of technology (Mallen et al., 2005). The existing literature has not been analyzed to assess the present state and trends. There is a shortage of research on inquiries related to the knowledge on the most effective methods for integrating technology in the counseling sector (Richards & Viganó, 2013). Research on the use of technology by school counselors will continue, as long as it is in use within educational institutions (Mason et al., 2018). These investigations are still lacking research (Mason et al., 2018). Due to resource constraints, college-counseling facilities struggle to meet student mental-health needs. To address these challenges, and maximize mobile-app potential, research must continue to evaluate program effectiveness, and determine optimal implementation strategies to meet college students' mental health needs (Levin et al., 2022).

This research is a follow-up to the results of content-analysis research (Woo, Dondanville, et al., 2020a). In contrast to some researchers (Woo, Bang, et al., 2020; Woo, Dondanville, et al., 2020b), who studied the integration of technology in counseling, this study examines the effectiveness of technology to improve educational-counseling services. Because these tools continue to develop, it is very possible for counselors or counseling teachers to use them as counseling tools or mediums. With the help of these advancements, problems in counseling services can be resolved, as described above. Educational-counseling services that use technology are influenced by research that is based on evidence. The aim of this literature review is to determine the amount of peer-reviewed empirical studies on educational-counseling services provided by counselors, or counseling teachers, to students using technology, and to evaluate their effectiveness to offer guidance for future investigations.

Objective

Even though there is an increasing interest in counselors, or counseling guidance, and teachers using technology in educational-counseling services, existing literature shows a focus on effective results, but ignores improvements in this area. The research questions for this study are: (RQ1) What are the types of technology and their uses in counseling? (RQ2), and How effective is technology in improving educational-counseling services?

Methods

Procedure

The reporting framework aims to identify, filter, and evaluate records for eligibility and inclusion using the Preferred Reporting Items for Systematic reviews and Meta-Analyses program, known as PRISMA (Liberati et al., 2009; Page, McKenzie et al., 2021; Page, Moher et al., 2021). The PEO (population, exposure, and outcome) approach was used to define the eligibility requirements (Pollock & Berge, 2018). The Scopus, PubMed, Crossref, and Google Scholar databases were searched for August 2023. The corresponding author identified the papers first, and validated the screening for articles that were published between 2008 and 2023.

A comprehensive analysis of the peer-reviewed literature that has been published on the effectiveness of technology in improving educational-counseling services was conducted between October and November 2023. The search was done using the Publish or Perish application, and included the following databases: Scopus, Crossref, PubMed, ACA, Web of Science, Springer, Emerald, and Taylor. To conduct the search, the following search terms were combined: (technology* OR educational counseling*) AND (electronic* OR counseling*) AND (media* OR school counseling*) AND (mobile* OR school counseling *).

The term "population" in this research refers to the definition given by Pollock and Berge (2018). This evaluation primarily focuses on the student population, with a demographic consisting of students from various countries, and includes both male and female populations. The term "exposure and outcome" is in line with the definition provided by Pollock and Berge (2018). Exposure in this study denotes to the use of technology in educational services, or cyber counseling (Baker & Ray, 2011), and instant messaging, synchronous chat, text messaging, video conferencing, and asynchronous email (Barnett, 2005). The outcomes in this review indicates the effectiveness of using technology to improve educational-counseling services in social and personal fields (McKenna & Bargh, 2000), learning (Hernawati et al., 2018) (Hayden et al., 2008; Hernawati et al., 2018), career (Baker & Bufka, 2011), and mental health (McBain et al., 2023; Skinner & Zack, 2004; Sloan et al., 2011).

The inclusion criteria include articles written in English, published between 2008 and 2023, peer-reviewed journal articles, and studies on the use of technology to improve educational-counseling services. The exclusion criteria are: 1) counseling practices that do not use technology; 2) counseling practices using technology, but outside of education (school); 3) counseling practices using technology that do not show effective results; 4) those not specific to one service-area counseling (personal, social, learning, career, mental health); 5) conference presentations/proceedings; 6) an article that is not a systematic literature review; and 7) articles that are not book chapters. To identify additional publications, the reference section lists articles that met the inclusion criteria that were then searched manually in Publish or Perish (PoP).

Data extraction, data synthesis and assessment of trustworthiness

Data from each study consisted of assessments of technological exposure in educational-counseling services. Additionally, the affected population was calculated. A summary of each study is also provided. The nature of this research is only quantitative. Evidence synthesis is conducted using technology.

This systematic literature review (SLR) uses the Gorard Trust mechanism, with a filtering method that allocates scores ranging from 0 to 4 for research articles, taking into account aspects, such as study design, scale, data quality, and other characteristics that have the potential to influence the dependability of research findings (Gorard, 2014)**.**

Results

A total of 19 studies were included in this research. The countries represented were Indonesia, the United States, the United Kingdom, Indonesia, Türkiye (Turkey), the Philippines, and Iran. Two themes were identified in the literature: 1) types of technology and their use in counseling; and 2) the effectiveness of technology in improving educational-counseling services.

The database search resulted in a total of 2514 prospective articles. After examining the titles, abstracts and full text, the pool was narrowed down to 32 eligible articles. Seven articles were removed, because they did not include one or more of the following: no report of effectiveness (n = 2), no student population (n = 5), and technology-based system development research that showed effectiveness, but did not include students as samples (n=6). A complete search resulted in 19 peer-reviewed articles that met the inclusion criteria for this review.

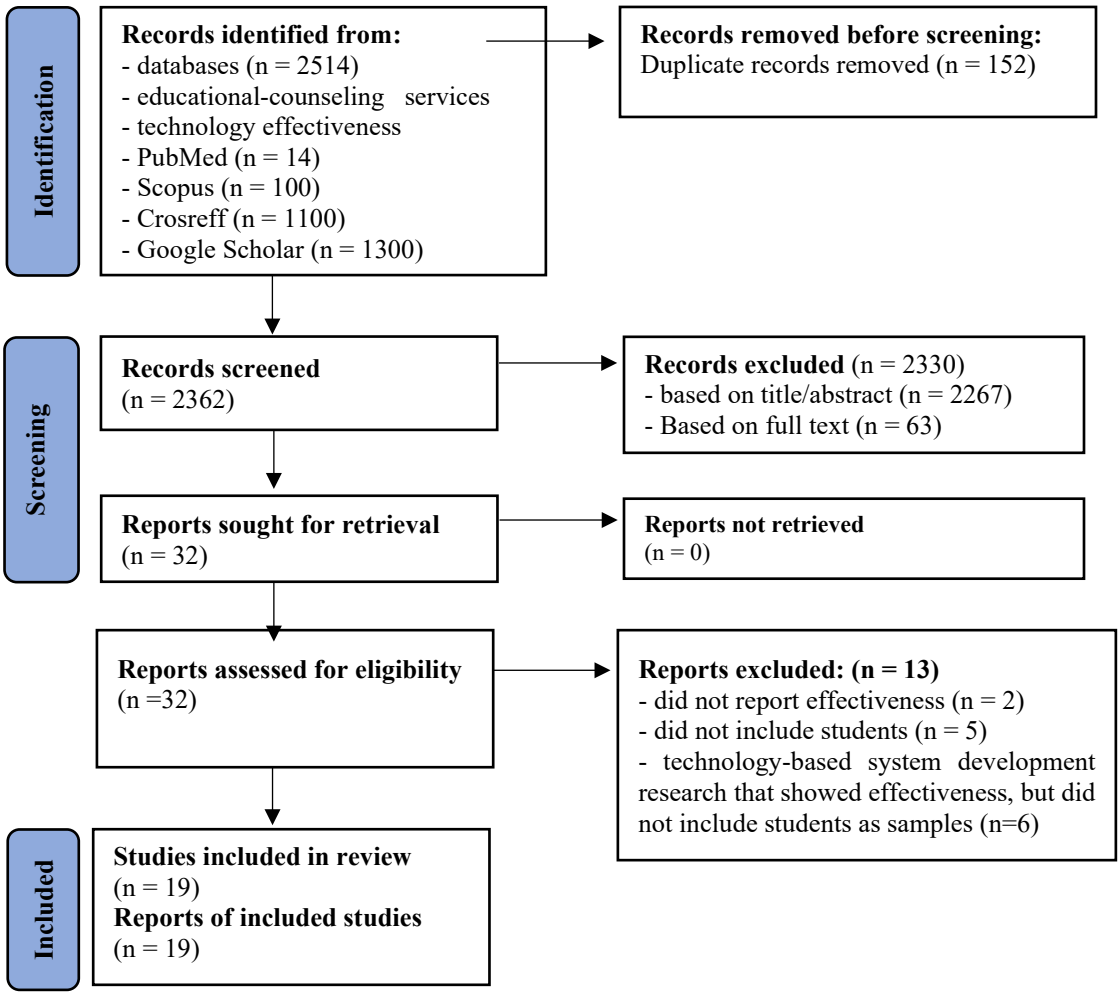


Figure 1. Flowchart for study selection.

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Table 1: Studies included in review.

Year/ First Author	***Country***	**Population** ***Student***	**Exposure** ***Types of Technology***	**Outcome** ***Educational Counseling***	**Findings** ***Improving educational counseling***	**Gorard Trust**
2008 Prokhorov	United States	N= 426	Computer-Assisted Intervention	Personal counseling	Reducing smoking habits among community college students	4
2010 Puri	United States	N=452	Computer-Assisted Instruction (CAI)	Counseling for learning	Improve communication and counseling methods for students	4
2011 Carey	United States	N= 677	CD-ROM-Computer	Personal counseling	Reducing alcohol consumption in female students	4
2013 Lindsay	United States	N= 38	Safety Decision Aid Smartphone Application	Counseling for social interactions	Offers confidential, safe, and non-judgmental information on abusive dating relationships and services	4
2013 Rockinson	United States	N = 59	Wiki Multimedia	Counseling for learning	Resulting in positive learning perceptions and reduced computer anxiety	4
2016 East	United States	N = 99	Mental Health Mobile Applications (MHMA)	Mental health counseling	Access methods to mental health services in underserved and rural regions	4
2017 Broglia	United Kingdom	N= 40	Mobile Well-Being App	Mental health counseling	Ongoing support for students and optimizing therapy time between clients and counselors	4
2019 Broglia	United Kingdom	N= 38	Mobile Well-Being App	Mental health counseling	Shows that a well-being app can keep providing clinical anxiety relief after counseling	4
2019 Hambali	Indonesia	N= 118	Virtual Message	Counseling for social interactions	Effective in increasing students' social commitment	4
2021 Pordelan	Iran	N = 60	Career Counseling Website in Persian at www.careercounseling.ir.	Career counseling	Improve career decision-making significantly	4
2021 Puhy	United States	N=7	Mobile Health (Mhealth) for the Mental Health Technology Platform, Neuroflow	Mental health counseling	Assist students with mental health treatment	4

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Year/ First Author	***Country***	**Population** ***Student***	**Exposure** ***Types of Technology***	**Outcome** ***Educational Counseling***	**Findings** ***Improving educational counseling***	**Gorard Trust**
2022 Reyes	United States	N =827	Mental Health Apps (MHA)	Mental health counseling	College students at risk of suicide: addressing unmet mental-health needs	4
2022 Quigley	United States	N= 123	Short Message Service (SMS)	Mental health counseling	Effective in reducing stress	4
2022 Fahyuni	Indonesia	N= 648	Mobile Counselling Online (Mco)	Counseling for learning	Enhance their learning potential--learning style correlation	4
2022 Levin	United States	N =23	Mindfulness App (Stop, Breathe and Think)	Mental health counseling	Improving mental health among students awaiting counseling services	4
2022 Akçabozan	Türkiye (Turkey)	N =58	Video-Modeling	Counseling for learning	Gives an alternate approach to teach counseling skills and strategies using Video Model	4
2022 Gom	Philippines	N = 10	Facial Emotion Recognition (FER)	Mental health counseling	Works well for counseling guidance and effective for emotion recognition on students' faces	4
2022 Hidayat	Indonesia	N= 573	Mobile-Based Career Counseling Application	Career counseling	Assists students in deciding upon a career	4
2023 Cohen	United States	N= 430	Mental Health Applications (MHA)	Mental health counseling	MHA helped students feel better mentally (less stress) (21.3–60.0%).	4

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Discussion

Types of technology and their use in educational counseling

This research also found a classification of technology used in educational services, including mobile application-based technology (n = 10), website (n = 2), virtual message (n = 1), SMS (n = 1), video modeling (n = 1), FER (n = 1), and computer-assisted meetings (n = 3). Based on 19 studies, it was found that the technology used in mental health counseling services is dominated by mental-health applications (MHAs), then mobile well-being apps, mobile health (MHEALTH), short message services (SMS), facial emotion recognition (FER), and mindfulness apps. Computer-assisted intervention and CD-ROM-computer technology are used in personal counseling services, while computer-assisted teaching (CAI) is used in providing learning counseling services. Social counseling services use two technologies, namely a safety decision-aid smartphone application and a virtual message. Counseling for learning services uses various technologies, for example, CAI, mobile counseling online (MCO), and video modeling. Career counseling services also use two types of technology, such as mobile-based career counseling applications and career counseling websites.

From the 19 studies, it was found that technology was used in educational counseling to provide services: mental health counseling (n = 9), personal counseling (n = 2), counseling for learning (n = 4), counseling for social interactions (n = 2), and career counseling (n = 2).

This analytical objective synthesizes information from the research. Types of technology and their use in educational-counseling services have been evaluated in recent studies involving students. Researchers found n = 3 variations of technology used to provide mental health services, included: 1) application-based: mental health applications (MHAs) (Cohen et al., 2023), mindfulness app (Stop, Breathe and Think) (Levin et al., 2022), mental health apps (MHAs) (Reyes-Portillo et al., 2022), mHealth apps for mental health (Puhy et al., 2021), mobile well-being app (Broglia et al., 2019), well-being app (Broglia et al., 2017), and mental health mobile applications (MHMAs) (East et al., 2016); 2) type of short message: short message service (SMS) (Quigley et al., 2022); 3) type of facial recognition: facial emotion recognition (FER)-web platform-JavaScript API (Gom-os & Yong, 2022). Internet-based counseling offers several advantages in terms of cost-effectiveness and accessibility for those residing in distant regions or facing constraints that prevent them from engaging in in-person counseling sessions (de la Varre et al., 2010; Krist, 2011). Programs, like mHealth interventions, can be a powerful platform for improving overall well-being or improving mental health (Lattie et al., 2019). Mental health services in educational counseling are dominated by application-based technology. The promising effectiveness of mobile health as a means of providing these services for students has led to the development of digital technology.

Furthermore, there are variations in the devices used in educational counseling within learning counseling services n = 6, namely: mobile counseling online (MCO) application (Fahyuni et al., 2022), video-modeling (Akçabozan-Kayabol et al., 2022), collaborative multimedia wikis (Rockinson-Szapkiw et al., 2013), and computer-assisted instruction (Puri et al., 2010). Utilizing digital information enhances communication and fosters strong ties with students who are used to a digital milieu. It also facilitates the learning process for students who prefer electronic

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communication and employ digital tools as a regular technique for various aspects of their lives (Abdillah et al., 2020). Also found were n = 2 variations of technology used in career counseling, namely: 1) website-based: career counseling website in Persia at www.careercounseling.ir. (Pordelan & Hosseinian, 2021), and 2) application-based: mobile-based career counseling applications (Hidayat et al., 2022). Related to these findings, internet-based counseling provides several benefits, in terms of increasing access to resources for clients (de la Varre et al., 2010; Krist, 2011).

Meanwhile, social counseling has n = 2 technological variations, which involve: 1) virtual message-based programs (Hambali, 2019); and 2) app-based tools: a smartphone app designed to help college-age women in abusive relationships make informed safety decisions (Lindsay et al., 2013). The main function of an educational counselor is to assist clients in gaining self-awareness and understanding their abilities. This is achieved by using their areas of expertise for gaining knowledge in professional and social fields, thereby encouraging the cultivation of principles, beneficial behavior, and an optimistic mindset (Aluede & Adubale, 2020). Personal counseling has n=1 technological variations, which is a computer-based: CD-ROM-disk (Carey et al., 2011), and LAYH (Look at Your Health) for computer-assisted smoking cessation counseling (Prokhorov et al., 2008).

Guidance and counseling facilities include personal and career services, as well as the fields of learning and social services (Minister of Education and Culture of the Republic of Indonesia, 2014; Muhammad & Patriana, 2021). The results of this review show that educational counseling services are technology-based such as those for learning counseling, social counseling, personal counseling, career counseling, and counseling services. School counselors will possess the necessary skills to use authorized counseling programs, implement contemporary theories and methodologies, and establish strategies for diagnosis, intervention, and group therapy. By adopting this approach, children's developmental, intellectual, social, and emotional needs will be adequately addressed. The aforementioned factors together contribute to the desired beneficial transformation (Pincus et al., 2020). According to Beidoğlu et al. (2015), digital technologies, including multimedia and websites, play a crucial role in enhancing educational counseling services.

The effectiveness of technology for improving educational-counseling services

Based on these research findings, the 19 studies that used technology reported effectiveness in improving educational-counseling services in five major areas. These topics are career counselling, mental-health treatment, habit changes, group guidance, and counselling curriculum. Further details about each section are explained in the next several paragraphs.

First, technological tools can assist students in deciding upon a career (Hidayat et al., 2022) and can improve career decision-making significantly (Pordelan & Hosseinian, 2021). For example, FER was shown to work well for counseling guidance (Gom-os & Yong, 2022).

Second, there is software that helps students who need mental-health treatment (Puhy et al., 2021), both for students awaiting counseling services (Levin et al., 2022), and for those after counseling (Broglia et al., 2019) because a well-being app can provide ongoing assistance. In addition, it optimizes therapy time between clients and counselors (Broglia et al., 2017) and allows for those in underserved or rural regions to have access to mental-health services (East et al., 2016). Technology was also shown to be effective in reducing stress (Quigley et al., 2022). Students reported that MHA helped to reduce their anxiety (21.3–60.0%) (Cohen et al., 2023). It also addresses the unmet needs of students at risk of suicide (Reyes-Portillo et al., 2022), and

offers confidential, safe, and non-judgmental information on abusive dating relationships and services (Lindsay et al., 2013).

Third, it can curb unwanted habits, such as reducing alcohol consumption in female students (Carey et al., 2011) and decreased smoking among community college students (Prokhorov et al., 2008). Conversational Artificial Intelligence (CAI) software can enhance student counseling and communication approaches in dietetics (Puri et al., 2010).

Fourth, tools, such as Virtual Message, work effectively to improve students' social commitment (Hambali, 2019). This is supported by Kimbel et al. (2014), suggesting that virtual counseling interactions can also be used to address personal/social domains. Thus, virtual massage tools are effective in improving social counseling services. In learning counseling services, research (Rockinson-Szapkiw et al., 2013) found that multimedia wiki tools were used to generate positive learning perceptions and reduce computer anxiety. According to Ayyash-Abdo et al. (2010), Internet access is one issue that may have influenced "virtual counseling to be a negative experience." Clarified by Jaber & Al-Hroub (2023), counselors finally agreed that this was a positive experience because they were able to take the negative side and turn it into an opportunity to learn more, so that it became a positive experience.

Fifth, for students enrolled in mental health curricula, computer applications, as mentioned above, provide an alternative approach to teaching counseling skills and strategies. For example, when using the video model (Akçabozan-Kayabol et al., 2022), students can learn about counseling skills and strategies, which enhances their potential-learning style correlation (Fahyuni et al., 2022).

Based on these 19 findings, technology has proven to be effective in improving educational counseling services. This increase occurred in mental-health services, study counseling, career counseling, social counseling, and personal counseling. From this literature review, it is clear from an assessment of the 2008-2023 research years that counselors follow technological trends. Educational counselors provide psychological counseling services using novel ways, one of which is electronic counseling, which is evidently, a current approach (Irwan et al., 2020). This demonstrates that guided professional practice does indeed occur when counselors and counselees are physically isolated. Subsequently, they employ electronic technology to engage in constructive digital discourse.

The Counselor Accreditation Agency (CACREP, 2016) requires technology-focused curricula in counseling programs. Therapy and relationship programs should include ethical and culturally-appropriate strategies for establishing and sustaining face-to-face and technology-facilitated interactions and how technology affects therapy. Several customized programs recognize pupils' technological needs (CACREP, 2016). According to the studies, the Comprehensive Developmental Counseling Program is employed for curricular guidance and help. In school counseling programs, technology enhances guidance curriculum, individual student planning, responsive services, and support systems (Hayden et al., 2008).

This review synthesizes information from research in the field of educational-counseling services, regarding the effectiveness of the use of technology in improving them for students, and identifies gaps to guide the need for further research. Personal-counseling services in research (Carey et al., 2011; Prokhorov et al., 2008) still use computer assistance, even technology that has been abandoned today, namely, CD-ROMs. Apart from that, there is other old technology currently used in mental-health counseling. This was found in research (Quigley et al., 2022), which showed the use of short-message service (SMS) to reduce stress. The availability of these tools is well utilized by school counselors, and has proven effective in improving services. This can be seen

using mobile apps in mental-health counseling, social counseling, learning counseling, and career-counseling services.

School counselors who operate in remote locations, or serve numerous school districts, offering online-response services, like individual or group counseling, use of technology may be a time-saving alternative to traveling long distances to reach institutions that are far away (Steele et al., 2010). This phenomenon is evident in a study conducted by East et al. (2016), where access methods were used for mental-health services in underserved and rural regions. According to this assessment, the mental-health-remote-counseling-educational system, as conceived, exhibits commendable performance, enabling effective distance education and possessing significant practical worth. This practice serves as a valuable resource for furthering education in online counseling for mental health.

Implications for educational-counseling services

The effectiveness of the technology described in the research results can guide counselors or counseling teachers to choose the right electronic tools for the specified counseling goals. This literature review shows that it is possible that all educational-counseling services can use technology. The availability of empirical evidence of the effectiveness of technology can guide counselors in developing software-based educational-counseling services. This will have an impact on increasing the number of professional counseling services provided by counselors. The study conducted by Holmes et al. (2019) used a random sample of 218 individuals who were members of the American Counseling Association. These participants were surveyed about their views on the incorporation of technology in the counseling industry, specifically focusing on their impressions of the advantages and obstacles associated with delivering online therapy. The findings indicated that 11% of participants now provide online counseling services, whereas less than 20% of participants expressed willingness to engage in online therapy. Counselors acknowledge the advantages of online therapy, but they remain cautious about its possible difficulties (Holmes et al., 2019). The study results provide validation for the efficacy of technology in the domain of educational counseling. Therefore, it is rational for educational institutions to improve system support by incorporating this type of media into counseling services.

Recommendations for future research

The findings of this review (Carey et al., 2011; Prokhorov et al., 2008) suggest that future researchers should conduct comprehensive literature reviews on personal counseling services, such as reducing smoking addiction and alcohol consumption through the use of mobile applications or AI technology.

Conclusion

The articles reviewed in this research reveal that empirical research regarding the effectiveness of technology in improving educational counseling services for students is limited. From 2008–2023, only 19 articles were available for review. Counselors, guidance and counseling teachers, and counseling researchers from year to year continue to report the need for the use of technology and its effectiveness. In practice, several types of technology are used in educational counseling services. This research adds evidence to the effectiveness of using MHAs technology, mobile well-being apps, mHEALTH, SMS, FER, and mindfulness apps to provide mental-health counseling

services in education. Computer and CD-ROM technology are effectively used in personal counseling, and CAI technology is successfully used in providing learning counseling. Safety decision-aid smartphone and virtual message apps are effective tools in social counseling. Conversational Artificial Intelligence (CAI) software, MCO, and video modeling technology are constructive media used in student learning counseling. Mobile-based, career-counseling application technology and career-counseling websites are beneficial in career- counseling services. Reports on the use of all forms of these advancements during the counseling process showed how it can enhance career, social, personal, learning, and mental-health counseling services in education.

Author Bio

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