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Systematic Literature Review on the Effectiveness of E-Coaching in Higher Education

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Abstract

The catastrophe linked to the COVID-19 epidemic has brought different education issues and challenges to academia across the world. All educational universities around the world were forced to adjust and reorganize the system and process of education based on face-to-face teaching and change it approximately instantly to the working settings and online education. Moreover, before COVID-19, it was common practice for universities to introduce final-year secondary school students to the university environment before they officially enrolled in a university program. However, when COVID-19 spread around the world, most universities stopped face-to-face or on-campus visits and enrolled students in their online degrees. This tended to have an adverse impact on student learning, particularly for first-year students, as the university systems are different for first-year students. The term e-coaching is defined as the method of coaching students through innovative technologies. This paper presents a systematic literature review on the importance and usefulness of e-coaching in improving learner performance—to the best of our knowledge, no researchers have ever done that before in the e-coaching domain.

Keywords

E-Coaching, Systematic Literature Review, E-Coaching Tools, E-Coaching Framework Web-Based Learning

1. Introduction

The internet has revolutionized communication and access to information and is a mechanism which facilitates collaboration and interaction between individuals without any restrictions on geographic location (Salas-Pilco et al., 2022; Suher-

lan et al., 2022). According to Statista (2022), there are over five billion internet users which is 63.1% of the global population (Beun et al., 2017; Frazee, 2008; Ifdil, Bariyyah, Dewi, & Rangka, 2019). This ever-changing world attracts organizational attention on how to service customers through internet. In another words, we live in a dynamic world that demands more and more of our intellectual and social skills. Those born in the past decade, commonly referred to as Gen Z, have mastered complex digital technology. The world wide web provides limitless access to information and generates opportunities that were not available in past times (Shahidi, Tossan, & Cacho-Elizondo, 2018; Stein & Wanstreet, 2020). In addition to the benefits associated with being able to access the wealth of information available online, people are also enjoying a wide range of entertainment choices, social interactions, and easy communications (Statista, 2022; Beun et al., 2017; Frazee, 2008; Ifdil, Bariyyah, Dewi, & Rangka, 2019).

Technology is the key driver of this radically changing world. To resolve the problems, new applications should be developed that will help organize the info, hence cutting down the complication to workable levels (Hunt, 2010; Ifdil et al., 2019). So, this gives rise to the need for cutting-edge applications that will support the organization and structuring of info, hence converting the difficulties into manageable stage (Greif, Möller, Scholl, Passmore, & Müller, 2021; Nugent, Kunz, Houston, Kalutskaya, & Pedersen, 2017; Rajabpour, 2016). Ground-breaking notions such as e-coaching can fast-track and help people adapt to the continual change of this increasingly complex environment (Beun et al., 2017; Nugent et al., 2017; Rajabpour, 2016). E-coaching offers fastness, easy accessibility, and convenience. His viewpoint primarily focuses on the advantages and opportunities offered by technology and the internet (Boyce & Clutterbuck, 2010; Frazee, 2008; Greif et al., 2021). Though, the opportunities for intra and interpersonal procedures receive quite less air-time. However, these opportunities offer the real advantage of e-coaching (Greif et al., 2021; Nugent et al., 2017; Rajabpour, 2016).

In this paper, we present a systematic literature review on e-coaching effectiveness in higher education. The paper answers the following questions:

- What is e-coaching and what is the motivation behind e-coaching?
- How can e-coaching be defined and the role of internet?
- What are the tools and technologies used in e-coaching?
- What are the available e-coaching frameworks and systems?
- What are the advantages of e-coaching?
- What are the challenges of e-coaching?

2. Literature Review Planning

To undertake this literature review, we examined studies published in reputed conferences and journals and also books during the period from 1-1-2000 to 1-8-2022. The first phase of this research is to identify the most appropriate academic research databases to search for relevant studies on the research topic, namely: Scopus, Web of Science, IEEE Xplore, ScienceDirect, EBSCO, ACM

Digital Library, and Google Scholar. The systematic review is based on Kitchenham et al. (2009).

In phase 2 of this research, we identified the relevant keywords on the theme of this research and discussed these keywords with e-coaching experts. The final list of keywords used to search for articles is e-coaching, electronic coaching, e-coaching in higher education, e-learning and e-coaching, systems of e-coaching, framework of e-coaching and effectiveness of e-coaching, e-coaching for computer sources and capability of e-coaching.

In phase 3 of this research, we searched for articles based on the selected keywords from the selected databases. In our initial search, we did not retrieve any relevant articles from the JSTOR database, therefore we removed this database from the list. In this phase, we first downloaded all the studies which contained the keywords, resulting in 455 studies which included books, book chapters, conference papers and journal articles.

In part 2 of phase 3, articles were either included or excluded based on criteria relating to the manuscript title, abstract, keywords, the introduction, and the conclusion. The results of this phase show that not all articles were relevant for the following reasons: they were duplicate articles, the same article had been published in two or three different databases; some articles were not in the English language; some articles were not on the selected study theme. After applying the exclusion criteria, 310 articles remained.

In part 3 of phase 3, to further classify the selected studies, we implemented the following three additional criteria for our analysis of e-coaching effectiveness in higher education. Therefore, during this phase, we read through all the selected articles in detail and eliminated the articles which did not meet these criteria: first, the selected article must be on the theme of this proposed research (that is, it must answer at least one of the aforementioned questions); second, the selected article must be on e-coaching and e-learning and the article must use a qualitative research method, a quantitative research method, a case study or a focus group in third criteria. As a result of applying these exclusion criteria, 86 articles remained. This process is illustrated in Figure 1.

3. Review Result

3.1. What Is E-Coaching and What Is the Motivation behind E-Coaching?

Technology is changing many professional services that previously relied on to person-to-person and face-to-face communications. This change is prevalent in telehealth, telepsychology, e-counseling, cybernetic mentoring, and e-coaching. For a long time, instructors have customarily used the telephone medium with trainees (Bagshaw & Bagshaw, 2002; Boyce & Clutterbuck, 2010; Bruck, Robinson, & Gallagher, 2021; Hui, Law, & Lau, 2021; Olszewski-Kubilius, 2013; Sailer, Schultz-Pernice, & Fischer, 2021). However, now the use of cyber-mediated techs is helping boost, extend, and substitute face-to-face training while transforming
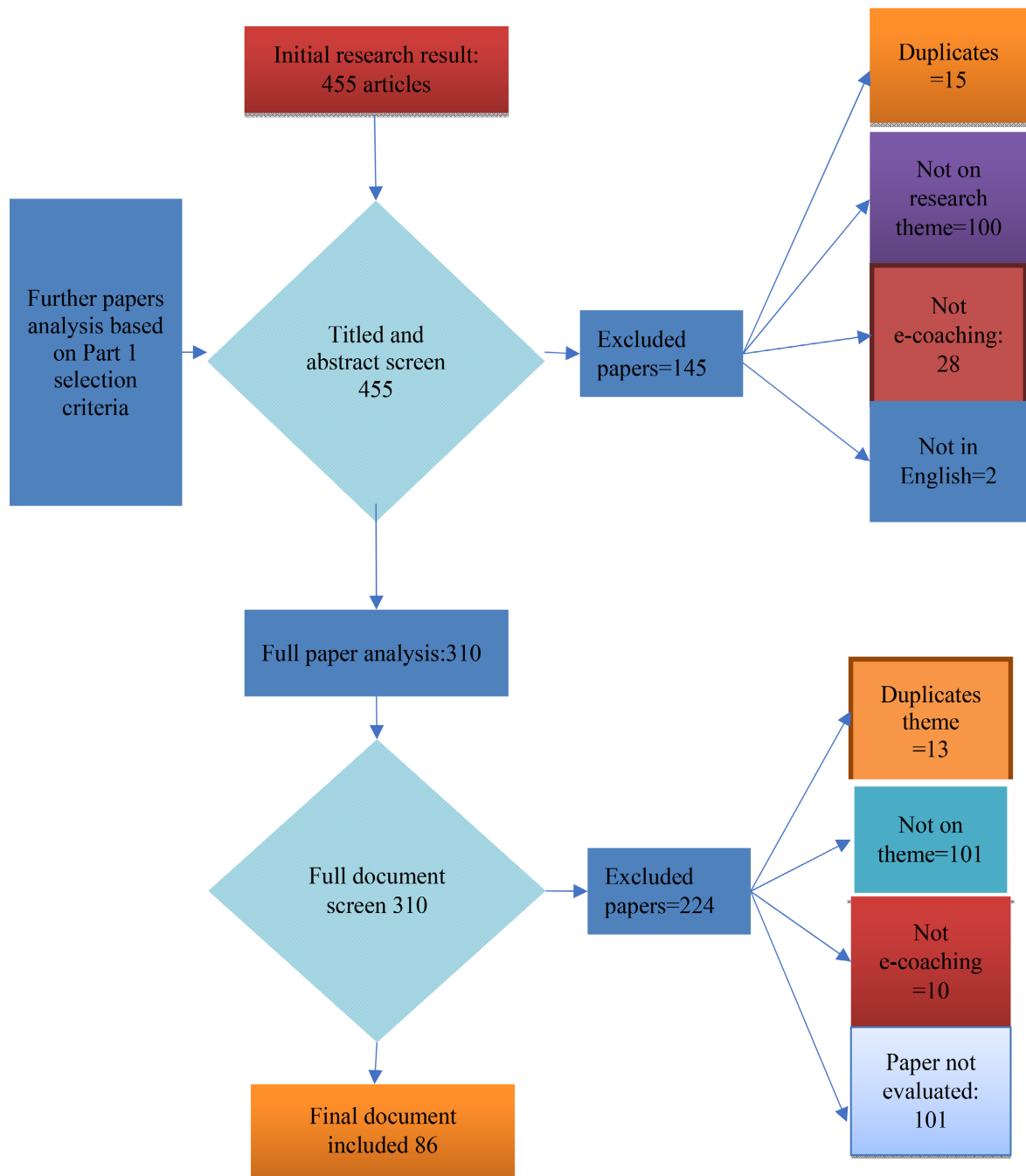
Figure 1. Selected article analyses and selection.

the overall training experience. Barbian (2002) suggests that "Trainers who are eager to remain important in the liaised world must connect the physical workspace with the virtual environment". Certainly, the trend of e-coaching is growing (Hui, 2015).

Grant and Zackon (2004)'s research discovered that almost 64% of the study participants reported they used electronic methods of training at some point in time (Bucur, 2018). The data also revealed that 63% of trainers use their smartphones compared to 34% who prefer face-to-face meetings as the main way of

conducting coaching sessions, with only 1.4% using email correspondence for coaching. Many virtual consultancies such as Advantage Coaching and Training offer e-coaching services and EMCI offers telephonic training; the Executive Coaching Studio offers cyber training solutions, face-to-face and via phone; Peyton Investments offer managerial training via phone, face-to-face email or direct messaging (Bagshaw & Bagshaw, 2002; Boyce & Clutterbuck, 2010; Bruck et al., 2021; Hui et al., 2021; Olszewski-Kubilius, 2013; Sailer et al., 2021).

E-coaching provides mechanisms for immediate and time-deferred connections, communications, and considerations (Bucur, 2018; Chang, 2009; Hubbard, 2015; Hui, 2015; Olszewski-Kubilius, 2013; Stein & Wanstreet, 2020). E-coaching can be used solely or as part of a hybrid learning project (Hamilton & Scandura, 2003; Headlam-Wells, Gosland, & Craig, 2006; Pulley, 2007). For instance, in a leadership development project executed in 2007 at Xerox, the participants began with a web-based seminar (a.k.a webinar) (Bucur, 2018; Chang, 2009; Hubbard, 2015; Hui, 2015; Olszewski-Kubilius, 2013; Stein & Wanstreet, 2020). It was followed by a 3-day person-to-person communication program entailing a two-hour one-on-one session delivered by a managerial trainer, culminating in the production of a development action plan. Over the next three months, the participants formed online teams to complete work tasks (Hernez-Broome, 2002). The outcomes had not been released at the time of this current research.

E-coaching is increasing in popularity however, there is inadequate experimental data regarding the efficiency of e-coaching or how technology can be used to implement it (Bruck et al., 2021; Bucur, 2018; Regan, Weiss, & Evmenova, 2017). In this study following two factors of e-coaching has been studied: what are the implications of e-coaching and reasons of why we need to study e-coaching. The number of articles on e-coaching motivation and implications is shown in Figure 2.

3.2. How to Define E-Coaching and the Role of Internet?

The method of e-coaching requires to answer two key questions: 1) how do
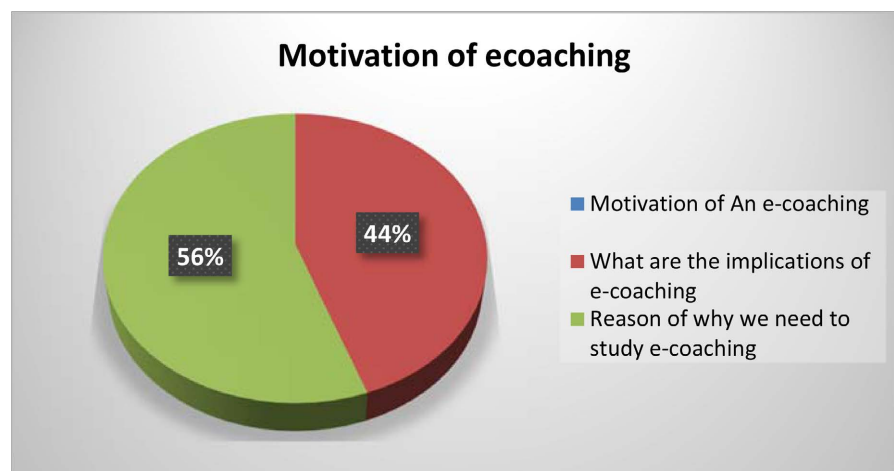

Figure 2. Motivation of e-coaching

information technology and information systems help in e-coaching? 2) How to define e-coaching in the context of e-coaching usefulness and implications. According to Hernez-Broome, Boyce, and Whyman (2007), e-coaching is a bi-directional communiqué carried out between the trainer and trainee empowered through technology, specifically cyber-mediated communications (CMC). Examples include email correspondence, virtual chats and negotiated discussions (Hui, 2015). Many authors define e-coaching and mentoring as training for which key communication is online, so that the base of mentor-protégé association depends on a more diverse kind of communication than that in customary mentoring (Boyce & Hernez-Broome, 2010; Geissler, Hasenbein, Kanatouri, & Wegener, 2014; Grant & Zackon, 2004; Hamilton & Scandura, 2003; Headlam-Wells et al., 2006; Hernez-Broome, 2002; Hernez-Broome et al., 2007; Kamphorst, 2017; Petsani et al., 2019; Pulley, 2007; Ribbers & Waringa, 2015).

Ensher, Heun, and Blanchard (2003) suggested three stages of CMC-empowered mentoring that are required for training: CMC-only with no person-to-person or telephonic communication, CMC Primary in which greater than half of the dealings are carried out in person, accompanied by phone, electronic message, and other CMC expertise. A collective factor in all these definitions is that electronic coaching embraces human collaboration (Uysal, Sani-Bozkurt, Bozkus-Genc, & Gurgur, 2021).

Berry (2005) claims that training should include a "distinct and commissioned association between two persons" and that for some levels of people, custom-made communication is vital for training to proceed (Moore, 2022). In this current research, describe e-coaching as training that is carried out partly or fully at a distance, via telephone, electronic message or other CMCs (Boyce & Hernez-Broome, 2010; Geissler et al., 2014; Grant & Zackon, 2004; Hamilton & Scandura, 2003; Headlam-Wells et al., 2006; Hernez-Broome, 2002; Hernez-Broome et al., 2007; Kamphorst, 2017; Petsani et al., 2019; Pulley, 2007; Ribbers & Waringa, 2015), in groups with person-to-person training, for determination other than participants planning engagements and completing managerial jobs (Boyce & Hernez-Broome, 2010; Geissler et al., 2014; Grant & Zackon, 2004; Hamilton & Scandura, 2003; Headlam-Wells et al., 2006; Hernez-Broome, 2002; Hernez-Broome et al., 2007; Kamphorst, 2017; Petsani et al., 2019; Pulley, 2007; Ribbers & Waringa, 2015). This research offers a comprehensive and wide-ranging definition of e-coaching that embraces the tools and assets that trainers use with their pupils for instructional purposes to facilitate the training procedure (Boyce & Hernez-Broome, 2010; Geissler et al., 2014; Grant & Zackon, 2004; Hamilton & Scandura, 2003; Headlam-Wells et al., 2006; Hernez-Broome, 2002; Hernez-Broome et al., 2007; Kamphorst, 2017; Petsani et al., 2019; Pulley, 2007; Ribbers & Waringa, 2015). Moreover, this comprehensive definition of e-coaching also encompasses CMC tools and technologies that people use to facilitate self-training—a kind of training that does not include an association between two people. The percentage of articles on e-coaching definition is shown in Figure 3.

In relation to the role of internet in higher education, applications related to the internet are the most valuable technology in today's world, this helps professional lives and daily activities. In the context of higher education, internet tools, and applications are commonly used to collect and analyze information related to higher education issues. Internet tools and techniques bring several benefits to the field of higher education (Salas-Pilco et al., 2022; Suherlan et al., 2022; Maatuk et al., 2022): 1) educational cost and affordability—the key issue in the higher education system is the high cost; 2) The Internet-related technology here pay a major role by providing education through online channels, web tutorials, and videos and these channels are affordable to everyone around the world; 3) teacher and student interaction—the internet has permitted university students to be in continuous contact with their lecturer through email, social media, and other online forums; 4) access to the quality education—University students can simply contact quality education and related resources, as the internet allows you to evaluate and rank the university courses; 5) update on the latest information—Today information is the main benefit which the internet and related applications are offering, each subject in higher education has a large amount of information which internet store and keeps students up-to-date with the newest information in relation to the subjects in which students are attracted.

3.3. What Tools and Technologies Are Used in E-Coaching?

In this section, we discuss the tools and techniques associated with e-coaching. It is widely accepted that e-coaching embraces technologies which can be used by individuals or groups with or without one-to-one contact, to empower or completely revolutionize training involvement (Berry, 2005; Ensher, Heun, & Blanchard, 2003; Horn & Rock, 2021; Moore, 2022; Rahmadi et al., 2021). An e-coaching technology encompass communications and multimedia systems that allow contemporary and non-contemporary communication via telephone
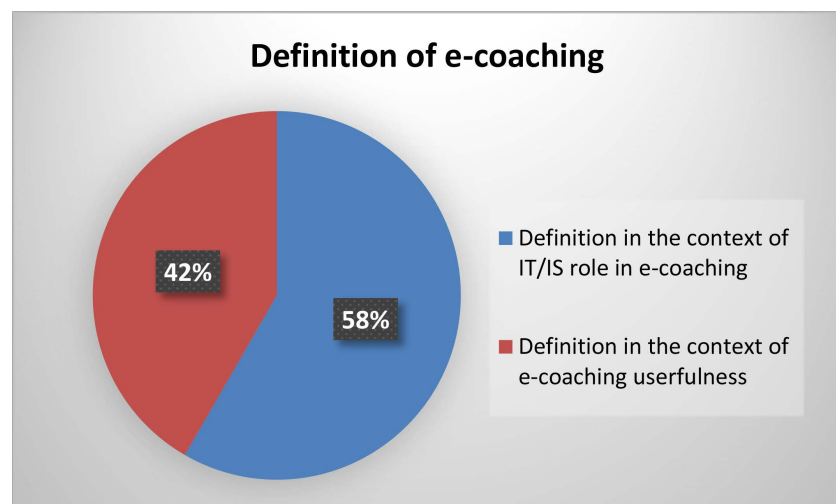
Figure 3. Definition of e-coaching.

communications and fast-speed cable connectivity to desktop devices, or remotely via mobile phones or other hand-held devices (Berry, 2005; Ensher et al., 2003).

Extensive research has been conducted on theories related to CMC and cyber-supported collaborative learning (CSCL) settings. There is detailed literature and several theories about computer-mediated communication (CMC) and computer-supported collaborative learning (CSCL) settings, a comprehensive discussion of which is further than the possibility of the current research (Berry, 2005; Ensher et al., 2003; Horn & Rock, 2021; Moore, 2022; Rahmadi et al., 2021). Though, theories about media richness and the flow of modernization support the declaration that CMC tools offer affordances (i.e., supposed action prospects or competencies) that make some technologies better matched for certain communication and training purposes than others (Frazee, 2008; Moore, 2022; Müller & Mildenberger, 2021; Mystakidis, Berki, & Valtanen, 2021).

The subsequent debate offers many CMC technologies, with both advantages and disadvantages for training. The advantages include better opportunities for spontaneity and discussion (Frazee, 2008; Moore, 2022; Müller & Mildenberger, 2021; Mystakidis et al., 2021). The disadvantages include problems associated with development, the possibility of methodological challenges reduced opportunity for reflection (Hernez-Broome, 2002). The percentage of articles on e-coaching tools and techniques is shown in Figure 4.

3.3.1. E-Coaching via Telephone

Telephones are used widely in e-coaching. Grant and Zackon (2004) stated that the phone is the chief mechanism of training. This is because the phone is familiar, easy to use, and is a suitable and operational distant communication device for training, though it does not have graphics to supports for person-to-person meetings. Telephone communications can be used to develop understanding and it is also a private form of communication. Almost 90% of managerial trainers in Charbonneau's research offered some phone training and reported it to be
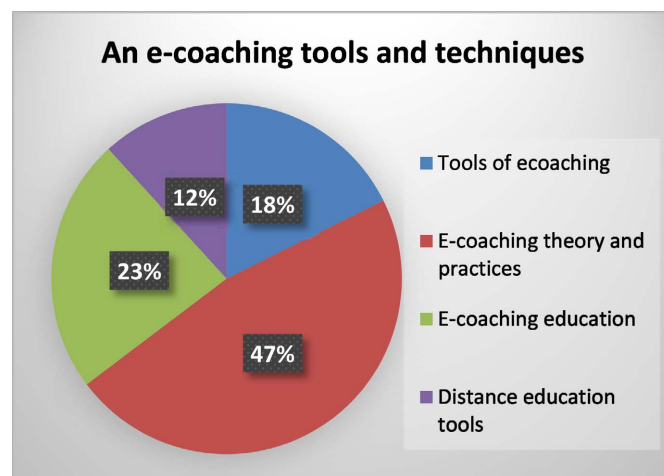

Figure 4. E-coaching tools and techniques.

quite helpful for encouraging to support multiple people at the same time. Tele-conferencing allows many people to converse concurrently for instantaneous meetings, distance learning, and training sessions (Gunawardena, Carabajal, & Lowe, 2001; Roger, 1995).

3.3.2. Text Messaging and E-Coaching

Live chatting, instant texting and short-text communications are instantaneous ways of communicating that can be used via personal computer systems or laptops, mobile phones, personal digital assistants or other hand-held internet devices (Moore, 2022; Okorie et al., 2022). Messaging enables fast, effective, private and relaxed communication between several parties instantaneously, and has more of a colloquial, and impulsive impact compared to physical mails (Bonk & Graham, 2012; Gunawardena & McIsaac, 2004; Ting & Scisco, 2006). When conducting e-coaching, a trainee may forward an SMS to seek quick advice from the trainer, and a trainer may share an SMS to share responses, reminders and reinforcements.

3.3.3. Video and Audio Conferencing

In e-coaching, audio and video conferencing over the internet enables people living in different geographical areas to communicate with each other (Hernez-Broome, 2002; Horn & Rock, 2021; Rahmadi et al., 2021). Audio-visual conferencing technologies are highly trustworthy, although costly, and generally include a devoted audio-visual conference setting and specialized apparatus, much like outdated conference calls.

Cyber-based desktop audio-video conferencing through fast internet connectivity has become widely accessible as a highly agile and inexpensive alternate. Contributors use microphones attached to their computer systems to carry out one-way or dual-way interactions via web-based applications that involve the voice over internet protocol (VOIP), enabling them to engage in affordable or free distant communications through the web. Web cameras offer a comparatively affordable and convenient way to carry out desktop audio-video conferencing that can be used to perceive performance, give opinions, and carry out playacting or demonstrations (Damschroder et al., 2017; Spence & Grant, 2007).

3.3.4. E-Coaching and Virtual Settings

Virtual reality (VR) instantaneously emerges from cyber-generated visuals, gestures, and dynamic data to provide an experience that would otherwise be quite risky, costly, or time-consuming (Ensher et al., 2003). VR involves a three-dimensional (3D) graphical representation and at times encompasses tactile strength response systems.

For example, VR systems can help in the training of physicians and aviators. In the work environment, some people believe that the approaching level in online work development involves 3D immersive virtual worlds. In 2003, Lin-den Labs, an American-based corporation, introduced a cyber-based 3D online world referred to as Second Life, which involves physical mock-ups, 3D exhibi-

tion, a full economy and social structure, and recently audio (Carmeli, Zivan, Gomes, & Markman, 2021). Second Life is a cooperative environment where users generate avatars (Carmeli et al., 2021; Cheek, Rock, & Jimenez, 2019) or virtual reality personalities that they engage to pay visits to sites and interact with content and other members (Bagshaw & Bagshaw, 2002; Kovalchuck & Vorotnykova, 2017; Sailer et al., 2021).

Second Life is not only used for entertainment purposes and virtual networking, university instructors plan lectures in the computer-generated spaces to teach construction, game plans, oracy and writing, sociology, information technology, design and media studies. Several large-scale corporates such as IBM, Sears, and Coca-Cola have established personal meeting spaces in Second Life, where personnel are able to interact and work collectively with co-workers and customers. For example, Manpower, the recruitment agency, established an island in Second Life where they offer training for job searches and resume writing.

3.3.5. E-Coaching and Web Conferencing

Web-based conferencing is an online two-way work setting used to offer virtual courses, consultations, conferences, demonstrations and web seminars to embrace e-learning, virtual societies, and online work squads. The most popular online tools include Connect, Live Meeting, Centra, Illuminate, Wimba, and WebEx. Web-based meeting applications can integrate several instantaneous CMC tools like online chats, VoIP, live video via webcam, reviewing demonstrations, and interpretations (such as allowing users to sketch and write on a common screen), footage for replay at an approaching time, display and application sharing. Hence, this innovative sound-based and collaborative system offers several benefits for audio-visual conferencing and video calls. Trainers may use web-based conference calls to carry out programmed training sessions or make themselves accessible during online office hour (Fettig, Barton, Carter, & Eisenhower, 2016; Orth & Schuldis, 2021).

3.4. What Are the Available E-Coaching Frameworks and Systems?

3.4.1. Blackboard Learning Systems and Platforms

In current times, Blackboard is one of the most well-known internet-based learning tools for higher education. It is convenient to use, making it a useful platform for course delivery. Blackboard is a learning system as an all-embracing technology platform for teaching and learning, community building, content organization and sharing, gauging learning outcomes and comprise of simulated elements with an important set of capacities that work together (Horn, 2021). More than 39 thousand professors and 1350 educational institutions use this system to deliver 147,000 courses, benefit-ting ten million pupils across 80 nations of the world. It combines communication tools, with a notice board, chat space and private email (Alnassar, Issa, Nau, & Abu Salih, 2021; Frazee, 2008; Johnson & Ross, 2010; Mystakidis et al., 2021; Pakhomova, Komova, Belia,

Yivzhenko, & Demidko, 2021). Moreover, graphical representations and audio and video records can be incorporated into the Blackboard platform (Alnassar et al., 2021; Frazee, 2008; Johnson & Ross, 2010; Mystakidis et al., 2021; Pakhomova et al., 2021).

Blackboard also offers instructive tools to support course content such as appendices, references, self-evaluation and quizzes. Pupils can substitute coursework and other study material in Blackboard for subjects they are learning. Moreover, Blackboard also helps the teaching faculty with course management tools to assist in grading, tracking pupil interactions, and supervising classroom progress. These elements can support interactions between the teaching faculty and learners. Only learners and the faculty of the course can access these tools as the system requires login details (user name and password) (Imhof et al., 2022; Katiforis, 2020; Li et al., 2021). So, Blackboard is safe as it protects the intellectual property of the teacher and the confidentiality of the students and protects course content from unauthorized third parties (Atad & Grant, 2021; Johnson & Ross, 2010; Joseph, Kearney, Brady, Downey, & Torres, 2021; Katiforis, 2020; Li et al., 2021).

3.4.2. E-Coaching and Zoom

With the help of the cloud-based video conferencing tool Zoom, it is possible to conduct live discussions while virtually meeting with other people through video, voice, or both. People can videotape the sessions to watch at a later time. Zoom is widely employed in the business and educational sectors, as detailed in the literature. A video conferencing session that uses Zoom is known as a "Zoom Meeting" (Alnassar et al., 2021; Atad & Grant, 2021; Frazee, 2008; Johnson & Ross, 2010; Joseph et al., 2021; Moore, 2022; Mystakidis et al., 2021; Pakhomova et al., 2021). These meetings allow for phone or webcam participation (Komninou & Papakostas, 2022). The physical hardware setup is known as a Zoom Room which enables businesses to schedule and start Zoom Meetings from their conference rooms. Zoom-based coaching could be effective in improving well-being (Alnassar et al., 2021; Atad & Grant, 2021; Frazee, 2008; Johnson & Ross, 2010; Joseph et al., 2021; Moore, 2022; Mystakidis et al., 2021; Pakhomova et al., 2021).

3.4.3. Virtual Coaching Platforms

Virtual coaching platforms such as Mentornet, MicroMentor, and coachingplatform.com are some of the most popular virtual systems which are exclusively used for training purposes. These platforms enable organizations and trainers to connect instructors to trainees and support training experiences (Alnassar et al., 2021; Atad & Grant, 2021; Frazee, 2008; Johnson & Ross, 2010; Joseph et al., 2021; Moore, 2022; Mystakidis et al., 2021; Pakhomova et al., 2021). The Ken Blanchard Corporates' coaching.com is a platform for endorsed trainers to offer services backed by a propriety web-based system (Alokluk, 2018; Suk Hwang & Vrongistinos, 2012; Vrij, Akehurst, Soukara, & Bull, 2002). It is very accommodating for trainers as it helps them manage coaching styles and favorite portfo-

lios, make performance evaluations and give feedback, structure and record targets and action plans, monitor progress, and forward follow-up messages regarding incomplete and completed actions. Compared to paper records, virtual assessments that deliver computerized scoring and instant results can save time.

The California Public Employees' Retirement System (CalPers) utilizes this type of system to offer training via phone and electronic mailing uses these mechanisms to provide training via telephone and e-mail as it will help workers understand preferred performance progresses that are expected as part of a 360-degree feedback tool (Frazee, 2008). The Center for Creative Leadership (CCL)'s Leadership Development Program (LDP) includes pre-work and assessments. It is a week-long onsite seminar that encompasses a four-hour face-to-face session with the trainer, goal setting on the last ten days, two-and-a-half months of online follow-up, reflections three months after, and a post-evaluation of a behavior change (Boyce & Clutterbuck, 2010; Johnson, 2003; Naim, 2021; Pakhomova et al., 2021).

The online follow-up administration system called Friday 5's, was designed for CCL by the Fort Hill Company. The system informs the participants via electronic mail each Friday to allocate a few minutes to reassess their goals, assess their progress, and complete an evaluation regarding individual and managerial influence. The system offers virtual resources that provide direction about actions. It also features communication tools that allow candidates to collaborate via the LDP project, discuss their goals with supervisors and associates, and engage in virtual coaching delivered by the CCL feedback trainer (Baafi & Atieno, 2020; Setiyawan & Santoso, 2022).

3.4.4. Performance-Based E-Coaching Systems

It is well known that training entails human interaction. However, it can encompass self-training with the assistance of the Electronic Performance Support System (EPSS). Job assistance planned by individuals is based on the human training model in the absence of human involvement to deliver training. For example, Fogg (2002) invented the terminology Computers as Persuasive Technologies (CAPTology) to describe a part of the analysis that examines the way computer systems can be utilized to induce, influence, and encourage changes in behaviours. A more comprehensive description of e-coaching is that it is an online system that can help people self-train by driving performance, de-termination and follow-through on goals (Boyce & Clutterbuck, 2010; Johnson, 2003; Naim, 2021; Pakhomova et al., 2021). The percentage of articles on e-coaching systems and frameworks is shown in Figure 5.

There are many examples of EPSS implementations and resources that embrace self-training. Doctoral pupils engaged in their final thesis tasks may receive online training by subscribing to an email newsletter shared by "the all-but-dissertation survival guide". In the work environment, call centre managers who use web-based phone systems may receive instantaneous programmed training (Aktan, Toraman, & Orakci, 2020; Müller & Mildenberger, 2021;
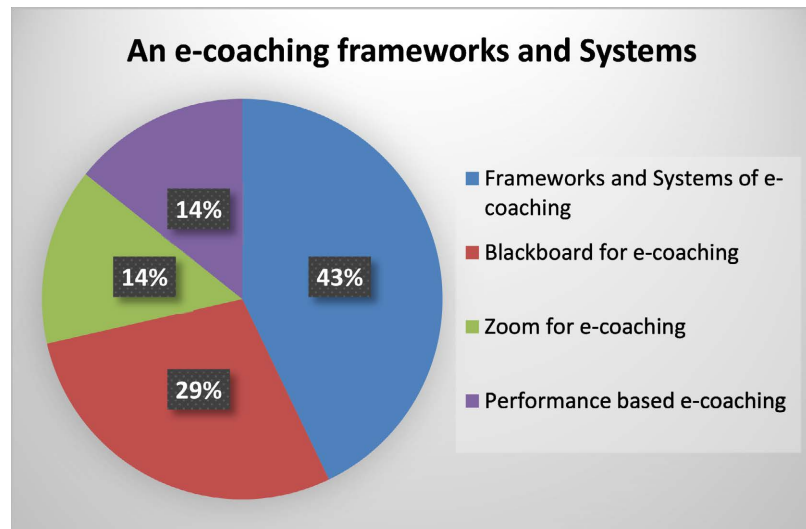
Figure 5. Frameworks and systems of e-coaching.

Stein, Wanstreet, Slagle, Trinko, & Lutz, 2013). By using speech-recognition technology, the system assists the managers as they manage client calls and share prompts, reminders, feedback, and responses via the telephone. So, this kind of system enables managers to take immediate remedial actions and enhance phone call quality and client satisfaction (Ghods & Boyce, 2013; Johnson, 2003; Khanji et al., 2019; Rock et al., 2014; Uziak, Oladiran, Lorencowicz, & Becker, 2018). Accenture introduced a digital training application to boost participants' communication and listening skills (Ghods & Boyce, 2013; Johnson, 2003; Khanji et al., 2019; Rock et al., 2014; Uziak et al., 2018).

The operators set a particular goal, and the device supervises the participant's conduct to evaluate the extent to which the user is conversing or interfering during the discussion and compares the perceived behaviours with the pre-determined goal. The application can generate a performance report upon completion, however more remarkably, the device can provide instant performance feedback via an earpiece. For example, if the operator is conversing and interfering a lot, the program may command them to converse less. FRED is also an online application that offers a personal learning trainer. It asks the worker to enter his job and interest profile and then suggest a number of personalized courses. Several virtual assistance systems offer experts and trainers who train beginners via basic tasks.

3.5. What Are the Advantages of E-Coaching?

The e-coaching and related systems help university students to improve their skills in many different ways, for example, students can approach their perspective lecturers through different forums and get responses in less period of time. This could improve students' skills such as effective learning, communication skills, study skills, assertiveness, responsibility, self-management skills, critical thinking, collaboration skills, and independent work skills.

Work is increasing in complexity, specifically for the information workforce and front-runners, requiring people to continually search for pioneering strategies, insights, and assets that drive them beyond their existing capacities. More-over, employees are becoming more itinerant and scattered, demanding affordable education and performance intermediation that are not linked to geography (Chatterjee, Gerdes, Martinez, & Prinz, 2021; Naim, 2021; Vrij et al., 2002). Therefore, e-coaching could play a major role in improving students' skills

According to Bagshaw and Bagshaw (2002), the success of e-coaching should be evaluated by how well goals are achieved instead of comparing it with to face-to-face coaching (Bagshaw & Bagshaw, 2002; Kovalchuck & Vorotnykova, 2017; Sailer et al., 2021). Every method has its benefits. However, a few advantages of face-to-face have disappeared in e-coaching, because the latter offers opportunities which are not available in face-to-face interaction (O'Brien, Regan, Coogle, Ottley, & Nagro, 2021). Effective e-coaching embraces the choice of the right tool according to the preferred results and the distinct features of the target audience and situations. The advantages of e-coaching are listed in Table 1 (Balasubramanian, Ye, & Xu, 2022; Barbian, 2002; Beun et al., 2017; Boyce & Clutterbuck, 2010; Ensher et al., 2003; Fielden & Hunt, 2006; Greif et al., 2021; Nugent et al., 2017; O'Brien et al., 2021; Pulley, 2007; Rajabpour, 2016; Single & Single, 2005; Stone, 2004). Figure 6 presents the total number of articles selected on the topic of e-coaching advantages.

3.6. What Are the Challenges of E-Coaching?

A few training activities might be not sufficient or challenging when being undertaken from a distance, regardless of technological efficiency. Some knowledge may demand implied background information, gesticulatory hints, or managing physical action (Aktan et al., 2020; Bruck et al., 2021; Bucur, 2018; Hubbard, 2015; Hui, 2015; Hui et al., 2021; Müller & Mildenberger, 2021). Other interactions may be enhanced by a smile or even a sympathetic touch on the shoulder. The two challenges for e-coaching are creating confidence and interacting successfully from a distance (Aktan et al., 2020; Bruck et al., 2021; Bucur, 2018; Hubbard, 2015; Hui, 2015; Hui et al., 2021; Müller & Mildenberger, 2021). Figure 7 presents the total number of articles selected under this topic.

E-Coaching Challenges
1) Establishing trust
Establishing a trustworthy bond is imperative to a successful training procedure. Charbonneau's research regarding managerial training highlighted that 80% of trainees thought that a trustworthy association was crucial and can be established through face-to-face session. A few even suggest that e-mentoring relations must start with a live session either in person, by telephone, or even through audio-visual conferencing (Bucur, 2018; Hui, 2015).

Berry (2005) analyzed the research related to the influence of remote learning compared to face-to-face communication on the establishment of a beneficial

Advantages of e-coaching.

Advantages of e-coaching	Description
Enhanced learning flexibility	e-coaching offers better flexibility in sustaining open communication and it increases options for how, and at what time, and between whom the interaction occurs. E-coaching makes trainers more reachable to the trainees and helps overcome time and distance limitations to enable the trainee to enjoy effective training engagements. If there are no time zone differences, preparation limits or lost time due to travel and coordination, e-coaching programs can be convenient includes and more time can be allocated for consultation, meetings or communication.
Greater Training Pool	e-coaching offers accessibility to a larger and more varied pool of trainers. It gives a chance to management to offer training, enabling managers to link working staff with knowledge and understanding in a quick and cost-effective manner (either inside or outside the firm). It enhances the chances of voluntary trainer-trainee coupling that have proved to increase the trainees' satisfaction levels. As e-coaching is not restricted by time or location and is less dependent on social controls of face-to-face communication, the grouping can be done according to compatibility and a few other aspects linked to demographics, locality, or convenience to access. E-coaching can also enhance cross-cultural bonds that are beneficial for the international economy.
Social Justice	e-coaching places a greater focus on communal values rather than communal traits, demographics and position. A long-distance communication technology can make it more challenging to perceive authority and rank, hence reducing social distance. It occurs because the technologies that depend on written messages are less impacted by graphical clues, individualities and social preferences that inexplicably hinder interest groups. In some ways, "functioning blind" from a distant location can help individuals avoid several instant evaluations according to a person's physical appearance. E-coaching might be particularly advantageous for females in those areas of education that are typically deemed inappropriate for them. Single & Single (2005) express the potential for women engineers while Fielden & Hunt (2006) explain the program for business women (Balasubramanian, Ye, & Xu, 2022; Fielden & Hunt, 2006; Single & Single, 2005).
Support for Telecommuters	Telecommuters can feel secluded and managers who are made responsible for handling remote workers can use e-coaching to help them feel attached, embrace their performance, enhance efficiency, and encourage continuing professional development (Balasubramanian et al., 2022; Fielden & Hunt, 2006; Single & Single, 2005; Stone, 2004). An in-house trainer can form a close association between the company and the telecommuter, broadcasting information regarding staff professional skills as well as any differences in the organizational setup or strategies (Balasubramanian et al., 2022; Fielden & Hunt, 2006; Single & Single, 2005; Stone, 2004).
Scalability and Regularity	Basic training cannot be sufficient whereas e-coaching enables companies to deliver regular training and provide valuable resources across the organisation (not only on an individual level) (Barbian, 2002; Fielden & Hunt, 2006). Technology assists in the monitoring and evaluation of return on investment (ROI), and virtual resources help support e-coaches and participants. Moreover, taping and cataloguing chosen messages support stability on a huge scale.

working relationship between the trainer and the trainee (i.e. individual and expert association incorporating trust and engagement on goals and jobs) and discovered corresponding results regardless whether the communication was face-to-face or through audio-visual conferencing or telephone (Berry, 2005). In a few cases, it was preferred for trainees to meet with their trainers outside the workroom to enhance privacy which could be done in person or via e-coaching.

2) Interacting successfully from a distance.

Some people feel that e-coaching lacks the spontaneity of face-to-face communication due to the pauses that may reduce interest, motivation, and encouragement. This may vary, however, as the newest mobile and on-demand technologies can ensure that distant interactions are instantaneous. e-coaches need
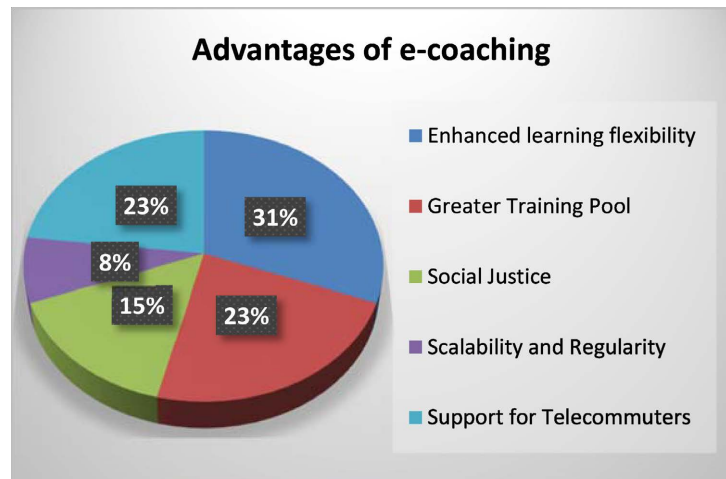
Figure 6. E-coaching advantages.

Figure 7. Articles selected under the topic of "challenges of e-coaching".

to strategize on how they will remain linked to the trainee which can be accomplished by scheduling regular sessions and preferring a communication strategy that explains opportunities regarding the best channels and the optimum turnaround time.

E-coaches must be aware of the trainees comfort level with technology and written messages (electronic mail and SMS). Moreover, e-coaches must make every possible attempt to avoid miscommunications. When communicating re-motely, it is extremely important to ensure an individual understands how they have been perceived. Trainers must be clear about what to teach, limitations and prospects, and they need to make an additional effort to express their responses and ask more questions to encourage trainees to be more expressive. They need to arrange training sessions and be clear regarding the aim of every communication, and they should be vigilant in closing the communication with a particular plan for the next contact response. Kandola's (2006) study on effectual business communication in online teams advises that the following strategies to build trust and enhance efficacy in remote working associations can be implemented in e-coaching (Kandola, 2006; Suthers, 2006):

- Offer many communication channels to avoid misunderstandings and offer choices for selecting the best tool for the job at hand.
- Use premium quality, media-loaded forms whenever preferable.
- Promote unplanned socialization and instant communication like online tea breaks, but avoid over-communication and disruptions.
- Formulate strategies regarding response times and message greetings.
- Be responsive by sharing your schedule as remaining silent might be easily misunderstood and rapidly erode trust.

3.7. Conclusion

This paper presents a systematic literature review on the role of e-coaching in higher education. The review is limited to answering six key questions on e-coaching listed on page 2 and detailed in Sections 3.1-3.7. Table 2 presents the summary of systematic review questions, with their selected themes and the selected total number of articles against each theme.

Table 2. Summary of systematic review questions.

Systematic review questions	Question Themes	Number of articles selected in each theme
What is e-coaching and what is the motivation behind e-coaching?	• What are the implications of e-coaching	8
	• Reason why we need to study e-coaching	10
How can e-coaching be defined?	• Definition in the context of IT/IS role in e-coaching	7
	• Definition in the context of e-coaching usefulness	3
What are the tools and technologies used in e-coaching?	• Tools of e-coaching	3
	• E-coaching theory and practices	8
	• E-coaching education	4
	• Distance education tools	2
What are the available e-coaching frameworks and systems?	• Frameworks and Systems of e-coaching	6
	• Blackboard for e-coaching	4
	• Zoom for e-coaching	2
	• Performance based e-coaching	2
What are the advantages of e-coaching?	• Enhanced learning flexibility	4
	• Greater Training Pool	3
	• Social Justice	2
	• Scalability and Regularity	1
	• Support for Telecommuters	3
What are the challenges of e-coaching?	E-coaching challenges	5
	Establishing trust	4
	Interacting successfully from a distance	5

We have learned the following two pivotal points regarding e-coaching from undertaking this review:

- Distant person-to-person communication is the fundamental feature of e-coaching, with little or no direct communication i.e. face-to-face training. The aim of e-coaching and conformist face-to-face training is to offer effective individual direction to influence a change behaviour, positively resulting in the student attaining their learning goals. Training helps students enhance their understanding, abilities and proficiencies, and will enable them to implement these capacities in their daily life.

- One of the most popular and suitable methods of e-coaching training is based on the following key six steps:

  1) Clarify the preferred outcome.

  2) Determine the particular goals.

  3) Enhance motivation by recognizing abilities and building confidence.

  4) Identify the available tools and frame particular action plans.

  5) Supervise and examine progress until the goals are accomplished.

  6) Regulate the action plans according to the feedback.

These steps can only be achieved through the implementation and testing of new e-coaching tools and techniques. However, further research is required on the design and development of an e-coaching framework, as e-coaching tools and techniques vary from institute to institute and region to region.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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