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Eda Deligöz

Self-presentation in metaverse environments from a psychological perspective

Eda Deligöz[1]

[1]Corresponding author, Üsküdar University, İstanbul, Türkiye, Email: edadeligoz93@gmail.com, ORCID: https://orcid.org/0000-0001-7037-5527

Article Info	Abstract
Review Article Received: 31 May 2024 Revised: 17 August 2024 Accepted: 5 September 2024 **Keywords:** Metaverse, Self, Self-presentation, Psychology, Sociology	This research aimed to investigate the psychology-related factors of self-presentation in Metaverse environments using the keywords "Metaverse," "self," "self-presentation," and "psychology." The universe of the research is the research on Metaverse and self-presentation in Turkey and the world between 1902 and 2023 in YÖK National Thesis Center, Google Scholar, ProQuest, ResearchGate databases with the keywords "Metaverse," "self," "self-presentation," "psychology." 39 articles, books, and dissertation materials were selected as the research sample. In the research, a general research trend was revealed by examining the data of the information contained in the articles, books, master's and doctoral theses written about the concepts of "Metaverse" and "self" in the world and in Turkey as a result of the research, it is assumed that self-presentation in the Metaverse will occur through luxury consumption, new technologies such as avatars and NFT, and with the influence of digital consumer culture.

1. Introduction

Metaverse, the future of the Internet, is still very new, and its conceptual framework and its relationship with self-presentation have yet to be fully drawn. The word "Metaverse" in Turkish means "beyond the universe" by combining the words meta "beyond" and verse "universe." Metaverse is associated with social psychology and interpersonal communication, so it can be predicted that it will open a new field in individuals' self-presentation (Nazlı et al., 2022). New technologies such as Web 3.0, augmented, virtual, and mixed reality, NFT, and new products of global brands that are necessary for the construction of the Metaverse and the presentation of the self are mentioned in terms of consumer culture. In the Metaverse, where interpersonal communication processes and all kinds of relationships will be perceived as if they were experienced in the physical world, users will present themselves with showcase performances to feel valuable, be recognized, belong, and experience all kinds of emotions. For this, they will express their status, socioeconomic class, etc., through NFTs. It can be said that they will construct their identities and images.

Metaverse can be expressed as a permanent and three-dimensional virtual world, which many people in the computer industry believe is the next stage of the Internet, where people live life in a way they cannot experience in the physical world and communicate with other digital twins, avatars, in a shared space (Baltacı, 2023). Virtual Reality (VR) and Augmented Reality (AR) are two technological terms essential for developing the Metaverse concept. VR can be expressed as a simulated 3D environment that allows users to interact with the virtual environment in a way that approximates the reality perceived by their senses. With the advancement of AR and extended reality technologies, it can be predicted that the Metaverse environment will have a faster and more positive course (Nalbant & Uyanık, 2021). According to the research that examines a socialization process in which users create their status, socio-economic classes, identities, and images through their avatars in the Metaverse, it has been shown that the Metaverse provides an experience that is close to the perception of reality in the physical world, enabling individuals to transition more quickly to identity, role, and socialization (Türk et al., 2022).

These high-fidelity devices, such as gloves, vests, and form-fitting tracksuits, allow users to interact more realistically in the virtual environment. The process works by adding digital layers to the real world through a lens. Meanwhile, users can interact with real-world environments. When the Metaverse, seen as the future of the Internet, is evaluated in terms of users' self-presentation, the ideal self is generally shaped in the direction that individuals want to be in real life (Türk et al., 2022). Technological devices such as VR, AR goggles, and lenses that provide access to the Metaverse are developing rapidly. At the same time, adequate bandwidth and interoperability standards, other critical components of the Metaverse, will likely take years to improve. It can be interpreted that the presence of essential industries in the Metaverse, such as virtual gaming, entertainment, education, marketing, and business, may increase the use of e-commerce.

Today, some companies use the term "Metaverse" to describe many advanced online environments. More than one three-dimensional technology is believed to be used together without a blockchain-based center. Interaction between virtual universes, data transfer, state integration, and user interfaces will be designed according to the most appropriate conditions for the Metaverse. The different temporal distances of virtual environments in the context of the Metaverse, the simulated self, and the authentic self of the participants. According to the research on the interaction between the selves, as the distance between the virtual world and the self in the virtual world increases, the attention span of the participants decreases, the simultaneous self-presentations of individuals in the Metaverse are related to their selves, and the differences are minimal in the context of the sustainability of the existence of individuals in the Metaverse (Jeon, 2022).

Social media, which has entered our lives with the development of Web 2.0 technologies, has significantly changed the structure of individuals' socialization and interpersonal communication with its constantly evolving structure and advantageous features. The content forms and interactive functions offered by social media platforms play an essential role in shaping users' behavior, helping them to express themselves, reconstruct themselves, and build their self-presentation. Thus, the development of systems, devices, and the Internet infrastructure with the new possibilities offered by technology are also transforming new social-digital communication environments. Networked virtual worlds are characterized by the ability of individuals in these environments to express themselves to other users in a virtual way with digital characters called avatars (Özkök-Şişman & Bilgici, 2023).

The self is a product of perception, shaped by the individual's mental processes, the data received from the outside world, and the material and spiritual characteristics that the individual possesses. The more an individual perceives with his/her sense organs, the more he/she will experience a perception closer to physical reality and will experience his/her self-presentation depending on this reality. Today, interpersonal communication processes and types, which have evolved from face-to-face communication to computer-based social media and to the Metaverse through virtual reality, have changed individuals' self-presentation. The new hybrid platform, which creates a third-dimensional feeling with depth perception and activates multiple sensory organs, creates a consumption for self-presentation, just like face-to-face communication, because it gives people a sense of physical reality. The Metaverse is where the physical and digital worlds coexist, where people can meet together and socialize, play games, do business, shop, and try on clothes, in other words, continue their daily routine life events through their avatar(s), who will be their digital representatives, independent of the concept of space-time. These are the new digital lives they can create.

The Metaverse will emerge; who will control it, what it will contain, and how much impact it will have on life is still debatable due to unknowns and a non-existent infrastructure system in the background. While the Metaverse is expected to have interesting aspects that will improve the daily lives of billions of people worldwide and provide good functionality, the situations in which it will have negative aspects should be considered and addressed. In general, this part of the study will explain what the concept of the Metaverse is, how emerging new technologies are transforming communication technologies, how the Metaverse is transforming the perception of reality, how self-representation works, and what changes are coming to the fore in the context of consumer culture.

In the following parts of this study, the relationship between self-presentation in Metaverse environments, especially from a psychological point of view, will be presented to the reader as a literature review. The information in the literature will be conveyed to the reader as definitions of self and self-presentation and explanations about the Metaverse will be made.

2. Self and self-presentation in the context of its relationship with the Metaverse

The self-concept, which was first conceptualized by William James (1963), represents the emotional, cognitive, and physical characteristics of individuals; it refers to the attitudes they acquire toward other individuals in social

life (Özkök- Şişman & Bilgici, 2023). While the self is the perspective the individual forms by interpreting his experiences, stimuli, and feedback, it is also mentioned as a systematic structure used to understand other people's feelings, thoughts, and behaviors (Serpil & Karaca, 2023).

As social beings, individuals can present themselves to others in the society in which they live, establish relationships, maintain communication, and so on. They strive to create a good impression of themselves in their voluntary actions. While "self" and subsequent "self-presentation" are essential concepts often discussed under social sciences, today, we see that they are discussed from a multidisciplinary perspective in articles based on current literature. Metaverse and self-presentation are explained through the relationship between semantic web concepts, virtual and AR, mixed reality and NFT, and consumer culture. Metaverse, considered the future of social media and mobile communication technologies, stands out with its NFT and virtual/AR technologies especially It is a concept that gains importance with the emergence of a new market for luxury brands (Türk et al., 2022).

Self-presentation can be expressed as the process of controlling how one is perceived by others (Araz, 1998). The concept of "self-presentation" can be mentioned in social sciences and today in multidisciplinary fields as the interpretation of the individual's emphasis on how others perceive him. The methods that individuals use to attract the attention of others outside themselves, to be liked, and especially to make a positive impression are included in self-presentation. As a result of the communication we have established with others while in society, we act with the desire to impress others and feel the need to control the impressions we give others (Deligöz, 2019). It can be interpreted that today's communication through electronic devices has moved away from the perception of reality. In self-presentation in digital environments, individuals reflect themselves to the other party through VR and feel free to present their dream (ideal) self, leaving aside the tensions and precautions they may experience in face-to-face communication. It can be said that concepts such as body, sense of identity, self-esteem, rational thinking, self-image, self-awareness, and recognition can be integrated into the self (Balıkçıoğlu, 2016). It can be said that when communicating with others in real social life, the cues we give from ourselves are necessary to be consistent with ourselves for a healthy and accurate self-presentation. The purpose of the process of self-development is expressed as feeling the self as having continuity and sameness and living by it (Taylor et al., 2012). "In other words, the self is seen as the twin of society in a sense that is significantly influenced by what others think about the person" (Cooley, 1902; Balıkçıoğlu, 2016).

In psychology, the "self" is the question of "what." It can be interpreted as descriptions in which he expresses himself and consciously defines his essence. The distinction between our relationships with people outside ourselves and when alone can clarify the self-concept (Deligöz, 2020). In the Metaverse environment where luxury brands exist, users are influenced by brand fanaticism, consumer culture, and fashion trends. They are willing to pay thousands of dollars for NFTs to construct their ideal self by having this luxury in such a universe (Türk et al., 2022). Metaverse environments in which the perfect self is used as a shared image lead to the conclusion that they may increase the risk of addiction among users.

Self can be expressed in "real self" and "ideal self." The real self is the self in which we currently exist and participate; the ideal self can be referred to as the self in our ideals, the self we feel the need to exist in, and the self we want to be. The difference between the real and ideal selves can cause changes in emotions, thoughts, and behaviors during self-presentation. The ideal self is formed by thoughts about what a person wants to be and what others want that person to be (Gülaçtı & Özen, 2010).

In self-development, the interaction of the physical and social environment and some associated emotions and values may be important for the individual in self-presentation and development. It has been stated that the self, which expresses the individual's state of conscious awareness about himself and is generally used instead of personality, is related to the individual's level of awareness, and the level of development of this process directs the concept of self (Bekiroğlu-Akçay & Hülür, 2016).

Individuals who use social media and digital environments tend to shape and share the rituals they perform during the day in VR as they wish. While his real self is a profile with an angry, grumpy, tense, unhappy mood, he can present his ideal self to social media users with a very affectionate, happy, friendly profile under virtual images. Many social media and digital users tend to share actions they cannot do in real life or ideal self-images they cannot have in VR and present themselves to others. The social self guides the socialized individual's behavior and reflects others' influence on the individual's consciousness (Çoştu, 2009). The social self can be associated with the virtual self (avatar) carried by individuals in digital network societies, the selves that users create in electronic environments, shaped by the filters offered by the Internet while wandering in the formal, imaginary world of the Internet, have become reconstructable.

Feedback and specific experiences gained through socialization and interaction with individuals in society provide essential resources for self-development. Socialization forms the essence of our early experiences, and the regularity of these experiences creates critical aspects of the self-concept (Taylor et al., 2012). It is important to remember that humans are accepted as social beings, that everyone is unique, that their self cannot exist without society, that the experiences they have throughout their lives shape the self, that they cannot continue their lives without rejecting the perceptions, opinions, and predictions of others with whom they communicate, and that all of these may be important in the presentation of the self. The concept of self, which is intertwined, has a complex structure in which many factors interact. While the self is a social phenomenon that develops through symbolic interaction and language, symbols that allow individuals to see themselves from the perspective of others are an essential tool for intertwining personality and society (Çoştu, 2009). Symbols and images in digital environments have a significant impact on the self-presentation and image development of individuals. In the literature, self-concept can be interpreted as the totality of a person's good or wrong beliefs about themselves. Our beliefs about our identity can be called self-concept (Taylor et al., 2012).

With high self-esteem, depending on their characteristics, they know what they can and cannot do, have positive beliefs and schemas about themselves, and set goals they can achieve to be at peace with themselves. They can engage in self-constructive activities in digital environments and protect themselves from negative thoughts about themselves. People with low self-esteem may have unclear perceptions of themselves, develop thoughts that often include negative comments about themselves, set unrealistic goals or avoid setting goals altogether, have a pessimistic outlook, develop adverse reactions to criticism, and tend to cope poorly with stress. These individuals may tend to create negative behaviors in digital environments and may be far from healthy Internet use.

The self develops throughout life; it is not something we are born with; on the contrary, it emerges through the individual's social experience and activity process and evolves over time and through their relationships with other individuals (Beeghley et al., 2013). In social life, when we present ourselves to others, we want to reflect ourselves to our environment as a whole, with the cues we give of ourselves being consistent. This attitude forms the basic building block of our relationships with others. Individuals in identity construction reshape their identities according to the information and transmissions they have learned through interactions (Çaycı & Karagülle, 2014). With advanced communication technologies, newly formed identities are formed in the virtual space on the digital world's axis and integrated into the community as image indicators. Today, it can be said that social media is one of the essential channels for individuals to express themselves, and social media users influence other individuals' perspectives of themselves (Çaycı & Karagülle, 2014). For individuals, being in the digital environment leads to mutual interaction.

When individuals are in socialization, the concept expressed as the "looking-glass self" considers the perspectives, impressions, and evaluations of others outside the individual and shapes the phenomenon described as the self. Individuals derive value from the opinions of others around them about the person. We get information from the comments, attitudes, and views of others and attribute meaning to ourselves. According to Lacan literature, the mirror stage, in which babies realize their selves when they see themselves for the first time in front of a mirror, has similar characteristics for users who present themselves through social media (Karaoğlu, 2015). The concept of the mirror, which is mentioned here in a representative way, provides digital media users with the opportunity to reach their ideal selves that they want to see and exist in a mirror in which they think they exist in front of themselves. The personal profiles of users circulating in digital environments, which they revise almost daily with new postings, can be considered mirrors. Digital virtual environments are practically indispensable in everyday life, allowing the easiest presentation of idealized selves.

Posts shared in virtual media lose their affiliation with us once they are shared, and because anyone can see them, they can easily be imposed by other users. Users of digital media who post can view their messages remotely, so the messages they share become an indicator. Users in the Metaverse will be able to reach the ideal selves they want to be in a practical and fast way, digitally. Emphasizing that language determines individuals' communication and relationships with themselves, others, and society can also be seen as establishing the self through language through social media (Karaoğlu, 2015). Since digital information technologies have entered our lives, self-presentation has been made through written communication under VR instead of real verbal communication. Digital media users make their self-presentation accessible to each other through written language through the photos, videos, status updates they share, or the comments they make on others' posts.

Today, identities resurrected in the Metaverse environment are presented through avatars that revolve around images waiting to be appreciated, loved, and admired by users. It is mentioned that people who meet electronically

and then meet face to face may sometimes be disappointed, that people in the virtual environment may reflect themselves differently than they are, and that those who try to get to know that person may idealize him/her in their minds (Tosun, 2017). Since avatars created in digital environments are idealized selves different from our everyday real selves, there is a distinction between reality and ideal. Individuals in society tend to hide attitudes that do not fit the ideal self-presentation they want to present in virtual social life. Based on this, individuals can live in the Metaverse world with completely idealized lives, but they will not have to think about the situations they do not want.

In the Metaverse, people try to embellish their ideal selves to make a better impression on others. Users who turn to selves other than their real selves present themselves to others as they wish to be in their dreams while turning the clothes and images of their avatars into indicators in the Metaverse. By using signs and symbols in our clothing that say something about who we are in our appearance, we present an external appearance and image to our environment, thus satisfying the need for self-aggrandizement with a more positive and exaggerated self-perception than our actual talent, competence, and social skills (Taylor et al., 2012). The concept that E. Goffman (2016) calls dramaturgical theory is the performance variables that play a role in people's communication with each other in everyday life practices, and the interaction is examined within the framework of a theatrical metaphor. In other words, dramaturgical theory explains how individuals create an idealized self-presentation in social life (Kavut, 2018). Individuals in society take on different roles in different situations and leave impressions of these roles on each other.

Dramaturgical theory can be expressed as the construction of the self and its presentation in everyday life (Esgin, 2008). Again, according to Goffman (2016), individuals have a social, private, and professional life. They present themselves by associating their idealized selves with different roles in environments where they have status. Users in Metaverse environments, where all kinds of relationships except interpersonal communication processes are perceived as if they were experienced in the physical world, share their selves in Metaverse environments with showcase performances to feel valued, recognized, belong, and experience all kinds of emotions (Türk et al., 2022). Goffman (2016) analyzes society and the interactions of individuals within society with each other, starting from dramaturgical terms such as self, face-to-face interaction, actor, performance, routine, team, front area, back area, regulation, actor's personal horizon, appearance, and form (Goffman, 2016; Koç, 2017).

In today's virtual media, self-presentation is shared through avatars and presented in an idealized form in other users' news feeds. Like the actors in question, Metaverse users present their emotional states, beliefs, and daily actions through their avatars using words, gestures, and facial expressions, using forms of communication other than verbal expression. Users of virtual media believe that the nicknames they choose in their profiles are related to their identities. It can be interpreted that users' names and even avatars are essential parameters for creating an impression on the Internet. The difference between young people's emphasis on self-presentation and new communication environments can be listed as online identities created through created profiles, avatars, and other online content and the ability to manage one's identity, social relationships, and lifestyle (Boz, 2012). Self-presentation strategies often involve expressing personal information and transforming specific details according to the ideal self (Boz, 2012). In Metaverse environments, users can transfer many factors to the virtual environment they can express in everyday communication.

Elements of personal performance include gender, age and racial characteristics, height, appearance, posture, speech patterns, facial and body expressions, etc. During the performance, appearance refers to stimuli that provide information about the social status of the actor at that moment (Goffman, 2016). These can now be shaped in virtual environments through avatars. It can be said that, on the one hand, it is difficult to search for the self emotionally and spiritually in the automated system of this world order while living in reality, and on the other hand, existing with the ideal self in the Metaverse will force individuals to reach the point of "self-knowledge" (Serpil & Karaca, 2023). Self-identity, necessary in the Metaverse environment, emphasizes the presentation of the self through consumer products in your expression, with the ability to customize your clothing and appearance according to your unique avatar (Türk et al., 2022). Metaverse users constantly tinker with their avatars to present themselves well to others, as profile owners may experience performance anxiety.

Metaverse users become the products they buy in luxury stores to decorate and shape their avatars and are perceived as how they construct them. Routine actions in everyday life have been moved into VR thanks to the Metaverse. Users in the Metaverse enhance their avatars with the luxury products they purchase and have the opportunity to construct their ideal selves. While in the physical world, people perform in front of a stage to present themselves, in the Metaverse, they carry all the elements that enhance their presentation, namely the illusion of depth perception and the third dimension. They do not hesitate to spend large amounts of money on products they can never physically touch or wear due to the illusion of reality (Türk et al., 2022).

As the Metaverse becomes more prevalent, on the platform where the illusion of reality is at its highest, users will be more inclined to purchase luxury products to showcase their performances while socializing. According to Erving Goffman (2016), self-presentation includes all the performances that individuals present to an audience that observes and influences them, as if they are on a stage, in a place where they are with others other than themselves, and where others shape the actions and attitudes they present in that place. According to the concept of self-presentation, an individual's behaviors and attitudes, which vary according to the situation, include the decision to act under one's gender concept, the environment, and the expectations of others.

Goffman (2016) compares everyday social life to a theater stage. Accordingly, he points out that performance is exhibited during self-presentation, which varies according to the environment, and that individuals need to have the self they present to the audience approved by them. The performance exhibited may vary according to the individual's position, social role, and status. Individuals can be categorized according to their roles in society. Man, woman, father, mother, child, employee, spouse, son, boss, etc. People have more than one social role and more than one performance. Goffman gave meaning to self and self-presentation and how interaction with others in daily life, interpersonal communication environments, and face-to-face relationships can affect the individual's self. Goffman examined the processes that unfold when a person is on stage and backstage, that is, with others and alone, and found that people present themselves with selective performances to meet the expectations of other people with whom they interact (Goffman, 2016).

Self-presentation can be described as a process by which individuals reflect and shape themselves, their bodies, and others as they perceive them. In virtual social networks, unlike face-to-face communication, self-presentation allows for the simultaneous presentation of multiple selves and identities. Users can present themselves according to their ideal perceptions by creating different profiles on social media, and they can participate in another self-performance with their bodies in the physical real world. For example, if the user is a real-life student, he can present himself as a professional in social networks. In face-to-face communication, the perception and focus are mainly on the individual's performance. Since the individual's body is outside of virtual social media and there is no direct control over the audience, the individual may have other concerns while presenting him/herself. In the Metaverse, thanks to developing technologies and AR, the change in depth perception creates an artificial reality. People are involved in almost realistic experiences due to the illusion of reality.

> *"Mead refers to the self-image that a person produces as a result of his or her behavior in a given situation as the 'social self.' In fact, the 'social self' represents the attitudes of others and society in general, as these influence the interpretation of the behavior displayed by the individual" (Beeghley et al., 2013: 492).*

According to this social self-concept, Metaverse users generally equip their profiles with idealized avatars. Symbolic interactionism states that the formation of self and society is based on social interaction (Çoştu, 2009). The individual and the society are constantly influencing each other. Symbolic interactionists investigate what causes people's behavior and examine and analyze individuals' actions to get to know themselves and others outside themselves. The concept explores the interaction established with the symbols it contains and can interpret the actions of others based on the meanings derived from them. According to the essential conceptual acceptance of the symbolic interactionism view, identity and culture are built on social interaction (Boz, 2012; Oksman & Turtiainen, 2004). In the virtual world of the Metaverse, individual-society interaction can be achieved through avatars, and a virtual profile can be created that corresponds to the individual's true identity in the culture in which he or she lives. In the world of avatars (Metaverse), people can choose the self they want to show (the ideal self), not the real self, and since these selves are not recognized, this can cause crime rates to increase in the virtual environment (Göçen, 2022). Through self-perception, the individual aims to be accepted by reflecting the self he or she wants to be to others with the "mirror self" (Cooley, 1902; Türk et al., 2022).

Perception can be expressed as physical, neurological, and cognitive processes that enable a person to perceive, recognize, understand, and interpret stimuli from the external world and internal experiences through sensory organs. Each shapes his values, beliefs, desires, and needs with the new perceptions he gains from the outside world; in the process, he changes his self-perception depending on the new stimuli he acquires and uses them in his self-representation. We connect to the outside world through our senses and our body. The body is the area that can be observed and paid attention to in its most concrete form as individuals present themselves. The body is the center of the self and plays a major role in shaping the reality perception. While mental processes occur through the body, there is a transition from physical experiences and perceptions to experiences and perceptions of the outside world's reality.

The individual is mentally integrated with the body, image, and experiences he or she has had throughout his or her life and has a single, complete body-self sensation both physically and psychologically (Türk et al., 2022). A person's perspective on his or her image is also essential in self-presentation. His positive or negative perception will also affect the direction of his communication with his environment. The recent increase in interest in plastic surgery due to the influence of social media is due to the shaping of body perception between fashion trends and self-presentation (Türk et al., 2022). It can be interpreted that the virtual world triggers individuals' desire to shape their images that reflect their external appearance to create their ideal self. According to a study examining how self-presentation and personal image creation in the Metaverse affect user behavior in social media use, the Metaverse increases social anxiety in young participants. It causes young participants to view the virtual world as more important than the physical world (Wang et al., 2022).

In the Metaverse, users who want to be A+ digitally construct themselves through luxury products to achieve their ideal selves and create an image for others with their mirror selves. It can be said that users buy famous brands for their avatars that they cannot wear in the physical world and products that serve their ideal self-presentation in the Metaverse. Self-presentation, or the external reflection of the image that a person has created for the individual he or she is or wants to be, has become the field of experience of the created self as well as the real self, starting with social networks and evolving into the Metaverse (Ertürk & Eray, 2016). In the Metaverse, users can shop for the ideal selves they dream of and want to be with digital clothing and can give themselves new meanings. Metaverse technology, which can transfer the self-presentation, lifestyle, and communication of Internet users to the digital space as they are, is trying to prevent the Web 3.0 Internet evolution that is at its core.

The Metaverse ecosystem comprises avatars, a virtual economy, content, trust and accountability, security, privacy, and social acceptance (Damar, 2021). Metaverse environments are experiential three-dimensional virtual worlds where users can socialize and stay connected in real-time to create a user-owned Internet economy that permanently integrates the digital and physical worlds. The continuity of physical and VR can be expressed as mixed reality. Studies in the literature show that users are happier thanks to their avatars, which reflect their desired selves and are in line with their ideal self-frames. LGBT, disabled, ethnic, female, disadvantaged, and those with physical body issues reported that the idealized avatars they created protected them from bullying on social networks and made them feel freer (Türk et al., 2022). It can be interpreted that the Metaverse plays a role in individuals' self-presentation.

Especially in the real community, where there is exclusion, marginalization, stigma, etc. For individuals who buy the labels, the virtual world becomes a dream world where they can freely realize what they want to be in the real world. Metaverse users can experience pleasure in the physical world by perceiving the products they purchase as if they were wearing them through VR glasses or lenses, thanks to tools that activate their sensory organs. Many users want their online selves to feel similar to their real-life experiences. In virtual environments, users now value and invest more in their digital identities than their physical ones. Virtual shopping environments in the Metaverse continue to offer digital meanings and promise to influence users to present themselves similarly to those in the physical world. The use of social media, especially by young users, for meeting their entertainment needs, maintaining their friendships, resting, social activities, communication, and interaction are the sources of motivation for its use, revealed under various studies (Tutgun-Ünal & Tarhan, 2022). Young people, especially those interested in colorful, virtual, and entertaining media, such as the Internet and Metaverse, may feel enthusiasm and attachment because they can reach their ideal selves through their avatars. As a virtual culture of consumption emerges, users who make discoveries may develop a daily addiction to this colorful and virtual world and pass it on to those around them, forming a new community.

Today, people spend more and more time on the Internet every day. Digital properties, friendships, social spaces, multiple access to information, etc. A new ecosystem of virtual life has emerged. In digital spaces, users socialize and begin to perform real-world actions in virtual environments, such as working in a business environment and earning new income, shopping, and discovering new products. Individuals are trying to virtualize their identities and the factors they value. In particular, they put a lot of effort into better designing and presenting the virtual self they want to be. In the Metaverse, users want to bring the selves and social environments they want to be in their real lives into the virtual world.

Interpersonal communication can be expressed as a process that transforms with new communication technologies and changes and transforms the self-presentations of people who shape their perceptions according to these technologies. Users of the Metaverse can establish close relationships with the illusion of three-dimensional reality and will not compromise on excessive spending and luxury consumption for their self-presentation. In essence, the goal of people using social networking sites is to create a profile that matches the ideal self they want to be.

To quickly achieve their perfect selves, they follow products and services closely, transforming themselves into extensions of luxury brands that make them feel like they belong to the classes and criteria they want to be in.

People who want to show themselves A+ pose on social networks with luxury brands with brand logos and emblems on them, take photos in luxury places and share them, and make changes in their appearance with the help of photo and video editing programs or aesthetic interventions are an effort to reach the ideal self (Türk, 2022). Unfortunately, it can be said that luxury brands become a part of the individual's identity and self after a while. People's consumption styles have changed with self-presentation in the transition from face-to-face communication to virtual social networks. With the proliferation of virtual communication, the private sphere of individuals has moved into the public sphere. Thus, consumption fashions in virtual media develop and spread to transform the self whose image is constructed into a more extravagant one.

Desirable selves such as the beloved, beautiful woman, the charismatic, handsome man, the perfectly brilliant mother, the powerful, wealthy father, and the famous circle of friends can be presented in social media channels through social networks and consumer products. Everyone competes to be in the best shape and wants to show others they exist with the best products. The user who comes from a family with an average socio-economic level in society has reached a position where he emulates famous, rich celebrities with luxurious lives while living an ordinary life, and he discovers that he can be like celebrities thanks to social networks and tries to embellish his ideal self with luxury brands. The purchasing behavior of individuals in everyday life, influenced by social conditions and the influence of consumer culture, shapes the performance of individuals for their self-presentation. Based on this, Metaverse has contributed to the digital consumer culture by creating a new market opportunity for virtual reality. As media reach everywhere, it can be said that the radical change in the concept and perception of reality has emptied reality in the cultural industry, and an artificial environment is marketed as real by intertwining reality and simulation (Türk et al., 2022).

Metaverse on user identity presentation critically examines the Metaverse's promise of facilitating social life, which came to the fore with the Meta Corporation, in the context of the life form that the Metaverse offers parallel to physical life (Saker & Frith, 2022). The physical life we live in the future will be reconstructed in the Metaverse. Users who participate in this world will have the same experiences as they do in the physical world, carry the interpersonal communication they establish here into the Metaverse, and structure their self-presentations there. In the Metaverse, this will happen through luxury consumption, new technologies such as avatars and NFT, and the influence of digital consumer culture. For example, user-designed avatars can be used in social media and Metaverse environments. Metaverse users shop for the avatars they create and feel the need to create a virtual self in their relationships with friends, family, and social circles to present themselves in the best light and to be perfect and unique. Low self-awareness is expressed as users experiencing a minimal sense of self in 2D environments (Göçen, 2022). The desire to achieve the ideal perfect body forces today's individuals to make significant expenditures for the ideal self (Türk & Bayrakçı, 2019).

With Web 3.0, a personalized virtual world using artificial intelligence technologies has emerged today. The concept of Metaverse, which was first used in the world of digital video games, will play a significant role in the future of the Internet with the investments of Meta companies in this field. Today, the concept of Metaverse has become a term used to express the new version of the Internet. It offers users a three-dimensional virtual world with its avatars. Metaverse, which provides the opportunity to participate worldwide, uses social media and e-commerce, social environment, education, communication, digital video games, culture, art, sports, and health. It can be said that this is an essential development in terms of directing and perhaps addicting users to buy luxury branded products for their avatars.

Today, in the hyper-reality created by simulacra, it can be said that users in virtual environments have become incapable of thinking due to the illusion of reality in the human mind, and they experience their experiences through intermediaries, making their choices feel real but far from reality. Today, we see that the real universe has been replaced by VR and real human experiences can be experienced through copies. Metaverse users mimic the realities of the physical world with replicas of their bodies. Today, consumer culture stores a message in the minds of people trying to prove themselves with the products they consume in a language that commands people to consume constantly, and fashion trends and products are in collaboration with luxury brands that sell meanings that complete the self-presentation with a perfect profile. This consumer culture has constantly made it obligatory to buy and show things to others through virtual contexts. The message is clear: with fine-tuning, you too can be better, more (Niedzviecki, 2011).

3. Methodology

This study has complied with the Research Publication Ethics stated in "Wager E & Kleinert S (2011) Responsible research publication: international standards for authors. A position statement developed at the 2nd World Conference on Research Integrity, Singapore, July 22-24, 2010. Chapter 50 in Mayer T & Steneck N (eds) Promoting Research Integrity in a Global Environment. Imperial College Press / World Scientific Publishing, Singapore". Since this is a Review Study, Ethics Committee Approval is not required. All responsibility belongs to the author.

This research aimed to investigate the psychology-related factors of self-presentation in Metaverse environments using the keywords "Metaverse," "self," "self-presentation," and "psychology." Studies in Turkish and international literature databases are discussed from the perspective of psychology. The universe of research is the research on Metaverse and self-presentation in Turkey and the world between 1902 and 2023 in YÖK National Thesis Center, Google Scholar, ProQuest, ResearchGate databases with the keywords "Metaverse," "self," "self-presentation," "psychology." It was found by searching. The search yielded 45 articles, books, and master's and doctoral theses. Thirty-nine selected articles, books, and dissertations were used as the research sample. In the research, a general research trend was revealed by examining the data of the information contained in the articles, books, master's and doctoral theses written about the concepts of "Metaverse" and "self" in the world and in Turkey. The literature studied was explained, reinterpreted, and presented to the reader.

A literature review provides information on the subject of interest, a theoretical basis for research, and insight into the results of similar studies (Büyüköztürk, 2015). It starts by defining the research problem and determining the information and research results related to the subject and subtopics discussed in the research. After the research, the literature review is expanded again to discuss the results obtained (Eustace, 2003).

4. Result

The Metaverse ecosystem, which will treat the physical and virtual worlds together and allow individuals to exist in a three-dimensional virtual world with their avatars, will become increasingly important. The Metaverse will cause a significant break in the future of the Internet and social media world. With the Covid-19 pandemic, the interest in digitalization has increased, technological possibilities have been tried to be developed, and there has been an increasing demand for development. In recent years, especially after the Covid-19 pandemic, it has been understood that a large part of our identity is formed in the socio-digital world, and with virtuality increasing day by day, a complete break from it cannot be achieved (Serpil & Karaca, 2023). In today's age, our digital identity has become almost more important than our physical one. Especially with the Covid-19 pandemic, people spend more time online, and 70% of people have moved their work to the digital world. For this reason, 88% of users believe that their online selves should reflect their real-life effects instead of using fictitious digital nicknames (Türk & Darı, 2022).

In the Metaverse environment, users continue performing routinized behaviors in a digital world through avatars representing themselves. In this context, commerce, consumption, shopping, culture, communication, etc., occur just as in the physical world. VR also makes basic human elements available in the Metaverse ecosystem. In this environment, users present themselves through the personal avatars they create. The consumer self is a result of using these technologies, and a new self-project distributed in time and space becomes visible (Tutgun-Ünal & Tarhan, 2021). Meta-avatars can experience luxury brands' clothes in the store. It can be said that these innovations offered by users who have digital products with avatars aim to help them better express themselves and connect with others through their ideal selves. Through Meta-avatars with stores, individuals can easily access all kinds of opportunities in the Metaverse that are difficult to purchase in everyday life. It can be said that the digital products that individuals will purchase for their avatars will exist thanks to tools that allow them to reflect themselves better (ideal self) and be "unique." Meta Avatars Store aims to reveal the prominent elements in promotional activities aimed at convincing users to buy digital products so that their avatars can better reflect themselves and make a good self-presentation (Özkök-Şişman & Bilgici, 2023).

The Metaverse contains a large field of view where we cannot limit our thoughts like a game universe and contains a virtual world beyond universes that can contain all universes. So much so that individuals in this digital universe will continue their lives in the universe with easily wearable technologies such as VR goggles and lenses. Metaverse is a very new technology that is still in the development stage. Metaverse, an example of the pinnacle of today's technology world, can be interpreted as the future of social media, mobile Internet, and digital devices.

Today, how individuals present themselves in real life is being transformed by personal avatars created in virtual environments. While human beings are living beings who know how to think and question and who can

exist with their soul and emotions, they have now forgotten how to think and feel by turning themselves into objects with technology for the convenience of technology (Serpil & Karaca, 2023). Digitized virtual universes can reshape the concept of beauty, idealized selves, life dynamics, and social acceptance norms widely discussed in popular culture from the past to the present through the digital representations of users called avatars. Individuals in the virtual universe design an artificial and unreal world where they can have the ideal appearance they desire and manage their talents, hobbies, professional standards, physical characteristics, and personal lives as they wish. Individuals with anonymous identities may feel more accessible in virtual space than in everyday life. It is suggested that individuals are motivated by the desire to reflect their realities and ideals in their world due to their narcissistic tendencies and to liberate their bodies (Özkök-Şişman & Bilgici, 2023).

As users shape themselves into their ideal selves in the Metaverse environment, the desire to be perfect can also increase narcissistic tendencies in individuals. When they return to their real selves and leave the Metaverse environment, they may experience disappointment, depression, anxiety, and a desire to live constantly in the Internet environment, that is, in the ideal self-role in the Metaverse. Avatars, expressed as virtual characters that represent the individual in the virtual world, are considered a reflection of the user's body, thoughts, and existence in the physical world and can be interpreted as essential self-presentation tools (Özkök-Şişman & Bilgici, 2023).

The Metaverse can be interpreted as a world beyond our real world or universe. In the Metaverse, individuals have assets in the same real world; virtual property can be used, bought, or sold through avatars and services. Users in the Metaverse want their virtual existence to reflect their real self or the ideal self they want to be in the virtual world, and thanks to the Metaverse, users here experience a universe in the virtual world where they will have a real-life (Büyükbaykal-Ilgaz & Sönmezer, 2022; Türk et al., 2022). Metaverse and social media, self-presentation, social media, luxury brands, and Metaverse fields are described as the main topics (Özkök-Şişman & Bilgici, 2023). Metaverse can be described as a virtual world that provides a three-dimensional environment where billions of people live in the comfort of their own homes in the physical world, work in workplaces, shop in shopping malls, learn in their social circles, and interact with each other. It can be said that users will have one unique experience after another by getting their digital copies or avatars, identities, and money.

The concept of the Internet can express it as an extensive network consisting of billions of computers, millions of servers, and other electronic devices and equipment. When users are online, they can communicate with each other, view Web sites, and interact through the Internet. The Metaverse phenomenon is also based on the Internet. The Internet can be described as something that people surf and browse, but to a certain extent and time, life can be created and experienced in the Metaverse. The universal and global growth of the Internet brings many services to the fore, which pave the way for building the Metaverse. According to research that examines what information users present about themselves in the Metaverse, how they do so, their opinions in this context, and the factors that influence this situation, the self-presentation of Metaverse users as individuals may vary with the complex interactions of different contextual factors such as privacy and anonymity in the virtual environment. In this context, user concerns must be addressed now and in the future, and secure areas for privacy should be created in the design of the Metaverse (Sykownik et al., 2022).

In the Metaverse environment, users establishing partnerships with game companies and the sale of player avatars through the design of NFTs contribute to users building their individual and social identities against other users and presenting their ideal selves (Türk & Darı, 2022). By introducing new technological advantages and creating immersive and fascinating virtual worlds, the online gaming industry can make users addicted to these devices. Metaverse, based on the virtual applications that companies implemented to support remote work during the pandemic, has started to be tested in workplaces and is being widely used in companies and schools after the pandemic (Baltacı, 2023).

A study on self-presentation and Metaverse in the literature reveals the place of avatars in the future of the Metaverse and the role that luxury brands can play in presenting the self online, showing that having digital products for avatars, users' expression of self in the meta-brand discourse and the relationship between self-expression (Özkök-Şişman & Bilgici, 2023). Meta-avatars: This study investigates the relationship between avatars, self-presentation, and luxury brands. It can be said that it aims to examine it through the example of the store. Digital twins and examples of collaborative work can also be mentioned as other applications. The concept of digital twins is not only a trendy concept on social media and computer monitors. Still, it also makes a name for itself through artificial intelligence-based holograms. For example, a conference room, commercial presentation areas, art galleries, homes or properties, and various virtual environments can be rented or purchased.

5. Discussion

Users who exist with their ideal selves enjoy the Metaverse environment. Still, when they return to their real lives, they may not be satisfied with their identities and may even feel alienated. The avatars in the Metaverse have become essential to an individual's identity over time. This universe continues to exist in Metaverse environments with games and player avatars. Social networks are prepared for all users to have an AR experience, and users here meet and make friends with other users in AR games with secondary socialization, socializing, and then interacting with their idealized selves. They participate in this process (Türk & Darı, 2022). In these virtual environments, users may become too attached to their idealized selves and essentially experience alienation from their selves. These users, who are satisfied with their idealized selves in their Metaverse environments, will likely want to return to their idealized selves in the virtual environment when they return to their real lives.

New technologies such as Web 3, AR and Mixed Reality, NFT, and new products of global brands necessary for the construction of the Metaverse and how self-presentation takes place are mentioned in terms of consumer culture. In the Metaverse, where interpersonal communication processes and relationships are perceived as being experienced in the physical world, users will present themselves with showcase performances to feel valuable, be recognized, belong, and experience all kinds of emotions. For this, they will express their status, socio-economic class, etc., through NFTs. It was mentioned that they would construct their identities and images. The physical life we live in the future will be reconstructed in the Metaverse. Users who participate in this world will have experiences as they do in the physical world, carry their interpersonal communication into the Metaverse, and structure their self-representations there. VR and AR are two technological terms that are important for developing the Metaverse concept. The self-concept, on the other hand, is a perceptual product shaped by the individual's mental processes and the data received from the outside world, as well as the material and spiritual characteristics of the individual. Today, interpersonal communication processes and modes, which have evolved from face-to-face communication to computer-based social media and into the Metaverse through virtual reality, have changed the self-representation of individuals.

For future studies, the transformation of the concepts in this study into the literature, such as a research article on the relationship between self, self-presentation, and Metaverse, may make a significant contribution.

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Author contribution statements

The author carried out the research design and implementation, analysis, and writing of the article himself without using AI applications.

Disclosure statement

The author reported no potential competing interest.

Ethical committee approval

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Research article/Araştırma makalesi

Exploring mental health through the eyes of physiotherapy students: Revealing
knowledge and attitudes towards mental health roles

Ashutosh Singh, Anand Mohan Jha, Deepesh Sharma

Exploring mental health through the eyes of physiotherapy students: Revealing knowledge and attitudes towards mental health roles

Ashutosh Singh[1], Anand Mohan Jha[2] and Deepesh Sharma[3]

[1]Corresponding author, School of Physiotherapy, University of Engineering and Management, Jaipur, Rajasthan, India, Email: drashutoshsinghpt@gmail.com, ORCID: https://orcid.org/0000-0002-5375-7870
[2]Department of Physiotherapy, Vivekanand Global University, Jaipur, Rajasthan, India, ORCID: https://orcid.org/0009-0009-8221-0450
[3]Department of Physiotherapy, Sharda University, Greater Noida, Uttar Pradesh, India, ORCID: https://orcid.org/0000-0001-9251-5922

Article Info	Abstract
Research Article *Received: 9 July 2024* *Revised: 14 September 2024* *Accepted: 17 September 2024* **Keywords:** *Mental health knowledge schedule,* *Mental illness clinicians' attitudes,* *Mental illness stigma,* *Physiotherapy students*	*The social stigma associated with mental illness leads to a reluctance to seek help and can negatively impact the therapeutic connections between individuals with mental illness and healthcare practitioners. With the rising prevalence of mental health illness, physiotherapy students will encounter a growing number of these patients during their undergraduate education. A cross-sectional online survey was done on undergraduate physiotherapy students using the Mental Health Knowledge Schedule and Mental Illness Clinicians' Attitudes scores. All participants demonstrated moderate knowledge and a favorable attitude toward mental health. Final-year students had more awareness and a better attitude towards mental health than the other students. Physiotherapy undergraduates with clinical experience tend to see psychiatry and individuals with mental illness more positively.*

1. Introduction

Mental health disorders impact approximately 1 in 5 people (Kessler et al., 2007). They are the main contributor to the worldwide burden of diseases, with the majority population between the ages of 10 and 29 (Whiteford et al., 2013). According to the World Health Organization's Mental Health Action Plan, by 2020, care coverage for severe mental diseases must increase by at least 20% (Saxena & Setoya, 2014). The attainment of this target depends critically on reducing the treatment gap in China and India, the two most populous nations in the world (Patel et al., 2016). In India, the current prevalence of mental morbidity in adults is 10.56%; at any given time, one in ten persons is reported to have one or more mental morbidities (Gautham et al., 2020).

Individuals who have severe mental illness have higher rates of morbidity and mortality, and their life expectancy can be shortened by up to 20 years compared to the general population (Arnoldy et al., 2014). Individuals who suffer from severe mental health disorders typically have poorer physical health than those who do not (Galletly et al., 2012; Richardson et al., 2005). Suitable primary care for these comorbidities must be provided for these individuals (Griswold et al., 2008). There is a lack of physical activity among those with mental illness despite research demonstrating the advantages of physical activity and its application in the management and treatment of this population (Bredin et al., 2013; Vancampfort et al., 2012). Physiotherapists play an essential role in managing individuals with mental illnesses to control their physical health comorbidities (Heywood et al., 2022). Physical health comorbidities related to the musculoskeletal, cardiorespiratory, and neurological systems for which physical therapy is either the preferred treatment method or a crucial part of care (Connaughton & Gibson, 2016). People with mental illnesses can achieve a higher quality of life with physiotherapy (Torales et al., 2017). This is accomplished in two primary ways: by enhancing the patient's physical well-being and by reducing the patient's psychological impairment (Pope, 2009). As a part of the multidisciplinary healthcare team, physiotherapists are crucial

in educating patients about mental health issues and making appropriate referrals for additional specialized care (Andrew et al., 2019). Even after it was proposed globally that primary mental healthcare should include physical therapy interventions, physiotherapists' role remains underutilized (Lee et al., 2017). The World Confederation for Physical Therapy (WCPT) has recognized the value of achieving individuals' and communities' physical, social, emotional, and spiritual needs in professional practice. It has also formed the International Organization of Physical Therapy in Mental Health as a working group within the WCPT ("Standards of Physiotherapy Practice," 1994).

Physiotherapy programs equip graduates with the information and abilities to diagnose and manage musculoskeletal issues, a vast spectrum of neurological disorders, pain, acute and chronic cardiorespiratory problems, and other preventable diseases. Students are also trained to identify and discern potential bio-psychosocial variables that could impact treatment (Daluiso-King & Hebron, 2022). Physiotherapy programs in India have no uniform curriculum and limited interest in mental health and psychiatry. So, insufficiently trained graduates might, therefore, rely on their own experiences, preconceptions, and prejudices to direct interactions and support patients with mental health comorbidities. In contrast to physical ailments, mental disorders are frequently more stigmatized, according to research. (Corrigan et al., 2001). Recovery of patients may be hampered by physiotherapists' stigma and negative attitudes concerning mental illness (Probst & Peuskens, 2010). Therefore, physiotherapists must have the knowledge and an optimistic attitude to handle these patients confidently (Vancampfort et al., 2018).

More than half of the physicians and medical students surveyed believed that individuals suffering from drug and alcohol addiction and schizophrenia were unpredictable and dangerous (Knaak et al., 2017). According to another study, pregnant distressed women were stigmatized by healthcare workers, who felt uncomfortable around antenatal depressed women (Gawley et al., 2011). Research on physiotherapy students' attitudes toward psychiatry conducted in Belgium, South Africa, and Australia revealed scores deemed to be moderately positive when assessed (Connaughton & Gibson, 2016; Gunduza et al., 2023; Probst & Peuskens, 2010). Physiotherapists in the United Kingdom have voiced concerns about the lack of training and expertise in mental health specializations and how it affects their ability to manage the psychosocial components of their patient's care (Hemmings & Soundy, 2020). There is currently little information available about Indian physiotherapy students' perceptions and attitudes toward psychiatry and people with mental illness. Therefore, our study aimed to ascertain the knowledge and attitudes of physiotherapy students regarding mental health.

2. Literature review

Physiotherapists, even those working in primary care, may encounter patients with complex mental health issues. Psychological co-morbidity may be present in specific somatic ailments under physiotherapy's purview, such as chronic obstructive pulmonary disease, cerebrovascular disease, or cardiovascular disease. Numerous research has uncovered several aspects of physiotherapy students' attitudes toward their mental health.

A study investigated how Flemish physiotherapy students felt about psychiatry and mental health (Probst & Peuskens, 2010). Positive attitudes toward psychiatry were moderate. There was a slight but noteworthy difference between physiotherapy and non-medical students (Cohen's d= 0.31). Compared to their male colleagues, female students exhibited a more favorable opinion toward psychiatry. More positive attitudes were linked to prior experience with mental illness. Positive attitudes rose following the completion of a psychiatry course. The knowledge and attitudes of third- and fourth-year physiotherapy students on mental health were evaluated in a cross-sectional descriptive study (Gunduza et al., 2023). Senior students showed greater knowledge and a better attitude toward mental health, whereas all students showed an acceptable level of knowledge and a favorable attitude toward mental health. A study intended to investigate the experiences and attitudes of student physiotherapists regarding treating patients with mental illness (Dandridge et al., 2014). It was discovered that students were worried about their lack of understanding of mental disease conditions and how to treat affected patients (Connaughton & Gibson, 2016). A cross-sectional investigation of Australian physiotherapy students' attitudes toward mental disease and psychiatry discovered positive opinions regarding psychiatry and mental health. Students who had finished their clinical experience had a noticeably more positive attitude, and women were much more optimistic than men.

There is a substantial knowledge gap regarding physiotherapy students in India, even though numerous studies have examined the attitudes and understanding of physiotherapy students toward mental health in nations like Belgium, South Africa, and Australia. Since mental health education is more deeply ingrained in healthcare curricula in Western and developed countries, the majority of research to date has been done in these areas. On the other hand, because Indian physiotherapy programs do not require standardized mental health education, students

may not have had much exposure to mental health-related subjects. The present study tries to fill the knowledge gap in the existing literature by exploring the mental health and attitudes of Indian physiotherapist students.

3. Methodology

This research has ethics committee approval from Vivekananda Global University, Jaipur, Rajasthan, India, with a 20/2/2024 date and 34/AHS/20/2/24 number.

3.1. Study design

Researchers employed a quantitative, descriptive, cross-sectional design with an online survey. Between March 23, 2024, and April 25, 2024, all data was collected using Google Forms. The Google form link contained an information page, consent, demographic form, Mental Health Knowledge Schedule (MAKS), and Mental Illness Clinicians Attitudes version 4 (MICA-4) scales. The Institutional Ethics Committee of Vivekanand Global University, Jaipur, Rajasthan, India, approved the study.

3.2. Participants

Students pursuing bachelor's degrees in physiotherapy were included. Convenience sampling was employed in the study. Colleges and universities offering physiotherapy degrees in Jaipur, Rajasthan, India, were contacted. Initially, the faculty members of the corresponding colleges and institutions were provided a survey link. The students were then given the survey link during class by faculty and invited to complete it during their observation. This is how the 100% response rate was achieved; only students who were eager to participate received forms.

3.3. Questionnaire

Knowledge of mental health and attitudes regarding the role of physiotherapy in influencing mental health attitudes were the study's primary outcomes. The students' attitudes were ascertained using the MICA-4, and their knowledge was evaluated using the MAKS questionnaire.

The MAKS originated in the United Kingdom (UK) to assess stigma-related mental health knowledge (Evans-Lacko et al., 2010). Items 1 through 6 of the 12-item MAKS evaluated knowledge in the following areas: (1) help-seeking, (2) recognition, (3) support, (4) employment, (5) treatment, and (6) recovery. Items 7 through 12 tested respondents' understanding of diagnosing mental health issues. On a five-point Likert scale, 1 represents complete disagreement, and 5 represents complete agreement. A higher score denotes more excellent knowledge. The total score is the sum of all the elements and ranges from 12 to 60. "3" was the code for the "Don't know" option. For MAKS, the internal consistency, "Cronbach's alpha," is 0.56. The MAKS's Kayser-Meyer-Olkin (KMO) index was 0.632. For the MAKS, the total variation explained by the factors was 31.58% (Ben Amor et al., 2023).

The MICA-4 scale, which is self-administered, evaluates attitudes toward psychiatry and individuals with mental illness (Siddiqua & Foster, 2015). It uses a six-point Likert scale—strongly agree, agree, agree to some extent, disagree to some extent, disagree, and strongly disagree for the questions. Every response is given a suitable numerical value. The responders' possible scores range from 16 to 96. The total points that the responders received form the basis of the analysis. An increased scale value indicates a higher degree of stigmatization. The attitudes that underpin MICA are centered around a few themes: students' perceptions of psychiatry and mental health; individuals with mental illness's ability to recover; individuals with mental illness danger; students' comfort levels around individuals with mental illness; students' disclosure of their personal experiences with mental health; diagnostic overshadowing; and discriminatory behavior directed towards individuals with mental illness. The scale has demonstrated strong internal consistency in prior psychometric testing, with Cronbach's alpha values of $\alpha = 0.72$ (Gabbidon et al., 2013) and $\alpha = 0.79$ (Kassam et al., 2010), as well as test-retest reliability (concordance) of 0.80 (95%CI: 0.68–0.91) (Kassam et al., 2010).

3.4. Statistical analysis

Following the proper arrangement of the collected data into an MS Excel spreadsheet, any potential errors were verified. Following error checking, the analysis was conducted using IBM SPSS Statistics for Windows, Version 27.0 (IBM Corp., Armonk, NY, USA). The demographic data was summarized using statistical tests such as means, standard deviations, frequencies, and proportions. Means and standard deviations were employed to summarize the total knowledge and attitude scores.

4. Result

A total of 288 students participated in the survey, with 163 (56.6%) males and 125 (43.4%) females. The average age of the participants was 20.01 ± 1.99. The participants had an average MICA 4 score of 43.28 ± 12.62 and an average MAKS score of 44.55 ± 4.68. Table 1 provides a comprehensive breakdown of the demographic characteristics of the participants in the study. Table 2 displays the findings of MAKS, indicating the percentage of responses from 288 participants across different statements related to mental health. 34.7% of respondents expressed a firm agreement with the statement that the majority of individuals with mental health issues aspire to have paid employment. Similarly, a majority of the participants (51.7%) expressed a high conviction in their ability to provide appropriate guidance to a friend dealing with a mental health issue, advising them to seek professional assistance.

Table 3 represents the responses of 288 participants on several statements relating to mental health attitudes and perceptions of MICA4. A considerable number (70.5%) agreed with the statement that they only learn about mental health when necessary and would not seek out further material on the topic. There was a significant degree of agreement (80.9%) that working in the mental health area is as respectable as other health and social care fields. The findings demonstrate a range of attitudes towards mental health, including a combination of stigma, acknowledgment of the significance of treatment and support, and a willingness to interact with coworkers who experience mental health difficulties. Table 4 illustrates disparities in scores between different academic year groups on measures: MICA 4 and MAKS. With more academic years, Bachelor of Physiotherapy (BPT) program graduates tend to score higher on MAKS and lower on MICA4 scales. This indicates that students in this program may have improved understanding and attitudes about mental health due to moving through the academic curriculum.

Table 1. Descriptive statistics

Variable	n	%	Mean	Standard Deviation
Gender				
Male	163	56.6	-	-
Female	125	43.4	-	-
Age	288	-	20.01	1.99
Academic level				
UG 1st Year	149	51.7	-	-
UG 2nd Year	67	23.3	-	-
UG 3rd Year	38	13.2	-	-
UG 4th Year	34	11.8	-	-
MICA 4 Score	288	-	43.28	12.62
MAKS Score	288	-	44.55	4.68

Table 2. Scores obtained from the mental health knowledge schedule questionnaire (n = 288)

	Scale no*					
	6	5	4	3	2	1
Most people with mental health problems want to have paid employment	34.7	32.6	19.1	3.8	3.1	6.7
If a friend had a mental health problem, I know what advice to give them to get professional help	51.7	31.3	7.6	2.4	2.1	4.9
Medication can be an effective treatment for people with mental health problems	42	33.4	11.5	6.3	3.1	3.7
Psychotherapy (e.g., talking therapy or counseling) can be an effective treatment for people with mental health problems	59.4	23.3	8	4.1	1.4	3.8
People with severe mental health problems can fully recover	36.8	33.3	15.6	5.6	3.1	5.6
Most people with mental health problems go to a healthcare professional to get help	36.1	28.5	14.2	12.5	2.8	5.9
Do you think each condition is a type of mental illness? Check one box only						
Depression	48.3	25.3	14.2	4.9	3.1	4.2
Stress	40.3	34	13.2	3.8	5.2	3.5
Schizophrenia	46.2	24.3	14.9	7.3	2.1	5.2
Bipolar disorder (manic depression)	42.7	28.5	18.1	2.8	2.4	5.5
Drug/ substance addiction	41.3	27.5	14.6	8.3	4.5	3.8
Grief	34.4	32	18.4	5.4	3.5	6.3

* 6-Agree strongly, 5-Agree slightly, 4-Neither agree nor disagree, 3-Disagree slightly, 2-Disagree strongly, 1-Don't know

Table 3. Scores obtained from mental illness clinicians' attitudes scale 4 (n = 288)

	Scale no*					
	6	5	4	3	2	1
I just learn about mental health when I have to, and would not bother reading additional material on it	25	45.5	15	3.1	8	3.4
People with a severe mental illness can never recover enough to have a good quality of life.	20.1	31.9	14.3	5.2	20.5	8
Working in the mental health field is just as respectable as other fields of health and social care.	39.6	41.3	11.1	1	5.2	1.8
If I had a mental illness, I would never admit this to my friends because I would fear being treated differently.	19.1	35.8	18.4	5.9	16	4.8
People with a severe mental illness are dangerous more often than not.	23.6	37.8	19.1	8.3	7.6	3.5
Health/social care staff know more about the lives of people treated for a mental illness than do family members or friends.	27.4	42.7	20.5	3.1	4.9	1.4
If I had a mental illness, I would never admit this to my colleagues for fear of being treated differently.	23.6	36.1	15.6	6.9	14.9	2.9
Being a health/social care professional in the area of mental health is not like being a real health/social care professional.	22.9	30.2	16	3.5	19.4	8
If a senior colleague instructed me to treat people with a mental illness in a disrespectful manner, I would not follow their instructions.	41.3	34.7	10.4	1.4	6.3	5.9
I feel as comfortable talking to a person with a mental illness as I do talking to a person with a physical illness.	30.9	39.9	14.3	6.3	6.3	2.3
It is important that any health/social care professional supporting a person with a mental illness also ensures that their physical health is assessed.	35.1	41.7	16	0.7	4.2	2.3
The public does not need to be protected from people with a severe mental illness.	20.8	30.2	17.7	9	13.2	9.1
If a person with a mental illness complained of physical symptoms (such as chest pain) I would attribute it to their mental illness.	21.5	31.3	21.2	7.6	13.9	4.5
General practitioners should not be expected to complete a thorough assessment for people with psychiatric symptoms because they can be referred to a psychiatrist.	23.6	41.3	21.9	2.8	6.6	3.8
I would use the terms 'crazy', 'nutter', 'mad' etc. to describe to colleagues people with a mental illness who I have seen in my work.	5.6	19.8	7.3	9.6	30.6	27.1
If a colleague told me they had a mental illness, I would still want to work with them.	27.8	42.4	19.4	2.8	3.8	3.8

* 6- Strongly agree, 5-Agree, 4- Somewhat agree, 3- Somewhat disagree, 2-Disagree, 1- Strongly disagree

Table 4. Differences in scores between the year groups

			MICA 4		MAKS	
		n	Mean	Standard Deviation	Mean	Standard Deviation
Academic Level	BPT 1st Year	149	47.53	13.21	40.79	4.78
	BPT 2nd Year	67	44.95	13.18	42.18	5.01
	BPT 3rd Year	38	42.37	10.39	45.60	2.19
	BPT 4th Year	34	41.27	11.22	49.64	3.65

5. Discussion

Stigmatizing beliefs and actions are documented in the literature on healthcare across a range of healthcare settings (Knaak et al., 2017). Therefore, this study evaluated undergraduate physiotherapy students' mental health-related knowledge and attitudes concerning mental health patients and health care. The results demonstrated that students studying physiotherapy have a basic knowledge of mental health, and they also displayed favorable attitudes regarding mental disease. This is a noteworthy finding, considering the prevalence of mental illness and physiotherapists' role in health care for persons with comorbid mental and physical conditions. This study's results align with previous research conducted in South Africa and Australia (Connaughton & Gibson, 2016; Gunduza et al., 2023). To the author's knowledge, this is the first study on physical therapy students from India. Compared to their colleagues in senior year, junior students knew less about mental health and had a more pessimistic outlook on it.

This is congruent with a study done on physiotherapy students, which discovered that students with prior experience with mental illness had more positive sentiments toward it than those without (Probst & Peuskens, 2010).

The high knowledge (MAKS) scores in the study revealed that undergraduate students had a good understanding of mental illness; the high score could be related to the increasing attention to mental health in the revised physiotherapy curriculums adopted in various institutions in India. Providing physiotherapists with undergraduate and graduate-level mental health education can significantly increase their comprehension of mental disease and workforce capacity (Hooblaul et al., 2023). According to UK research, 75% of physiotherapy students said they needed more mental health education, and the majority (71%) had received less than four hours of training (Dandridge et al., 2014). One reason why physiotherapists feel unprepared to treat patients with mental illness is a need for more knowledge (Driver et al., 2017; Hooblaul et al., 2020).

Attitude refers to an individual's emotional state, sentiment, or inclination toward learning (Geer et al., 2006). The attitudes of health professionals towards individuals with mental health disorders have a significant impact on their subsequent treatment and interactions (Dandridge et al., 2014; Hansson et al., 2013). Fourth-year physiotherapy students exhibited a more positive disposition towards mental illness than all other students, a finding consistent with previous research (Gunduza et al., 2023; Probst & Peuskens, 2010). In addition, a study done on physiotherapy students in Belgium provided evidence that students' attitudes toward patients with psychiatric illnesses improved after obtaining training in these conditions. This suggests a correlation between knowledge and attitudes, which aligns with our findings (Probst & Peuskens, 2010). The mean MICA-4 score of 43.28 in our study aligns closely with the results obtained from surveys conducted on medical students in Australia (43.5), medical students in Chile and Spain (40.17), and a global study involving medical students from 65 countries (40.5) (Babicki et al., 2021; Lyons & Janca, 2015; Masedo et al., 2021). Positive attitudes can influence how health professionals view and treat patients' mental illnesses (Ghuloum et al., 2022). It appears from our data that students studying physiotherapy are less likely to stigmatize mental health conditions. However, as the curriculum varies nationwide, this result cannot be applied to all colleges. In this study, final-year students also had superior attitudes and knowledge, so we recommend that academic institutions adjust their health sciences curricula to incorporate mental health rotations early in the curriculum instead of only in the last year. Physiotherapy programs must emphasize empathy training and patient mindset comprehension to reduce stigma, particularly concerning mental illnesses. This will ensure that stigmatizing attitudes do not become ingrained and interfere with future patient care.

This study is the first of its kind in Indian physiotherapy students, with results shedding light on a critical concern. The participants were recruited from different years of the undergraduate program with almost equal proportions of both genders, which allowed for investigating variances in attitude. The use of a validated technique to measure stigma generated accurate estimates of attitudes toward mental illness. Two limitations were observed in this investigation. One significant constraint of our study is that the data we used were obtained from a sample of volunteers rather than a randomly selected representative sample. Second, our results may be suggestive, but they are not necessarily generalizable to the total population of Indian physiotherapy students owing to the small sample size. Future research should establish the link between various sociodemographic characteristics and mental health knowledge and attitudes of Indian physiotherapy students, utilizing a larger sample size.

6. Conclusion

This study offers insights into the mental health-related knowledge and attitudes among undergraduate physiotherapy students in India. The findings reveal that while students generally possess an essential awareness of mental health and exhibit good attitudes towards mental illness, there are considerable variances between junior and senior pupils. Junior students are likely to have less knowledge and more negative attitudes compared to their older colleagues, suggesting a possible need for early intervention and instruction in mental health within the physiotherapy curriculum. This study contributes to the growing body of literature on mental health education and stigma reduction in healthcare settings, notably among physiotherapy students in India.

6.1. Theoretical implications

Concentrating mainly on physiotherapy students, this study focused on the population often overlooked in mental health research. This study contributes to the theoretical understanding of healthcare professionals' knowledge and attitudes about mental health that already exists. It confirms the relationship between knowledge and attitudes by reiterating that education and clinical experience shape knowledge and positive attitudes regarding mental health.

6.2. Practical implications

Since senior students showed superior knowledge and attitudes than junior students, the study emphasizes the necessity to include mental health education sooner in the physiotherapy curriculum. It is recommended that academic institutions include mental health rotations and offer specialized courses on mental illness to promote empathy and understanding among students.

6.3. Limitations and future research directions

A convenience sample of volunteers was used in the study, which means that the attitudes and knowledge of all Indian physiotherapy students may not be fully represented. To improve the generalizability of the results, larger, randomly selected samples should be used in future research. The study's applicability to other regions was limited by its location in Jaipur, India. Conducting the survey again in other parts of India will give researchers a more comprehensive picture of how students studying physiotherapy perceive mental health in that nation.

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Author contribution statements

The authors equally contributed to the research design and implementation, analysis, and the manuscript's writing.

Disclosure statement

The authors reported no potential competing interest.

Ethical committee approval

This research has ethics committee approval from Vivekananda Global University, Jaipur, Rajasthan, India, with a 20/2/2024 date and 34/AHS/20/2/24 number. All responsibility belongs to the authors.

Research article/Araştırma makalesi

Perceptions of research engagement among teacher educators in Cambodia: An explanatory mixed-methods design

Sokchea Ly

Perceptions of research engagement among teacher educators in Cambodia: An explanatory mixed-methods design

Sokchea Ly[1]

[1]*Corresponding author, Hiroshima University, Higashihiroshima, Hiroshima, Email: ly.sokchea@nie.edu.kh, ORCID: https://orcid.org/0009-0004-9014-5541*

Article Info	Abstract
Research Article *Received: 21 August 2024* *Revised: 19 September 2024* *Accepted: 20 September 2024* *Keywords:* *Cambodia,* *Explanatory mixed-method,* *Research engagement,* *Teacher educator-researcher*	*This study aims to understand teacher educators' perceptions of research engagement in higher education-based teacher education. Integrative insights were gathered from analyzing survey data from 89 teacher educators and conducting semi-structured interviews with subsample 13 informants to explore their perspectives on professional roles and research engagement. This study reveals mixed perceptions of professional roles among teacher educators. While many value the role of a researcher, the teaching role is also significant. Although research is highly esteemed, not all teacher educators actively participate. Many use research to improve their professional practices but may not feel capable of conducting research. They show moderate awareness of the research's significance in their responsibilities, and research activities are not absent.*

1. Introduction

The Cambodian National Institute of Education (NIE), under the Ministry of Education, Youth, and Sport (MoEYS), is vital for implementing education policies (MoEYS, 2019; NIE, 2022). It focuses on producing high-quality secondary school educators and aims to excel in teacher education, professional development, and research. Research and publication are crucial for career advancement at NIE, aligning with global trends where teacher training centers emphasize research for curriculum improvement and skill development (MoEYS, 2019, 2020; NIE, 2022). Teacher educators are expected to be active in teaching-related research (Cochran-Smith, 2005; Griffiths et al., 2010; Livingston et al., 2009; Smith, 2021).

In this study, "research engagement" covers both consuming and conducting research to develop professional knowledge and improve teaching practices (Borg & Alshumaimeri, 2012). Teacher educators' research engagement focuses on improving theoretical knowledge, enhancing the profession, and connecting with the professional community (Livingston et al., 2009; Willemse & Boei, 2017). Richter et al. (2021) highlight that teacher educators' perceptions influence their teaching methods. Meanwhile, Shen and Hongmei (2021) stress the importance of understanding these perceptions for improving instructional effectiveness and educational reform.

Research on the teaching-research relationship has been conducted, but teacher educators in Cambodian higher education-based teacher education have yet to receive much attention (Eam, 2015a, 2015b; Heng, 2020, 2022; Heng et al., 2022). Historically, research about teacher education and educators has not been appreciated much (Smith, 2021), resulting in a neglect of teacher educators' research in the field. Moreover, while author's prior two studies (Ly, 2023a, 2023b) have contributed to this field by exploring teacher educators' research engagement in different contexts, namely from the perspectives of professional learning needs and education policies, these studies did not focus explicitly on the teacher educators' research activities experienced and the individual and contextual challenges in engaging research. This study, using an explanatory mixed-methods approach, aims to understand how a teacher of teachers perceive their researcher role, research activities, the extent of their engagement in research, and factors promoting or hindering their research engagement. The findings can offer valuable insights

for policymakers, directors, managers, and teachers of teacher educators, ultimately enhancing their professional quality and teacher education in Cambodia and similar contexts. Understanding teacher educators' research aspects reveals their current research activity expectations nationally and internationally (BERA, 2014; European Commission, 2013; Lunenberg et al., 2016; MoEYS, 2019, 2020; Smith, 2021).

2. Literature review

2.1. Challenges in teacher educators' research engagement

As part of daily activities, it is commonly agreed that teacher educators should be involved in research; however, not all teachers choose to do so due to various challenges (Lunenberg et al., 2014; Willemse et al., 2016). Competence in research requires several crucial attributes, including perception and attitude toward research, motivation, autonomy, confidence, institutional support, and policy considerations. A study conducted in Myanmar, a similar developing context in the region (Kyaw, 2021), revealed that teacher educators face challenges stemming from policy, system, institutional, and personal factors, which affect their research production (Alhija & Majdob, 2017; Cardona, 2020; Kyaw, 2021).

The following sources suggest that teacher educators face two main challenges in their research engagement: individual and contextual (Heng, 2020; Kyaw, 2021; Smith & Flores, 2019; Thanh Tien, 2016; Willemse & Boei, 2017).

First, one of the challenges is related to their views on the research and researcher roles. Some teacher educators may question their abilities as educators if they need to be proficient in research. However, those who appreciate research and actively engage in research-oriented activities show a stronger inclination to participate in research-related programs, read research literature, and conduct independent research (Kosnik et al., 2016; Ping et al., 2018; Willemse & Boei, 2017).

Likewise, age, research experience, educational qualifications, and language proficiency influence research involvement alike (Alhija & Majdob, 2017; Heng, 2020; Kyaw, 2021; NIE International, 2017; Tack & Vanderlinde, 2014). Higher academic ranks are associated with greater research productivity (Hesli & Lee, 2011). Additionally, proficiency in foreign languages, mainly English, is another significant role in research consumption and production. In this regard, non-English language researchers face numerous barriers in reading, writing, and publishing research in English (Heng, 2020).

Considering the documents discussed thus far, one may suppose that the obstacles affecting teacher educators' research engagement at the individual level include perceptions of their role and research, age, educational qualification, position or ranking, and foreign language proficiency. Apart from the individual-level challenges mentioned earlier, the contextual-level challenges play a crucial role in promoting research engagement among teacher educators. An instance is the influence of research policies (Kyaw, 2022; Nguyen, 2015). According to Kyaw (2022), promoting teacher educators' research engagement can be achieved through supportive policies that cohere with their intended implementation, consistent enforcement of policies, and sufficient time for research preparation. Time allocation is a critical institutional aspect, as it significantly impacts research outcomes and reports (Heng, 2020; Swennen et al., 2017). The allocation of time between teaching and research, known as workload, also affects research productivity (Jung, 2012). Higher research productivity is observed when more time is dedicated to research (Alhija & Majdob, 2017). In the context of developing and emerging economic countries, other contextual conditions determining the institution's research performance and productivity include strategic plans, research policies, research culture, and especially governmental support in terms of facilities and finances (Heng, 2020; Negash et al., 2019; Pornsalnuwat, 2014; Thanh Tien, 2016).

The contextual-level challenges of teacher educators' research engagement include research policy, time allocation, research culture, research facilities, and research funds. Overall, it appears imperative that teacher educators address vital challenges—individual and contextual—to enhance their research engagement. This requires a committed or positive perception toward research, sufficient qualification, motivation, and foreign language skills. The policy should provide recognition and support regarding awareness, time, budget, and facilities.

2.2. Contextual background of the National Institute of Education, Cambodia

Over the years, the NIE has served various roles, such as a training place, a political periphery, and a storeroom. Following the 1979 victory over the genocidal regime, it underwent several name changes and became the Faculty of Pedagogy of the MoEYS in 1992. Receiving much support from organizations like the United Nations (Chim, 2020; NIE, 2007), it was restored and expanded to provide training and educational activities.

Since 2004, playing a vital role in producing teachers in Cambodia (Royal Government of Cambodia, 2004), it presently holds a prominent teacher education role in training teachers in the French language for lower secondary level and teachers in all subjects teaching upper secondary schools nationwide. Furthermore, it provides education programs for educational and administrative officers at all levels, focusing on developing essential 21st-century mindsets, knowledge, and skills (NIE, 2022). The NIE Center for Educational Research and Innovation is crucial in transforming the NIE into a full-fledged higher education. It supports the graduate programs of Master's and Doctoral programs. Likewise, one of the three strategic plans of the NIE (2022) is to improve the research capability of the staff and institute. However, the NIE's Strategic Plan highlights weaknesses, including teacher educators' limited research capability and the lack of dedicated research facilities (NIE, 2022). Similarly, no stated or allocated research time is paired with teaching duties. Although "research" has been signified by the governmental educational policies over a decade (MoEYS, 2010b, 2010a, 2011, 2014, 2019), the quality standard or research requirement benchmark for Cambodian NIE teacher educators has not been established, contributing to the lack of active research engagement.

Accordingly, NIE teacher educators involved in various roles and programs (pre-and in-service, research, administration) may refrain from engaging in research. Specific research skills might not be considered essential, and the value of research involvement may not be immediately evident. These factors significantly influence teacher educators' research engagement. Therefore, with its individual and institutional challenges, the NIE context is the guiding framework to analyze factors influencing teacher educators' research participation. Teacher educators at the Cambodian NIE face significant research engagement challenges due to individual and contextual factors. At the personal level, limited research training, low proficiency in English, and varied perceptions of research roles hinder active participation. Contextually, the lack of clear research policies, insufficient time for research, inadequate facilities, and a weak institutional research culture further worsen these challenges. Despite NIE's strategic plan focusing on improving the research capacity of teacher educators, these barriers remain considerable, suggesting that enhancing research engagement requires addressing both personal competencies and institutional support.

Besides the NIE, the Cambodian higher education-based teacher education also includes teacher education colleges (TECs), currently consisting of Phnom Penh and Battambang Teacher Education Colleges. However, this study does not cover these two TECs for various reasons. First, these TECs have different phenomena, contexts, and feature lengths because these TECs were just assessed and accredited as a part of higher education institutions on 08 December 2022 by the MoEYS (JICA, 2023). Moreover, even though these TECs have been technically assisted by the Japan International Cooperation Agency (JICA) alike, each one's identity and characteristics are unique and notably different between the two and from other teacher education institutions (JICA, 2023). Considering these discrepancies and points, this current study focuses on the NIE, Cambodia's only prominent teacher education institution.

Drawing on earlier work exploring the professiona learning needs of Cambodian NIE teacher educators and policy review on Cambodian NIE teacher educators' research engagement (Ly, 2023a, 2023b), the author of this current study aims to reveal the extent to which NIE teacher educators perceive and engage in research, as well as the critical contextual challenges in their research engagement. The following questions, therefore, guided the study:

- How significant do the teacher educators value the research?
- What research activities have teacher educators experienced?
- What perceptions of teacher educators regarding research engagement?
- What are the key individual and institutional barriers in supporting or hindering teacher educators' research engagement?

3. Methodology

This research has ethics committee approval from Hiroshima University, dated 29/8/2022, and number HR-ES-000453.

3.1. Research design

This current study applied a sequential explanatory mixed methods design, consisting of a separate phase of data collection, with phase one using a survey and phase two semi-structured interview (Creswell & Creswell, 2018). It should be mentioned that the data utilized in this study were first gathered for a paper that was published earlier and examined the professional development requirements of teacher educators in Cambodia (Ly, 2023b). For this

current study, this existing data has been analyzed from different perspective with a specific focus on teacher educators' research engagement. This chosen design allows for the thorough observation of research engagement of teacher educators and their challenges in engagement within the contexts of teacher educators. Additionally, the foundation for the subsequent qualitative inquiry was formed based on the perspectives regarding the teacher educators' professional roles, their research activities, and their research engagement. This intentional sequencing aims to provide context for the details raised by the quantitative findings. Moreover, this explanatory mixed method approach is appropriate for a single researcher to manage the time and division of the tasks in a manageable investigation. Separation of data analysis and integration of data interpretation to better comprehend the responses to the study's overall purpose were done from the Google form-based survey (Bowen et al., 2017) and the semi-structured interview (Leech, 2002).

3.2. Research participants

During the initial quantitative stage, an online survey was administered to 105 teacher educators. In the subsequent phase, the researchers used purposive, intensity, and criterion sampling methods (Gay et al., 2012) to select sub-samples who volunteered for the study. Through intensive screening, the participants were chosen from various fields, such as Arts, Educational Sciences, English, History, Khmer Literature, Biology, Chemistry, Earth Sciences, Physics, and Mathematics.

Based on contractual agreements to preserve the privacy and confidentiality of the participants, data were ensured they could not be tracked in both the survey and interview. For this reason, there is no comparison between the teacher educators in the analysis and result section.

3.3. Instrument

The survey questionnaire was adapted from the study of MacPhail and colleagues (2018). The first section has six questions about "Life as a Teacher Educator"; the second section consists of 4 main questions about "Teacher Education and Research." The demographic section, having eight questions, gathers information relating to sex, age, employment status, educational qualification, and subject taught. The teacher educators' research involvement is assessed by asking them to rate on 5-point Likert scale statements, ranging from 1 (= strongly disagree) to 5 (= strongly agree). The research instruments were translated into Khmer to maximize comprehension and tested with twenty Cambodian graduate students and teacher educators of the TECs, the NIE, and the Regional Teacher Training Centers. The comments and feedback from the pilot test improved the questionnaire interview questions and protocol. Particularly for the survey questionnaire, the reliability of the scales had been run using Statistical Package for the Social Science (SPSS v.26); the Cronbach's reliability scale was highly acceptable with $\alpha = .956$.

Equally important, the research instruments comprising the survey questionnaire and the interview protocol had been reviewed by a team of human resource development for education, and they had been approved by the author's Institutional Research Ethics Review Board (IRB) for content validity and for guaranteeing the confidentiality and privacy of the participants, respectively.

3.4. Procedure

In collecting data, the NIE management, particularly the Head of the Department of Education, was the facilitator from September 19th to October 19th, 2022, for the survey administration to the entire population of teacher educators. Out of 105 teacher educators, 89 (= 85%) filled in the digital survey questionnaire, all acceptable.

Among the 89 above, subsample of 13 teacher educators volunteered to participate in one-on-one semi-structured interviews from 25th December 2022 to 16th January 2023. A positive rapport was established to encourage interviewees to openly share their experiences, emotions, and viewpoints (Leech, 2002); the study's objectives and advantages were explained beforehand. Once consent had been obtained to record the audio, the interview proceeded. While conducting interviews, a new identifier, such as TE1, TE2, TE3, …, was created for each participant to substitute their real names while the interviews were being conducted. These identities were generated and assigned at random. This coding procedure was implemented to protect their confidentiality and privacy.

3.5. Analysis

The raw data from the quantitative survey were entered into the SPSS v.26 data editor, cleaned, and analyzed using descriptive statistics of teacher educators' consumption and conduct of research. The interviewed data were transcribed verbatim for coding and categorizing the emerging themes using Nvivo11 software. In coding, the thematic

analysis (Creswell & Baez, 2021; Gay et al., 2012; Guest et al., 2014) was exploited to find the repeating keywords or phrases describing feelings, experiences, or responses. The texts were read many times to develop themes and codebooks, which were then discussed with other Ph.D. students and graduates from the teacher education field to solve the disagreement on the coding and finally revised to reach a consensus. The respondents' verbal comments about their professional role perceptions, research activeness, engagement, or experience were illustrated to support the themes.

In the same way, as described earlier, the analysis of the research question relating to the key challenges influencing teacher educators' research involvement was focused mainly on the contextual background of the studied subjects, i.e., the individual and institutional levels. Drawing from the contexts, the findings from the analysis were discussed to share the interpretations and meaning elicited.

3.6. Limitations

It is important to note that the studied context was used and analyzed to examine the emergent challenges in teacher educators' research engagement. Even though this analysis added valuable understanding into the individual and institutional obstacles determining the teacher educators' research engagement, the study has excluded other various aspects that may impact teacher educators' research engagement, where the challenges go beyond the individual-institutional contexts, including the national level such as politics and governmental support, culture, industry, and donor agencies.

4. Results

The results are integrated with quantitative and qualitative data in a single section. An examination of the numerical data using descriptive statistics opens this combined section. Subsequently, it delves into the qualitative stage and offers insights from the semi-structured interviews. Subsections within this part are arranged by the broad themes discovered during the quantitative and qualitative phases, supplemented by substantial remarks from the respondents.

4.1. Demography, perceived professional role, and significance of research valued

Demographics and professional backgrounds of teacher educators have been reported. Male teacher educators account for more than half of respondents (n = 53; 60%), most of whom are middle-aged adults. Half of the respondents have been employed by the institute for over ten years (*n = 48;* 54%). In the meantime, most teacher educators held a Master's degree (*n = 81;* 91%), whereas Ph.D. holders accounted for 6.7% (*n = 6*). Most of them work full time (96%), of which 75% serve in pre-service teacher education programs. To be exact, 92.1% (*n = 82*) of them teach in Bachelor + 1 pre-service teacher education program, whereas 27% (*n = 24*) in Bachelor + 2. Nearly one-fourth of the respondents are serving in both programs.

Regarding how they viewed the role in teacher education, the teacher educators were asked to rank as "1 = best describe themselves", "2 = better", "3 = average", "4 = less", and "5 = least describe themselves". When ranks "1" and "2" merged, the ranking order of the Researcher role (75.3%) was slipped out by the Teacher role (95.5%) and the Teacher Educator/Trainer role (94.4%) (See Figure 1 about the perceived roles of the teacher educators below).

As the following qualitative assertions show, another perception of the teacher educators' role could be understood from the interviewees' speech:

> *"...my naive working capacity still makes me think that I am an ordinary teacher despite being officially called a teacher educator. I think that I am an ordinary teacher who understands that my work and role is to train Bachelor holders who come here to study BA + 1. We [I] are still ordinary teachers."* (TE12)

> *"If to be called a teacher educator, I am not qualified enough yet! And if a researcher, I am not."* (TE9)

While identifying themselves as teachers, they also saw themselves as researchers. Another verbatim response illustrated some of these multiple natures of the teacher educators' role:

> *"A teacher educator is required to do research; I always tell my student teachers that a researcher is a skilled person. At the moment, I am writing books…"* (TE3)

Regarding the role of a researcher, this finding suggests that three-fourths of the participants in this current study identify as researchers. It can be implied that teacher educators count research as an integrative part of their profession. Both the survey and interview data indicated that most teacher educators opted to identify themselves

as teachers, closely followed by teacher educators; the interview data also added a sense of thought that research is an interlinked or interrelated aspect of a teacher educator. Furthermore, the questionnaire also involved the extent to which the respondents valued research and rated the degree of agreement on research orientation in daily practices of teacher education. The respondents appreciated the significance of research, which influenced the value placed on engaging with and in research. For instance, almost all the respondents agreed/strongly agreed with the statement: "Research is essential for the teacher education profession", or "Teacher educators should conduct research to investigate their own beliefs and practices about teaching, learning, and education."

Figure 1. Perceived roles of teacher educators
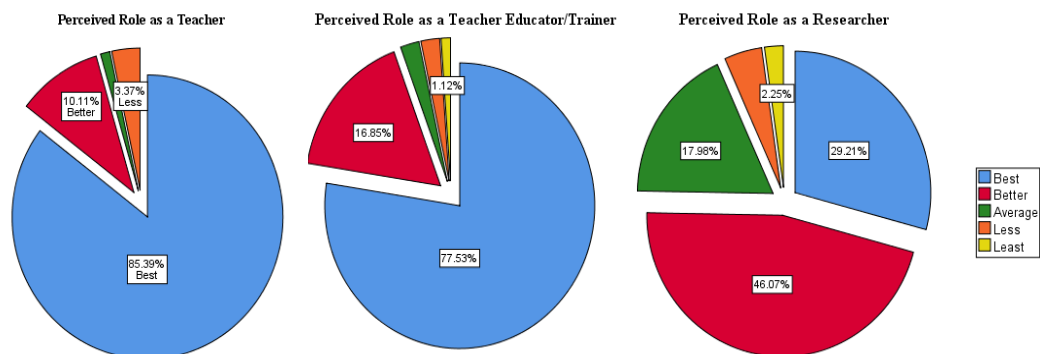
This point is consistent with the qualitative data indicating that research is essential to their daily work. This aspect is reflected in the subsequent quotes of some interviewees:

"Research is fundamental. I believe that if research and teacher educators are good, the quality is good. ... If there is no research, there is no development. Good research, good quality." (TE3)

"I think it [research] is important; we can find something new. It is needed in the future because we are teacher educators, which will be [re] appraised and ranked by the Ministry [MoEYS]. We supervise student teachers; we have to align with the NIE's vision and make it realized, which requires us to enhance research capacity considerably." (TE8)

Similar to how teacher educators perceive their role as researchers, this finding supports a positive perception of research as a necessary characteristic for effective research engagement. It also implies that in the teaching-learning context, research is a pre-requisite for improving the quality of teacher educators and raising the quality and effectiveness of teacher education and overall education.

4.2. Teacher educators' research activity experienced

Given the interrelatedness with the research role of a teacher educator, their research experience was explored with the types of research activities. Regarding the high percentage of research involvement of teacher educators (74.2%), "I am involved in scholarly research (e.g., reading to prepare for the lesson, lectures…)", the qualitative data further provided insight that the teacher educators' teaching was research-informed in improving the quality of daily practices such as preparing lesson plans, drawing lesson learned, as well as enhancing own critical thinking from the research products. These respondents mention this point in the case:

"I have experience in doing research at our workplace and other nongovernmental organizations. I have written textbooks." (TE3)

"Research is a way to pursue new knowledge and solve problems. We try to incorporate action research nowadays. Action research is a very practical way to solve problems ... such as in our classroom, what are the problems, what are the effective solutions to the problems, and what can be applied for effective teacher and learning?" (TE11)

However, particular experience in research data gathering has been exposed by most respondents (no experience = 19.1%), indicating a notable number of them need more experience in another fundamental aspect of con-

ducting research, i.e., analyzing and writing up the research report. This is evident in this statement, *"I just participated with others [NIE teacher educators], doing an interview, doing a survey; helping others like that: ok. But coming to big work such as analyzing, I could not."* (TE4)

This condition suggests that it is essential for teacher educators to provide support and training to cultivate their research knowledge and skills, particularly in data analysis and producing research reports.

This finding indicates that teacher educators engage with and in research activities to inform and improve their teaching practices. For example, they conduct action research to find ineffective teaching factors, successively develop lesson plans, draw lessons learned, and enhance their critical thinking skills. By doing this, teacher educators can improve the quality of education by better supporting their student teachers' learning and growth.

4.2.1. Teacher educators' research consumption

Of the research consumption of the teacher educators, the questionnaire asked about the extent to which the respondents used research. The respondents were asked to rate a degree of agreement, of which "1 = Strongly disagree,"; "2 = Disagree,"; "3 = Not sure,"; "4 = Agree,"; and "5 = Strongly agree".

Table 1. Statements concerning the extent to which teacher educators consume research

Description	[Strongly agree] %	[Agree + Strongly agree] %
1. I am familiar with research concerning the education of future teachers	14.6	74.2
2. My teaching is informed by research	28.1	79.8
3. I often read research articles in educational journals	14.6	68.5
4. I am inclined to use research literature to solve problems in my teaching practice	22.5	735.
5. I know how to use research as a teacher educator	16.9	77.6
6. I attend research conferences and seminars to keep up to date with educational research	14.6	70.8

(MacPhail et al., 2018)

Table 1, about the degree of agreement to which the teacher educators used research, showed that teacher educators commonly know how to use research well. One prominent use of research is to inform teaching. Some interviewees highlighted this point by stating that: *"We try to research to be able to answer with them [student teachers]"* (TE10) and

"For me, I read a lot. Normally, in research, we do a literature review. This means that we can find the best practices in other countries; for example, research has found that there are new techniques in this or that country that are effective or preferred by the students. We can follow the best practices… action research can see the pros and cons of applying that new strategy." (TE11).

Most teacher educators believe that research informs their teaching practices and, thus, value research to apply research evidence-based approaches in their profession. This demonstrated a systematic understanding of the usage of research.

4.2.2. Teacher educators' research conduct

Another set of questions asked about the extent to which the teacher educators think they can research teacher education. They were asked to rate the degree of agreement on the statements of research conduct, of which 1 = 'Strongly disagree'; 2 = 'Disagree'; 3 = 'Not sure'; 4 = 'Agree'; and 5 = 'Strongly agree.'

Table 2. Statements concerning the extent to which the teacher educators conduct research

Description	[Strongly agree] %	[Agree + Strongly agree] %
1. I am capable of presenting and sharing my own research results with other teacher educators (e.g., at conferences, in journals, etc.)	12.4	60.7
2. I conduct research in order to develop knowledge relevant to other teacher educators	14.6	73
3. I see myself as someone who is capable of conducting research	13.5	73.1
4. I have experience with conducting research to improve my own teaching practice	12.4	69.7
5. I present at conferences and seminars to share my own research results	10.1	50.5
6. I conduct research to improve my own practice	22.5	80.9

(MacPhail et al., 2018)

Table 2 indicated that even though almost three-fourths of the respondents thought they could conduct research, about 81% agreed and strongly agreed that they research to advance their practice. That was no contention from the qualitative data, as highlighted by some statements of the interviewees:

"I am writing books on teaching methodologies, and I am writing a research report. I do research by myself even though there is no allowance. I research to publish as a book. This is to develop my profession. I am researching and writing two books on new teaching methodologies, which will be published next year." (TE3)

"I incorporate action research into my teaching." (TE11)

The combined quantitative and qualitative data suggest that most teacher educators value research as a valuable tool for improving their teaching practices and professional development. By conducting research, teacher educators can enhance their ability to assess their teaching effectiveness based on evidence and develop evidence-based interventions, resulting in effective teaching. Most teacher educators feel optimistic about their capacity for conducting research and desire to participate in research activities.

This current study also analyzes the overall research engagement of the respondents by looking at the research consumption and conduct collectively, i.e., "My teaching is informed by research" (Agree + Strongly Agree: 79.8%), "I research to improve my practice" (Agree + Strongly Agree: 80.9%). The analysis shows that teacher educators moderately engage in and with research yet have a surprisingly high level of signification of research. It can be inferred that while teacher educators highly value research, there is still potential for improvement in their comprehension of the research role in contributing to their job responsibilities. Teacher educators who have a deeper understanding of the significance of the research tend to engage in research activities more and apply the research outcomes to their teaching practices, which, in turn, might improve the teaching performance and quality of student teachers.

5. Discussions

This study explored Cambodian teacher educators' perceived researcher role, research activities experienced, and research engagement. In addition to the multiple roles that teacher educators perceived, this study's findings also demonstrate that teacher educators in higher education institutions in Cambodia possess limited knowledge and skills in effectively consuming and conducting research. At the same time, there is high esteem for research.

5.1. Mixed perception of teacher educator-researcher

Most teacher educators view themselves as researchers and consider them an integral part of their professional role/identity. It implies that these individuals value the research aspect of their job, which may include conducting research, analyzing data, or contributing to research-based policy or practice. This perception of oneself as a researcher could reflect a more profound commitment to the profession, a higher level of engagement with research, or a greater understanding of the importance of research in their field. However, most respondents also have different perceptions toward their roles, namely teacher and teacher educator/trainer. This case corresponds to the results of several studies (Cochran-Smith, 2005; Murray & Male, 2005), which indicated that the teacher educators' primary responsibility is to engage in teaching. They are expected to possess knowledge and skill in their specialized subject and have pedagogy to transmit this knowledge effectively.

Conversely, this case corresponds to a study of teacher educators' professional roles and development by Lunenberg et al. (2014), in which they have other roles, such as mentors, a gatekeeper, and a curriculum developer. Perhaps this is an issue of constructing a role or identity, which is sometimes time-consuming and challenging to transform. Livingston and colleagues (2009) highlighted that not all teacher educators have strong research backgrounds or consider research a fundamental part of their practice. A study on factors hampering the research engagement of teacher educators in Myanmar (Kyaw, 2021) emphasizes that building and advancing teacher educators' research identity is a long-term course and cannot be achieved solely by imparting research skills. Likewise, the teacher educators have been recruited as teacher educators rather than researchers; the job description or institutional guideline relative to the researcher role has not been forward, stated (NIE, 2022). Thus, the lack of research experience and unclear expectations vis-à-vis the role of a teacher educator-researcher might explain why many Cambodian teacher educators strive to develop an identity having a research role.

From another angle, the diverse perceptions emphasize that while teacher educators acknowledge the importance of research, their actual involvement and knowledge production are limited. This mirrors the reality of

research, researchers, and research engagement in a developing context. The study aligns with prior literature (Akerlind, 2008; Heng et al., 2022; Moore, 2011), revealing a gap between the perceived significance of research and the tangible engagement in research activities of teacher educators. A study on Cambodian university faculty highlighted the phenomenon of 'lip service' to research (Heng, 2022), a unique finding resonating with teacher educators in this study. Their lip service may express genuine support for research significance despite limited personal involvement, or it might signify recognition of the research's diversion from their primary role as teacher educators—the Janus-face teacher educator (Smith & Flores, 2019). Cultivating a research mindset demands intentional self-study, knowledge development, and sharing within the teacher education community and broader public contexts, both nationally and internationally (Tack & Vanderlinde, 2014).

Given these different perceptions, Cambodian teacher educators still need to identify and clarify what is required to be teacher educators and researchers, as Lunenberg et al. (2014) suggested. Clarity regarding what is needed to fulfill these multiple roles of teacher educators is necessary.

5.2. Research engagement of teacher educators

This current study revealed that though the research is well-regarded by Cambodian teacher educators, their research engagement is restrained. There are many challenges in explaining this phenomenon. In the scope of the limited research on teacher educators' research involvement in a developing Cambodian context, the discussion relies mainly on the context of the study and on the framework of two main factorial challenges: individual and contextual/institutional, influencing research engagement.

5.2.1. Individual factorial challenges

First of all, age has been found to have a significant relationship with research engagement and productivity, particularly middle age (approximately 35-55); however, many studies have found a curvilinear relationship, meaning the older, the less output of the research seems to be (Heng et al., 2020). In this current study, despite many teacher educators being in middle age (37-46), their research engagement was reasonably active. This unique finding does not support the previous study, suggesting that age might not be the noteworthy determinant influencing teacher educators' research engagement.

Additionally, educational qualifications have been reported to differentiate the research products between teacher educators. For instance, Alhija & Majdob (2017) reported that Ph.D.-holding-teacher educators demonstrated higher research production than their counterparts with a Master's degree. In this current study, the number of teacher educators holding Ph.D. degrees accounted for about 6.7%; unsurprisingly, the teacher educators in this current study tended to be less experienced in engaging in and with research. Therefore, the limited activeness of the teacher educators' research might be attributable to their lack of qualifications.

Another aspect of the personal factors is the rank or promotion of teacher educators. Hesli & Lee (2011) suggested a link between higher academic ranks and greater research productivity. However, this aspect did not appear to reflect the reality of the studied teacher educators. Moreover, though there has been an announcement of academic ranking in higher education, the announcement might only directly apply to and influence teacher educators later. Similarly, there has been no clear assessment or appraisal guideline or policy besides the internal and overall form long-used by the MoEYS, which does not require research product to be the evaluation criterion or for rank promotion. Consequently, even though teacher educators value the research's essence, they are less likely to engage and research productively. The above condition might be explained.

Furthermore, foreign language proficiency, mainly English, partially takes a big pie in consuming and conducting research. For instance, given that English is a high-status language in science and the world, many non-English language researchers have faced many obstacles in writing and publishing research in English (Heng et al., 2020). The challenges, such as technical problems with the language and more time to write and edit the paper, tend to prevent teacher educators' research production. The foreign language level of the studied teacher educators is as low as un-practicable in doing research, as reported by the study of the National Institute of Education International (NIE International, 2017). From this point, it becomes evident that one of the leading contributing causes to the teacher educators' low degree of research engagement is their low proficiency in foreign languages, mainly English. In brief, age, and rank or promotion factors did not seem to enhance the highly valued teacher educators' research engagement. Other factors explaining further complications for the teacher educators' research engagement could be educational qualification and proficiency level of a foreign language in research.

5.2.2. Contextual/institutional factorial challenges

In addition to those above individual factorial challenges, contextual/institutional factors are critical in fostering the engagement of teacher educators in research. Firstly, one key institutional factor is the research policy, as found in the Vietnamese context, in examining the factors influencing the research productivity of Vietnamese academic (Nguyen, 2015). In the studied context, there has been no institutional research policy for teacher educators, meaning there are no guidelines for doing research and no time allocation for research activities. The institute has not established, clarified, or reached a consensus on institutional research performance indicators and incentives and rewards among teacher educators. Likewise, the research center at the institute is designed to allow only the center staff to be responsible for the whole research function of the institute. In other words, the teacher educators of different departments, such as the Department of Education, do not have or take the role of research. Therefore, teacher educators are not officially obliged to do research. Moreover, teachers are recruited to be teacher educators rather than researchers in this studied context of teacher education. Similarly, the traditional role of the institute is still teaching, though research is deemed necessary to transform the institute to research-based teacher education. Thus, the teacher educators might face challenges in establishing a research culture, as this similar condition has been found in a similar Israeli teacher education context (Alhija & Majdob, 2017).

Similarly, teacher educators are not expected to be engaged with and in research due to the lack of a clear research policy to which they can adhere. The teacher educators' unfavorable working conditions regarding teaching versus research responsibility coincide with previous research (Alhija & Majdob, 2017). The underlying obstruction in teacher educators' research engagement, such as writing and publishing output, is the limited time for research. There has not been any clear guideline on time allocation for researching teacher educators; administrative responsibilities of teacher educators might take most of the time available for research. The teacher educators' primary responsibility is to teach the student teachers. Therefore, time is one determinant that promotes and hampers research engagement among teacher educators.

Among others, the availability of resources such as facilities and finances is one of the institutional factors influencing research engagement (CICP, 2016). The present facility condition is not favorable for the teacher educators conducting research. The physical infrastructure neither supports the development of research knowledge and skills nor promotes research activities among different departments and teacher educators, as stated in the strategic plan of the studied institute (NIE, 2022). Overall, the current context of the studied subject reveals that the institutional factors seem not to positively contribute to the willingness, commitment, or motivation to promote research policy, culture, or environment for the teacher educators' research engagement.

6. Conclusion

6.1. Overall conclusion

In general, many Cambodian teacher educators' diversified perceptions toward their roles generally stem from their knowledge of teaching and research, not from their involvement in research. This comparative lack of research engagement prevented them from perceiving themselves as researchers. Teacher educators highly value research and are committed to using it to improve teaching practices and stay updated on teacher education trends.

This study offers insights for practitioners and policymakers in developing research in teacher education. It emphasizes the significance of promoting positive awareness, recognition, and the ability to engage with and in research effectively. Smith (2021) signifies the link between teacher educators' expectations to breed and publish research and the need for supportive actions at both institutional and national levels. These supportive actions should be visible to all educational stakeholders.

6.2. Theoretical implications

This study contributes to some theoretical implications of the professional roles and research engagement of teacher educators in Cambodia by emphasizing the complexity of their identities, encompassing teaching and research responsibilities. Firstly, the findings align with existing theories, such as those proposed by Murray and Male (2005) and by Lunenberg et al. (2014), highlighting the multifaceted roles of teacher educators as not only instructors but also researchers, mentors, and curriculum developers. Their mixed perceptions of professional roles suggest a need for self-directed learning, which aligns with the adult learning theory. Secondly, many participants in this study view research as an integral part of their professional identity, yet they face challenges in fully embracing the role of a researcher. This underscores the complexity of professional identity construction (Richter et

al., 2021; Swennen et al., 2017), aligning with the existing professional identity development theory. Despite a strong recognition of the value of research, the study reveals significant challenges in engaging with research due to individual and institutional barriers, including limited research experience, lack of clear institutional policies, and inadequate resources. These insights resonate with prior research in developing contexts, where institutional support is crucial for fostering research engagement (Alhija & Majdob, 2017; Kyaw, 2022; Nguyen, 2015). Lastly, the study presents the concept of "lip service" to research (Heng, 2022), which teacher educators signify but are unable to engage it in their professional practice actively, reflecting the theoretical tension between valuing research and the practical realities of engaging in it (Smith & Flores, 2019). In brief, this study enriches the discussion on teacher educators' professional learning and development, particularly in contexts where research culture is still emerging, and highlights the need for continuous institutional support to balance teaching and research roles effectively.

6.3. Practical implications

This study provides an empirical understanding of teacher educators' research engagement in Cambodia and the challenges that need support for teacher educators. Notably, within the institutional context, to make a difference, this finding has important implications for management in creating a clear strategy, goal, or vision for the future of research at the institute. The implication is straightforward: to improve the institute's capacity for research, Cambodian NIE should reexamine the professional roles and academic professionalization of teacher educators, considering their crucial role as (teacher educator) researchers, who matter significantly in improving the research capacity of the institute. For them, not engaging with and in research is essentially not having a developing profession.

Likewise, the institute needs to develop suitable training sessions and programs to acquaint teacher educators with beneficial research consumption and conduct skills necessary for effective active engagement in research. To ensure the sustainability of these efforts, the institute should consider the teacher educators' research experience and skills during recruitment and promotion processes. Accordingly, support is unavoidably required from collegial, institutional, and national collaborations to develop and maintain teacher educators' research capacity.

The Cambodian MoEYS can benefit from teacher educators' contextual factors and challenges, which this research highlighted while restructuring and improving other teacher education institutions. This study will help make comprehensively informed and enlightened decisions about practices and policy implications for improving the quality of teacher educators' research and enhancing teacher educators' professional learning.

6.4. Limitations and future research directions

Although this current study adds to the knowledge of teacher educators' perception and engagement of research, more areas and aspects still require further inquiry. These include the true causes of this limited research engagement and the correlation between research and teaching across various disciplines. Furthermore, few studies examine the broad factors—such as national-level components like politics, governmental support, culture, industry, and funding agencies—that influence teacher educators' involvement in research. Therefore, further research will investigate how best to establish and promote the research culture for and of teacher educators. By doing so, we can better understand the characteristics, determinants, and various contributions of the relevant factors to the teacher educators' research engagement.

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Sokchea Ly: Conceptualization, Data curation, Methodology, Writing—original draft.

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The author reported no potential competing interest.

Ethical committee approval

This research has ethics committee approval from Hiroshima University, dated 29/8/2022, and number HR-ES-000453. The author is responsible for all aspects of the study.

Insight into the postgraduate certificate in teaching and learning in higher
education, challenges, and opportunities

Rahman Tafahomi

Insight into the postgraduate certificate in teaching and learning in higher education, challenges, and opportunities

Rahman Tafahomi[1]

[1]Corresponding author, School of Architecture and Built Environment, College of Science and Technology, the University of Rwanda, Kigali, Rwanda, Email: tafahomi@gmail.com, ORCID: https://orcid.org/0000-0002-7172-1302

Article Info	Abstract
	The main objective of this paper is to evaluate the postgraduate program in learning and teaching in higher education. The program was designed to introduce the essential knowledge, skills, and abilities to enhance the teaching quality to the higher education academic staff. The research methodology was qualitative, with content analysis, structured observation, and storytelling techniques. The research findings reveal that the program has been designed for the junior staff to engage with the undergraduate students. The program does not consider the senior staff who supervises master's and PhD students, and they need knowledge about research methodology, thesis and dissertation supervision, and the support system. In conclusion, the program needs to be flexible with more optional or elective courses to specialize or personalize the content and structure for the individual participants.

1. Introduction

There are several courses and programs to enhance the quality of teaching skills for teachers, tutors, and lecturers in higher education due to time and location. Seemingly, the policy of educational centers leads the instructors as learners to take these courses to enhance the quality of teaching. This policy varies from optional and supplementary to essential and compulsory in different institutes. Although many institutes offer such kinds of courses openly for learners, the University of Rwanda presents this program with the title of the Postgraduate Certificate in Learning and Teaching in Higher Education (PGCLTHE) (UR, 2019). The structure was designed on theoretical and practical activities to develop participants' knowledge, skills, and abilities, specifically in teaching, learning, and assessment in higher education, which takes time between half and one year of study.

Graham (2009) classified the education process into four components: activities, courses, programs, and institutions. Seemingly, the education of educators includes a parallel ordering in terms of interactions and results of students, staff, programs, and institutions based on the relationships. First, there is no doubt that the students are the primary purpose of higher education, and the participation of the students is the main reason for education. Second, staff facilitates the process of the delivery of knowledge through interaction, communication, and collaboration with the learners. Third, a curriculum draws the essential aspects of education that unify educators and educators on the same topic. Fourth, the institution's structure, vision, objective, and strategies play a significant role in the context of education, and the institute's system influences the quality of education. In this logic, postgraduate certificate programs (PGCs) are supposed to introduce the participants to the significant aspects of teaching and learning. Perhaps, for this reason, critiques highlighted the educators' low knowledge of the context of education and the teaching delivered based on self-learning and experience (Lee, 2005).

There still needs to be a more significant gap in teaching teachers how to teach in higher education (Korthagen, 2016). The problem has been rooted in the need for a strong research background in educating teachers (Murray & Male, 2005; Murray et al., 2008). The studies revealed that the earlier activities in teaching new teachers took place in the apprenticeship model in the early nineteen-century (Dennen, 2004; Labaree, 2008), and the concept of training the teachers in an academic environment is a new approach (Davey, 2013). Struyven and De Meyst (2010) advocated that educating teachers is a progressive process of knowledge, skills, attitudes, and experiences.

The University of Rwanda ranks first in the country and leads in higher education. To promote the university's quality of teaching and learning, the university's policy encourages academic staff to enroll in the postgraduate program. The program occurs in the Department of Education at the University of Rwanda. Due to the distance between the College of Education and the capital city, the course takes place on one of the campuses in Kigali, the country's capital. The program enrolls participants from different fields and backgrounds interested in teaching and learning in higher education. The number of students varies due to the registration process, which includes submitting essential documents, making payments, and attending class. The program consists of three modules without elective or optional components, and participants cannot specialize or personalize the program's content, exercise, and learning process.

This research is targeted to discover opportunities and challenges that the program is faced in the current structure. The research questions are designed based on whether the structure of the program covers the topics in higher education and what methods are applied in the delivery of the courses. Moreover, who is this program's leading target group of delivery services? What were the classes and activities in the program needed to be included? To discover the answer to the questions, this research will review the program's structure compared with other institutes, the process of delivery of the courses, and the program's content to expose possible steps to improve the program's quality in a practical method.

2. Studies on teaching and learning in higher education

There is a wide range of discussion about teacher and teacher education in both schools and higher education (Craig, 2016) to shift from a linear education structure to a dynamic and meaningful structure based on knowledge, skills, and abilities (Loughran & Hamilton, 2016). In the linear structure of education, teachers teach as their teachers have traditionally taught them rather than systematically (Drexler, The architecture of the Ecole des Beaux Art, 1975; Dutton, 1991) "We teach as we have been taught" (Tafahomi, 2022). The study highlighted that the linear structure not only encompasses the traditional values of a given society (Williams & Robert, 1997) but also includes some of the colonial approaches, in which the new approach advocated a revolutionary approach to training the trainers (Gatlin, 2009). In addition, the study recommended a shifting paradigm from the traditional style to a new model of education based on integrating three factors notably: knowledge, experience, skills, and abilities (Jones et al., 2002).

Korthagen (2016) questioned whether teaching the teachers requires a specific curriculum. He referred to the previous studies on the differentiation between the teaching students and the teaching educators in terms of the prior layer of education (Murray & Male, 2005; Harrison & McKeon, 2008). In this regard, some studies revealed that the education of learners for teaching is quite a new innovative concept in education that needs to be placed more seriously in the research activities for the education of teachers (Clarke & Hollingsworth, 2002; Loughran J. J., 2010). Nonetheless, in the traditional style, learners learn to teach through how they have been trained, or they have observed the teaching process by senior teachers based on apprenticeship trends (Dennen, 2004; Labaree, 2008). Perhaps, for this reason, the positions of assistantship and apprenticeship took place in this context to work under the supervision of a master to learn how to do the task as he did. However, the achievements of enlightenment activities in the 19th century resulted in criticism of the educational process for drawing a new approach in the 20th century based on pragmatism (Davey, 2013).

The modem movement in education introduced many new approaches such as research-based (Groat & Wang, 2002; Marshall & Rossman, 2006; Neuman, Social research methods: Qualitative and quantitative approaches, 2006), problem-based (Hmelo-Silver, 2004; Seifert & Sutton, Educational psychology, 2009), evidence-based (Moran & Malott, 2004; Vreman-de Olde et al., 2013), project-based (Blumenfeld et al., 1991; Helle et al., 2006; Kokotsaki et al., 2016), student-center (Hong, 2007), distance learning, and blended learning (Graham, 2009; Owston et al., 2013) to change educational environment significantly. This bulk of approaches changed higher education from lecturing in the classrooms to research activities (Johnson & Christensen, 2014), methodological approach (Silverman, 2010), problem-based learning, and competencies (Serdenciuc, 2013) that advocated the necessity of research activities in the higher education (Healey, Jenkins, & Lea, 2014).

In addition, the new achievement of education formulated not only the learning process but also how to learn based on epistemological skills, engaging learners in learning processes grounded on cognitive, non-cognitive, and specifically metacognitive skills (Hill & Houghton, 2001; Lee, 2005; Lubicz-Nawrocka & Bovill, 2021). It was expected that cognitive skills such as critical thinking, analysis, problem-solving, and creativity (Owens, 2007), and non-cognitive criteria such as personality, attitude, and motivation (Woolfolk, 2016), and metacognitive skills such as self-planning, monitoring, and evaluation (Salkind, Encyclopaedia of educational psychology, 2008; Tafahomi, 2022). These three skills refer to accountability and responsibility (Bold & Hutton, 2007; Marzanoand & Kendall, 2008) in the training process. It is supposed that the new movement in higher education approaches has resulted in the development of training courses for instructors in higher education. A comparative study of the different structures of PGCs in other countries can draw a general perception of the teaching of teachers' programs.

2.1. Comparison of applied structure for PGCs in other centers

There are a variety of postgraduate programs that teach higher education teachers. For example, Curtin University advocates the program as a new way to understand pedagogy through learning space, environment, and evaluation with an evidence-based learning approach. The duration of the program has mentioned half-year studies on campus with online options. The program is embedded in four modules, including the learning cycle: design and curriculum, design thinking and educational innovation, research for the scholarship of learning and teaching, and teaching portfolio (Curtin University, 2021). Temple University, for example, arranges this program to improve teaching through effectiveness, develop high-quality teaching, and build up portfolios and networks with professionals. The program includes two modules in two semesters, including teaching in higher education seminars and innovation, technology, and teaching in higher education (Temple University, 2021).

In some universities, the course includes elective modules for participants to specialize the content to their needs. For example, East Tennessee State University arranges the program into required elective and advisory modules. The required courses encompass two courses, "high-impact higher education instructions and the adult learner." The optional courses include three options: higher education in America, community colleges in the United States, and history of higher education in America. The advisory programs are selected by the course advisor for the participants. The university highlights the candidate's work experience, position, and writing ability as crucial as the critical criteria for registration (ETSU, 2021).

Moreover, The Swinburne University of Technology presents almost the same structure to 'transform teaching approaches, practice, and innovation through the use of technology and design.' The course is designed for one year in two semesters with two clusters of modules, core and elective. The core modules include 'nature of learning- teaching, curriculum design, and assessment presented' and elective courses contain digital learning environments, developing inclusive learning and teaching practice, scholarly teaching: to explore, evaluate and improve, design and delivery for online learning (Swinburne, 2021).

Harvard University presents the course online in eight weeks through the Derek Bok Center for Teaching and Learning. The aim and objective of the course are mentioned in terms of ensuring 'better teaching practice with alignment to the discipline, personality, and context.' The program is divided into eight weeks, and the titles of the sessional activities encompass 'the construction and communication of knowledge, how learning works, creating an inclusive learning environment, lesson planning, and delivery, engaging students, course and assignment design, using feedback to improve teaching and teaching portfolio preparation' (Derek Bok Center, 2021). In addition, the University of London presents this course online. The aim and objectives of the course are listed, such as 'confidence in teaching, enhance the skills, student's relationships management, balance in the study, work and commitment.' The course is presented in two modules "supporting learning, teaching and assessment, and enhancing learning, teaching, and assessment" (London, 2021).

The University of Cape Town also presents the topic in the one-year (two semesters) program with the aim of 'professionalizing of teaching and learning practice in higher education,' with the core and elective courses in the region. The program is based on 'learning and teaching in higher education, higher education assessment and evaluation practice, higher education curriculum and course design as core modules, and some elective modules such as 'South African education in context, online learning design, researching practice in education' (UCT, 2021). The University of Johannesburg points out that the objective of the course is to link the 'theory and practice, research-oriented activities, and enhances the knowledge about the education.' The program encompasses a variety of courses in both core and optional modes, such as 'teaching and learning, curriculum development, assessment,

research methodology, postgraduate supervision, learning with technology, leadership, and management, and understanding social inclusion' in higher education that the first four modules are arranged as compulsory and other optional modules respectively (Johannesburg, 2021).

Table 1 is conceptualized to draw similarities of the modules in some universities in PGCs programs such as the University of Nottingham (2021), the University College Cork (Cork, 2021), the University of the Witwatersrand (Witwatersrand, 2021), Walden University (Walden, 2021), University of Pretoria (Pretoria, 2021), Otago University (Otago, 2021), University of Sussex (Sussex, 2021), University of Kent (Kent, 2021), and the University of Rwanda.

Table 1. The content of the program in other universities

Center	Teaching learning	Assessment of course	Curriculum design	Research methods	Education innovation	Students diversity	Online learning	Context of teaching	Teaching portfolio
Curtin	√		√	√	√				√
Temple	√				√				
Otago	√		√	√			√		
ETSU			√			√		√	
Swinburne	√		√	√	√		√		
Derek Bok	√	√			√	√			√
Walden	√				√	√	√		
London	√	√	√						
Nottingham	√		√				√		
UCC	√	√				√	√		
Sussex	√	√							
Kent	√	√	√	√					
Witwatersrand	√	√	√		√				
Pretoria	√	√	√			√		√	
Johannesburg	√	√	√	√		√	√	√	
Cape Town	√	√	√				√	√	
Rwanda	√	√	√				√		

In summary, Table 1 reveals that some courses repeated more in the programs, such as teaching and learning, online learning, and curriculum, as the most common courses in the PGCs. In contrast, other courses, such as assessments, students' diversity, and innovation aspects, take place in the second priority level. Contextuality is a crucial criterion, particularly in Africa, perhaps in reaction to the postcolonial reconstruction. Some programs also offer elective courses in terms of specialization and personalization in the content. Two universities emphasize the adult teaching specification in the curriculum, and just one of the universities highlights the importance of supervision activities in the program. Although this table represents a quantitative aspect of the modules, a qualitative analysis of the current course of PGC at the University of Rwanda could lead interested people to criticize the opportunities and challenges of this kind of program.

3. Methods and Materials

This study has complied with the Research Publication Ethics stated in "Wager E & Kleinert S (2011) Responsible research publication: international standards for authors. A position statement developed at the 2nd World Conference on Research Integrity, Singapore, July 22-24, 2010. Chapter 50 in Mayer T & Steneck N (eds) Promoting Research Integrity in a Global Environment. Imperial College Press / World Scientific Publishing, Singapore". Since this is a Review Study, Ethics Committee Approval is not required. All responsibility belongs to the author.

The methods and materials included methodology, research design, research process, data specification, limitation and implication, and time and location as below:

3.1. Methodology

Studies on education and teacher's education applied quantitative and qualitative methods (Cohen et al., 2007). Quantitative methods and statistical analyses were used to evaluate educational big data and course outputs (Peers, 1996). The central part of the quantitative methods extracted data to analyze the results of the questionnaires precisely the opinions of the teachers and students (Tafahomi, 2021a; Xi et al., 2017; Yang et al., 2013). The

primary purpose of the quantitative methods was to discover the opinions of the participants in the research (Neuman, Social research methods: Qualitative and quantitative approaches, 2006; Loughran J. J., 2010) based on a survey operation, particularly the questionnaire (Creswell, Educational research planning, conducting, and evaluating quantitative and qualitative research, 2012; Almquist, Ashir, & Brännström, 2014; Johnson & Christensen, 2014).

The qualitative methods were also used to study the behavioral patterns of the teachers and learners based on the structured observation and interpretation of the results (Tafahomi, 2020; Tafahomi, 2021b). In detail, the study applied content analysis to analyze the documents, policies, curriculum, syllabuses, and educational materials (Krippendorff, 2003; Mugerauer, Interpreting environments: Tradition, deconstruction, hermeneutics, 1995; Murray, Nuttall, & Mitchell, 2008; Tafahomi, 2022). The studies applied qualitative methods to study the data in the context and the natural setting (Groat & Wang, 2002; Neuman, Social research methods: Qualitative and quantitative approaches, 2006; Silverman, 2004) exceptionally structured observation (Tafahomi & Nadi, 2020; Tafahomi, 2021c), and storytelling to explain the events through the narrative approach (Denzin & Lincoln, 2018; Given, 2008; Tafahomi & Chance, 2023) based on real events (Koskinen et al., 2011). Storytelling was mentioned as a qualitative method to interpret the events based on the observation of the activities based on the thematic topics, behavioral activities, and contextual matters in the research process (Denzin & Lincoln, 2018; Tafahomi & Chance, 2023).

3.2. Research design

This research was designed based on three qualitative techniques, including content analysis (Drisko & Maschi, 2016; Elo et al., 2014; Mayring, 2000), structured observation (Salkind, Encyclopaedia of educational psychology, 2008; Santrock, 2011), and storytelling of the events (Denzin & Lincoln, 2018; Tafahomi & Chance, 2023). The content analysis (Krippendorff, 2003; Mugerauer, Interpreting environments: Tradition, deconstruction, hermeneutics, 1995) was applied to evaluate critical criteria in the PGC program. The key factors were extracted from the program's structure and the modules' content with the application of the interpretation approach (Murray et al., 2008; Murray & Male, 2005). Through analysis of the program's content, the critical criteria were listed, including the program's content, methods of teaching in the courses, and the styles of the assessments. The structured observation (Marshall & Rossman, 2006; Tafahomi & Nadi, 2020; Tafahomi, 2020; Tafahomi, 2021c) was applied to analyze and interpret the styles and methods of the teaching and delivery of educational materials in the courses. To analyze the program's assessment style, content analysis, and structured observation techniques were applied to evaluate the assessment process and describe the results. A descriptive action was mentioned with the titles of storytelling method (LeCompte et al., 2012; Denzin & Lincoln, 2018) and logical arguments (Groat & Wang, 2002) to narrativize the observations, perceptions, or events.

3.3. Research process

To evaluate the PGC, the program's content was analyzed based on three critical criteria: the content of the modules, methods of teaching, and style of assessment of the learners. The content of the program was not accessible due to neither being shared content by the lecturers officially nor available on the department's website; therefore, the content of the modules was evaluated based on the presentations by lecturers through PowerPoint slides in terms of educational materials in classes. The critical criteria of teaching and learning aspects were analyzed based on educational material to determine each module's objectives and learning outcomes. Second, the teaching and course delivery methods were recorded through structured observation and notetaking as sessional activities to classify and interpret the module's aim. All activities were observed and recorded to discover the teaching methods, such as group work, individual activities, discussion, tasks, exercises, and presentations. Third, to evaluate the style of the assessments, all assignments were recorded based on the structure, time, handout, evaluation criteria, and achieved marks to assess the objectives of the assessments.

3.4. Data specification

The data included qualitative data, including three primary sources: the content of the presentation, the method of the presentation, and the assessment methods. The researcher collected data through notetaking in activities, interactions, and communications of six lecturers who presented the modules.

3.5. Limitation and implication

This research was carried out based on the researcher's structured observation in all program sessions without being absent. All data and interpretation were designed based on the researcher's note-taking in the classes, exercises, and activities in the program. Therefore, this research did not survey to collect the participants' opinions on the program. Perhaps the participants' views could highlight other aspects of the analysis that this research missed. In addition, the researcher did not inform the lecturer and students of the structured observation techniques at the time of the classes. Considering the possible effects of knowing the ongoing research about course delivery may affect the behavioral patterns of lecturers and learners that were not mentioned at the time of research.

3.6. Time and location

The program was arranged for the 2019-2020 academic year in the first semester. However, the COVID-19 and post-COVID problems affected the classes with many interruptions. Although most of the classes passed before lockdowns, the classes did not continue in the blended learning mode and, with some consideration, continued with social distance in the computer lab to cover the program's content. The classroom was located on the third floor of the teaching building and the first floor of the computer lab on the Remera campus in Kigali, Rwanda. The classes were arranged on weekends, including Friday and Saturday mornings and afternoons. The number of participants in the classes was 24 due to the final list of students, including learners from different departments such as medicine, law, public health, mathematics, education, and architecture.

4. Results

The program's structure encompassed three modules: 1) learning, teaching, and assessment in theory and practice, 2) curriculum design and development, and 3) e-learning: resource development and student support. Two instructors taught each module and divided the semester into two parts to present their topics, materials, and approaches. The instructors asked the participants for a teamwork project as the formative assessment and final critical papers regarding the summative assessment. The combination of the students encompassed the students from different departments and cities in the country.

4.1. Content of the program

The program's content, structure, and module description were not shared with the participants. Therefore, the students were introduced to the modules through the lecturers' slides. Thus, systematically comparing the delivered modules and the curriculum content was impossible. Nonetheless, the presentations of the lecturers provided sufficient data to analyze the content of the program in the three modules as below:

4.1.1. Learning, teaching, and assessment in theory and practice

The module's content was designed to cover teaching processes, methods, and materials in different programs based on a wide range of participants. The instructors highlighted the specification of educational materials in higher education, specifically in Rwanda. The main objective of this module was to obtain a framework for challenges and problems with higher education in the country. The module encouraged the students to brainstorm the challenges in some topics, such as infrastructure, language, class and campus capacity, and differentiation between K12 and higher education.

4.1.2. Curriculum design and development

The module presented a brief curriculum classification, such as intended, enacted, hidden, and invisible, although the course focused on its structure. The instructors attempted to present a framework for learners based on objectives, content, learning outcomes, and assessment methods. The instructors also briefly explained the curriculum assessment, review, and revision to introduce the learners to the curriculum development process and procedure.

4.1.3. E-learning resource development and student support

This module was designed to lead the participants in applying internet-based and distance learning activities. The course was in two parts, including applying digital tools and platforms to share information online and offline. Both lecturers asked participants to report their activities as educators. The first part focused on using the software in the classroom, and the second focused on hardware and networks. The course did not include Moodle applications for distance learning.

4.2. Methods of teaching

Most of the course occurred in a typical classroom with potable chair tables. The class was arranged based on row-column seating arrangement, and the lecturers took the position in the front of the school for the presentation. The computer lab was used for the eLearning classes. The lecturers applied PowerPoint presentations, common discussions, and panel works of the learners on different topics in terms of educational methods. Just two of the lecturers shared journal papers or offline eLearning materials. One of the lecturers shared the link to another institute for the eLearning materials that the participants can use.

The discussion in the class was the standard technique due to the high number of senior learners (senior lecturers who participated in the program) in the training course. The discussions were started through theories, ideas, or questions from lecturers and the participants based on concrete examples or hypothetical situations. The senior participants led the discussions who had more experience in different fields, classes, and industries. In this process, the class was a location to interchange the ideas, experiences, and lessons learned by the members at all levels. Although the junior participants (the assistant lecturers and tutors) were more passive in hearing the stories of active participants, the discussions shared information between them through listening. The debate was not recorded, shared, or presented as educational materials but as a complimentary conversation to be used by the classmates.

Brainstorming was another common technique based on teamwork activities applied by the lecturers concerning some course topics. The lecturers were asked to make temporary groups for brainstorming and present a board of ideas for the presentation, discussion, and critiques. The results of the activities were usually constructed based on a perceptual framework by the learners rather than a structured study, analysis, and conclusion. However, the discussion on the topics led the ideas toward improvement, precision, and completeness.

One of the lecturers applied SWOT (strengths, weaknesses, opportunities, and threats) and PEST (political, economic, social, and technical) techniques to analyze the challenges in higher education in the country in one of the courses. Despite each group of participants developing just one of the components in each technique, such as weaknesses or social aspects, the results of the exercises led other learners to understand different components of the methods based on the presentation and discussion. Both techniques were designed based on brainstorming, teamwork, and presentation processes. In each session, the participants presented one of the components of the methods in the classroom for discussion.

4.3. Structure of assessment in the courses

The program was designed in two formats: first, class activities in the group format, and second, the final project, which was called the final critical paper. Although the central part of the program included topics to explain formative and summative assessments, the program was arranged on the summative evaluation to evaluate the participants' progress. The activities were less based on a systematic assessment, marking, and informing the participants about the marks achievements and improvement in the formative evaluation. In addition, in the whole program, just one of the lecturers shared a handout with a clear structure of the criteria for evaluating the deliverables and marking just for the final exam.

The summative assessment was designed based on a critical paper on the participants' classroom activities, including the curriculum development, teaching method, applied strategies, and online and eLearning activities. Although the formative assessments were arranged in groups, the lecturers asked the participants for individual exercises for summative assessments in specific cases due to the participants' educational backgrounds. Table 2 summarizes the activities, themes, and topics in the program.

Table 2. The comparative table of the content of the course

Topics	Teaching learning	Assessment of course	Curriculum design	Research methods	Education innovation	Students diversity	Online learning	Context of teaching	Teaching portfolio
Content of curriculum and modules	√	√	√					√	
Methods of teaching in classes	√			√	√		√	√	

Structure of Assessment in the course	√	√		√		√	√

4.4. Analysis of the results

The program's curriculum includes three modules: learning, teaching, and assessment in theory and practice, curriculum design and development, and e-learning: resource development and student support. This program structure does not provide a variety for the participants to personalize and specialize the program for their knowledge, skills, and abilities. Although the program aims to serve the most common needs of the participants as learners, the program's structure has been fitted to the junior participants to introduce them to the fundamental and essential components of higher education. For this reason, the curriculum structure encompasses fixed modules rather than elective or optional. The absence of elective courses in the program reveals that the program did not predicate a variety of learners in the program and is less adapted to the university's vast number of departments, schools, and colleges.

The lecturers shared the application of teaching methods based on their own experiences rather than a systematic process and procedure to reveal the essential teaching techniques for the participants. The absence of the research methodology module was prominent in leading the participants to design their educational methods to cover the epistemological aspects of the teaching, such as problem-based, project-based, evidence-based, and other approaches. Adding the research methodology module to the course could cover part of the gap in delivering educational methods and techniques. Notably, the research activities are essential for the participants in the program to apply the different approaches and methods in their program in terms of the personalization and specialization of the lessons learned in the specific field.

The program needs to be more prosperous in the assessment structure. The materials for the assessments, such as formative and summative, did not include a variety of quizzes, exercises, and projects to internalize the evaluation process for the learners in the course. In addition, the program is missing a solid background in writing handouts for different modules to teach the participants to draft the handouts for the exams by rewriting the achievements in the program. Due to this weakness, the program faced problems with the formative assessment of the participants. The participants needed to be more informed about their progress issues, the recommendations for improvement, and the steps forward to enhance their advancement.

The program includes no module or course about the students, academicians, and administrative staff. The program needs an educational psychology course and topic to help the participants learn about students' behaviors, the department staff's interaction, and communication with administrative staff on the campus. It is supposed that after passing the program, the participants know how to lead the students in learning and their reactions, interact with the academic staff in the educational context, and communicate with other colleagues. However, those aspects still need to be included in the program.

5. Discussion

The PGCLTHE program was a new movement in universities to change the traditional structure of education and training of the lecturers with a modern concept of education (Craig, 2016) based on a systematic structure of education grounded on the knowledge, skill, and ability similar to findings of Loughran and Hamilton (2016). This process differed from the traditional style of training of staff based on the apprenticeship activities that in some departments it was a strong practice and belief (Drexler, The architecture of the Ecole des Beaux Art, 1975; Dutton, 1991; Harrison & McKeon, 2008; Tafahomi, 2022). The program targeted to modernize the style of education of lecturers in the university based on the essential segments (Davey, 2013) by creating a foundation for the trainers (Given, 2008).

Despite the current structure of the PGC program in the university with three modules, the study demonstrated a wide range of modules based on titles, content, and structure in other universities due to the specification of the context (Curtin University, 2021; Derek Bok Center, 2021; Pretoria, 2021; UCT, 2021; Johannesburg, 2021). The results also illustrated that some of the universities focused on the students' diversity (ETSU, 2021; Derek Bok Center, 2021; Walden, 2021; Pretoria, 2021; Johannesburg, 2021), educational innovation (Curtin University, 2021; Temple University, 2021; Derek Bok Center, 2021; Swinburne, 2021; Walden, 2021; Witwatersrand, 2021), and research methods (Curtin University, 2021; Otago, 2021; Swinburne, 2021; Johannesburg, 2021), which were missing in the case of study. Although the significant parts of the precedents emphasized the teaching and learning,

assessment methods, and curriculum design and development in terms of essential criteria in the PGC programs, the countries with a wide arrange of departments, programs, and colleges included more options in the program to adapt to needs of the participants.

Despite the wide range of methods and approaches advocated in higher education, namely project-based, problem-based, evidence-based, research-based, and blended learning, educational approaches in the program were designed based on the linear structure that Craig (2016) criticized. The program was designed based on critical thinking, discussion, and presentation; however, the program did not lead the participants on a systematic project such as research-based activities (Groat & Wang, 2002; Tafahomi, 2022), project-based innovation (Kokotsaki et al., 2016) and problem-based research (Seifert & Sutton, Educational psychology, 2009) in both formative and summative assessments activities. In this regard, the program lost the opportunity to introduce the research methodology module to familiarize the participants with a systematic research activity (Serdenciuc, 2013; Healey et al., 2014).

The findings of the research demonstrated that the program focused on the cognitive skills of the participants, such as teaching, learning, and assessments (Hill & Houghton, 2001; Lee, 2005; Owens, 2007; Tafahomi, 2021a; 2021b) and some aspects of non-cognitive skills importantly teamwork, and metacognitive particularly self-planning and self-monitoring (Bold & Hutton, 2007). The cognitive aspects of the course constructed an essential foundation for the junior learners although non-cognitive and metacognitive skills were found through the story-telling of the senior participants and teamwork in the course (Denzin & Lincoln, 2018; Kokotsaki et al., 2016). A structured module in educational psychology could reveal essential skills to deal with students, staff, and institutions. While the application of the storytelling technique by the senior participants attempted to share experiences with the students, instructors, and staff in the institutions, relative courses could strengthen relationships between teacher and learner in educational centers in terms of motivation, interaction, and communication (Lee, 2005; Salkind, Encyclopaedia of educational psychology, 2008; Woolfolk, Educational psychology, 2016).

6. Conclusion

The PGCLTHE program focuses on teaching, learning, assessment, curriculum specification, and the online teaching structure as the program's main components. The program is supposed to lead the academic staff to run the assigned job based on the teaching activities in a routine process to serve their students. The course has targeted chiefly teaching activities. However, other essential activities of the academic staff do not appear in the curriculum structure, such as research, outreach, publication, and administrative responsibilities. Therefore, the program targets one of the pillars of the academic staff in terms of teaching, learning, and assessments.

The University of Rwanda started an academic process to train the junior staff through the program to enhance the quality of education at the university. The main reason for running the program is to strengthen the level of teaching for undergraduate programs in the university, in which the program's content has been adapted mainly to the joiner staff who engage in the undergraduate programs. The senior participants with master's and Ph.D. students expect related content, courses, and achievements concerning the graduate and postgraduate programs. In this missing aspect, the participants with a higher experience level are less fitted to the program's structure. The program's structure does not adapt to the teaching, learning, and assessment of the graduate and postgraduate programs, especially supervision, thesis, dissertation leading, and assessments of the students in the viva presentation.

The combination of the participants who are not at the same level creates a big gap between the participants' topics, discussion, progress, and engagement. The participants included different levels of knowledge, skills, abilities, and experiences, from tutorial assistants to senior lecturers. This variety of the levels results in designing the class's progress based on the lower level, which has fewer experiences in the academic position and needs more mentorship than senior participants. Although the opening of discussion by the senior participants is valuable for the junior participants to introduce other precedents, senior participants, after a while, the junior participants are marginalized from the mainstream of the class and activities, and the senior participants lead the program through dialogue, open discussion, and interactions in the sessions.

To improve the program's current curriculum, it is suggested that at least two modules be added to the program to fill the gap in the structure and, most importantly, research methodology and educational psychology. First, the research methodology module enhances the participants' engagement level in undergraduate and graduate programs. It involves them in essential activities such as research design, research process, analysis, and supervision

processes. This course covers the methodological gap in the program and enhances the participants' epistemological level to frame the research-based activities in their teaching modules. Second, knowing the specifications of the students through educational psychology, such as motivation, attitude, and personality, will be an excellent opportunity for the participants to promote their knowledge, skills, and ability about behavioral patterns and learning modes of teaching effectively in the programs.

6.1. Theoretical significance

Critical thinking: It is supposed that all thinkers critique the current trends to evaluate the system's stability or mechanism against the critics. Education, programs, or courses are based on logic designed to achieve a specific objective at a particular time and location. A critical thinking style leads the students and lecturers to reassess the educational contents and methods to discover possible opportunities to improve the system. Specifically, teaching higher education teachers requires seeding the applicants' critical thinking.

Participatory education: Teaching teachers in higher education is a participatory education rather than a classical style. The applicants' participation in restructuring the content, introducing methods and styles, and sharing their styles and experiences could open new perspectives for other participants and educators. Attention to the needs of the participants makes the program more adaptive to the challenges and problems in the current world.

Cognitive, non-cognitive, and meta-cognitive skills: despite the necessity of three skills in educational programs, the non-cognitive and metacognitive skills should take place in more segments in educating educators for higher education. Importantly, metacognitive skills lead the learning to design out style for self-learning, self-development, and self-evaluation. Metacognitive skills significantly affect the lifelong learning of the applicants so that they can continue their exploration of educational knowledge, skills, and methods.

6.2. Practical implications

Restructuring the program: The program needs to be revised based on the current style of education, such as research-based, question-based, and evidence-based. Notably, two courses, research methodology, and educational psychology, need to be added to the program to provide new insight into the research, the personalities of the educators and students, and the educational environment. This program restructuring could enhance its resiliency for the new generation of educators in higher education.

Research-oriented activities: Many universities have been oriented toward research-based institutions. Programs such as PGC should advocate this orientation to teach educators to do and teach research. Accordingly, the program needs to reorient toward research activities for educators in higher education. This step requires teaching the research methodology and designing research projects based on the applicants' specifications.

Final project activities: The PGC program needs a final project that encompasses and presents all the lessons learned through a project. The program's structure was divided into six final projects based on the six instructors (not the modules) with the same value. However, a final project could provide deeper insight into specific aspects of higher education programs such as law, health, or architecture. The final project requires a focus on problem-based research to deal with particular challenges in specialization programs.

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The author reported no potential competing interest.

Ethical committee approval

This study has complied with the Research Publication Ethics stated in "Wager E & Kleinert S (2011) Responsible research publication: international standards for authors. A position statement developed at the 2nd World Conference on Research Integrity, Singapore, July 22-24, 2010. Chapter 50 in Mayer T & Steneck N (eds) Promoting Research Integrity in a Global Environment. Imperial College Press / World Scientific Publishing, Singapore". Since this is a Review Study, Ethics Committee Approval is not required. All responsibility belongs to the author.

Development and initial validation of the online risk-taking scale

Rabia Şengün Afşin, Özcan Doğan, Ayşe Dilek Öğretir Özçelik

Development and initial validation of the online risk-taking scale

Rabia Şengün Afşin[1], Özcan Doğan[2] and Ayşe Dilek Öğretir Özçelik[3]

[1]Corresponding author, Aydın Adnan Menderes University, Buharkent Vocational School, Program of Child Development, Aydın, Türkiye, Email: r.sengun.afsin@adu.edu.tr, ORCID: https://orcid.org/0000-0003-1477-3752
[2]Hacettepe University, Faculty of Health Sciences, Department of Child Development, Ankara, Türkiye, ORCID: https://orcid.org/0000-0002-3006-8159
[3]Gazi University, Faculty of Gazi Education, Department of Primary Education Early Childhood Education Programme, Ankara, Türkiye, ORCID: https://orcid.org/0000-0002-6380-4757

Article Info	Abstract
Research Article Received: 26 August 2024 Revised: 24 September 2024 Accepted: 25 September 2024 **Keywords:** Online risk-taking, Validity, Reliability, Scale	This study aims to develop and validate the Online Risk-Taking Scale. Based on the results of expert opinions and a trial application, a 20-item draft form was created. This scale includes 20 questions about behaviors that are considered risky and have been performed in the last six months. The scale was administered to 214 secondary school students as an online questionnaire, and data were collected. Validity and reliability studies were conducted using these final data. Exploratory factor analysis and confirmatory factor analysis were performed to determine the validity levels of the scale. Cronbach's α coefficient and McDonald's Omega (ω) coefficient were analyzed to assess the reliability levels. The scale demonstrated satisfactory validity and reliability. As a result, a valid and reliable measurement tool that will contribute to the literature by determining the online risk-taking levels of secondary school students has been obtained.

1. Introduction

Internet technology was created in 1969 in the USA to coordinate the military communication system. Since then, the modern Internet system we use today has become integral to our lives. All computer systems using the Internet represent the digital world, and children of our age are born into this digital world and grow up within its conditions. Technology has brought positive changes to human life. Thanks to technology, tasks can be completed faster and more efficiently. Technological developments facilitate connections with countries worldwide, and working conditions can be created quickly and efficiently. The internet has become an integral part of many individuals' lives. However, alongside the positive benefits of technology, its negative effects on health and other areas have become a concern. Countries may face costs related to health problems and technical difficulties.

Adolescents spend more time with technological devices such as computers, smartphones, and tablets than adults. In the USA, 91% of adolescents use the Internet daily (Gross, 2004). According to the data from the Turkish Statistical Institute (TÜİK) Information Technologies Usage Survey on Children in 2021, the daily internet usage rate of children between the ages of 6 and 15 is reported to be 90.1%. Additionally, 64.4% of children use smartphones or mobile phones, 55.6% use desktop or laptop computers and tablets, and 35.9% spend time in front of screens. The purposes of using the internet include attending online classes, using the Internet for learning purposes or homework, playing and downloading games, making audio and video calls over the internet, watching videos on sharing sites, and messaging (TÜİK, 2021). These usage figures reveal that the internet is a significant part of children's and young people's lives. These devices make life easier. However, their uncontrolled use causes many problems (Mustafaoğlu et al., 2018). In addition to being used as a means of communication, technological devices are utilized for various purposes such as education, transportation, health, and entertainment. As these devices have become an integral part of life in recent years, their use among children, young people, and adults is increasing uncontrollably (Joshi & Rose, 2018).

Studies investigating the negative and positive effects of digital use on children and adults can be found in the literature. According to the US Bureau of Labor Statistics, applications related to diseases caused by computer use constitute 64% of work-related diseases. Long-term computer use causes significant damage to the eyes, social development problems, musculoskeletal system, and emotional eating disorders (İnandı & Akyol, 2001; Mustafaoğlu et al., 2018). Uncontrolled and excessive internet use during adolescence negatively affects psychological, social-emotional, cognitive, and physical development (Evgin et al., 2019). Excessive internet use causes functional impairment in the brain's prefrontal cortex, making it difficult for adolescents to control their movements and impairing their planning and motivation skills. More importantly, it may cause psychosocial dangers, such as exhibiting more risky behaviors and engaging in dangerous activities (Mridha, 2019). Increased internet use is known to cause negative behaviors such as depression, dissatisfaction with life, aggression, a decrease in positive social behaviors, and desensitization to violence (Andreassen et al., 2016; Bargeron & Hormes, 2017).

The increase in the frequency of use of technological devices has also brought problems related to the access of individuals who abuse technology to children through these devices. Technological devices can harm children's social, emotional, and physical development with content such as online child abuse, exposure to harmful content, sharing private information with strangers, and cyberbullying (Çalışkan, 2019; Karaman & Ayhan, 2021). This brings up the issue of creating some limitations on using technological devices by parents and educators and informing children about these risks.

It is undeniable that internet use has many benefits for children, both socially and educationally. However, many studies have shown that children are exposed to and exhibit risky behaviors online. Livingstone and Helper (2007) explain that children, in particular, are exposed to commercial, violent, sexualized, or cyberbullying incidents or harassment in online environments. Livingstone and Bober (2014) stated that more than 30% of children between the ages of 9 and 19 were exposed to sexual harassment and bullying behaviors via email or messaging. Almost half of the participants in the study stated that they shared their personal information with people they did not know online, made friends with people they did not know, and met face-to-face with people they met online, engaging in behaviors that can be considered risky. Another study showed that children who went on a date assuming that the person they met online was a teenager learned that the person they communicated with was an adult (Liu et al., 2005). This shows that people in the online environment may also be malicious.

In a bulletin prepared by the OECD (2021), online risk types are defined in four categories: content risks, behavioral risks, contract risks, and contact risks. Many of these are digital versions of traditional risks. It can be said that every type of risk encountered in real life also exists online. For example, bullying, racism, sexism, and sexual harassment exist both in real-life and online environments. Like in daily life, reaching environments with zero risk in online spaces is impossible. However, creating the conditions for a safer online environment is possible. Livingstone and Haddon (2009) defined the risks that children face in online environments in four categories: risks related to cultural values, commercial risks, sexual risks, and violent risks.

In their study, Ybarra et al. (2007) identified nine risky online behaviors in young people. These behaviors include publishing personal information, sending personal information, making rude comments to others, embarrassing and harassing others, meeting someone online, having people they do not know in their friend list, visiting porn sites, talking about sex with online people, and downloading files on file-sharing sites. The EU Kids Online network has categorized online risks to children as violent, sexual, value-related, and commercial (Livingstone & Smith, 2017). Especially after the increase in usage, the internet and technological devices have become more private for children and less accessible and controllable regarding parental supervision (Livingstone, 2009). Families have difficulties reducing their children's dependence on complex digital technologies, guiding them, and meeting their children's demands and needs (Ofcom, 2016).

De Moor et al. (2008) categorized online hazards into three classes: content hazards, contact hazards, and commercial hazards (Sasson, 2015). Content hazards refer to content that children may be exposed to that is disturbing for them, such as violence, racism, pornography, and content containing false information. Commercial hazards include games with hidden offers to sell products to children, brand communities that target young people and encourage conscious consumption, and planned advertisements to sell drinks and food to children. Contact hazards involve behaviors that may lead to risky situations, such as sexual harassment, cyberbullying, threats to privacy, and contact with strangers.

While adolescents and children can be exposed to content and commercial hazards on television, exposure to contact hazards is specific to the internet environment. One of the developmental tasks of adolescence is to establish social relationships. Friendships formed on the Internet provide emotional support, encouragement, and advice

to adolescents who aim to develop social relationships (Subrahmanyam & Smahel, 2011). Consequently, adolescents try to communicate with others and maintain these relationships consistently. These interactions within peer groups extend beyond the physical community through the Internet, leading to communication with people from different countries. As a result of these relationships, they are likely to be exposed to contact hazards such as online bullying, communicating with strangers, and the disclosure of personal information (Mesch & Talmud, 2010).

A study found that 32% of young people who use the internet received requests from strangers on social media sites, and 21% communicated with the person who made the request (Lenhart & Madden, 2007). Another study establishes a positive relation between the intensity of internet use and increased users' willingness to share personal information online. In other words, the more the internet is used, the more personal information is shared (Mesch & Beker, 2010). Additionally, it was found that young people are somehow involved in online bullying (Sasson, 2015).

All these studies highlight the importance of staying supervised in online environments and ensuring necessary controls are in place. To carry out these controls, it is essential to identify children with risky behaviors and to create and implement intervention programs for these children. However, an online risk-taking behavior measurement tool for secondary school students in Turkey needs to be implemented. To address this gap, a study will be conducted to establish the validity and reliability of a measurement instrument that can be used to define the online risk-taking behaviors of secondary school students. Developing an online risk-taking scale will be critical to protect children from dangers in online environments. In this way, children's behavior in online environments can be better understood, possible risks for children can be determined, and effective intervention methods can be developed if necessary.

2. Methodology

Ethical permission was obtained from Gazi University Ethics Commission (dated 28.12.2023 and numbered E.837243). Subsequently, permission was secured from the Ankara Governorship Directorate of National Education (dated 11.01.2024 and numbered E-14588481-605.99-94178892).

This research is a scale development study. One of the quantitative research methods used was a survey model.

2.1. Data

The research was conducted in the 2023-2024 academic year. The study group consists of three secondary school students from the central districts of Ankara, Turkey. The sample includes 595 students divided into groups of 30, 351, and 214 students, respectively. A simple random sampling method was used to determine the sample. The frequency, percentage, mean, and standard deviation findings of 214 secondary school students in the validity and reliability sample group are shown in Table 1 below.

Table 1. Frequency, percentage, mean, and standard deviation findings of the participants

	Average	S.D.			f	%
Age	13,19	1,60	Gender	Male	114	53,3
				Female	100	46,7

When Table 1 is analyzed, it is observed that 114 (53.3%) of the students participating in the study were male and 100 (46.7%) were female, with an average age of 13.19.

2.2. Data collection tools

Online Risk Taking Scale, -Turkish name is Çevrimiçi Risk Alma Ölçeği- to evaluate the online risk-taking levels of adolescents, the final version of the scale consisting of 14 items was developed by the researchers. The scale includes 14 questions, all of which are related to online behaviors performed in the last six months. It covers various online risky behaviors considered risky (e.g., sharing identity information, meeting face-to-face with people met online). In the Likert-type scale, the values 1, 2, 3, 4, and 5 correspond to the statements 'not true, rarely true, sometimes true, usually true, always true' respectively. A minimum of 14 and a maximum of 70 points can be obtained from the scale. High scores indicate that students engage in more online risky behaviors. An average score for the questions was calculated as $(70+14)/2 = 42$; a higher score indicates more online risky behaviors.

Mindfulness Sacele for Children and Adolescents was developed by Greco et al. (2011) to measure the mindfulness skills of children and adolescents aged nine years and older. While mindfulness is frequently measured in adults,

the lack of a measurement tool for children and adolescents led to the development of this scale. The scale includes negatively worded items and consists of 10 reverse-coded items. It is a self-report scale with a 5-point Likert-type response format: "not true, rarely true, sometimes true, usually true, always true." The Cronbach Alpha coefficient for the scale was found to be .81. While it is recommended to use multi-factor structures in mindfulness scales for adults, a single-factor structure was obtained for this scale due to the developmental characteristics of children. A high score on the scale indicates high mindfulness. The single-factor structure may be due to the underdevelopment of this skill at an early age compared to adults. In Turkey, the adaptation study of the scale was carried out by Çıkrıkçı (2016), and its usability was tested. The adaptation studies involved 660 children and adolescents attending grades 5 to 11. As a result of Confirmatory Factor Analyses, a single-factor structure was observed, unlike the original scale. Item analyses assessed each item's adequacy in measuring participants' attitudes. Following the analyses, two items were removed from the scale to achieve a single-factor structure. The Conscientiousness Scale for Children and Adolescents was found to be a reliable measurement tool with an internal consistency of .73 (Çıkrıkçı, 2016). Permission was obtained from the original developers of the scale for its use.

Personel Information Form was created by the researcher that includes some demographic information about the children participating in the study.

2.3. Development of the scale and collection of data

First, ethical permission was obtained from Gazi University Ethics Commission (dated 28.12.2023 and numbered E.837243). Subsequently, permission was secured from the Ankara Governorship Directorate of National Education (dated 11.01.2024 and numbered E-14588481-605.99-94178892). Initially, an item pool consisting of 30 items was created by reviewing the literature on the research objectives. For face and content validity, the opinions of six experts (five child development experts and one statistical expert) were solicited. The 30-item scale was prepared in a five-point Likert format based on the expert opinions.

After obtaining the necessary permissions, public secondary schools in Ankara province were visited for the application in the 2023-2024 academic year. Before participating in the study, consent forms were obtained from the parents, and participation consent forms were collected from the secondary school students. Only those who filled out these forms were included in the study. The draft form, created based on expert opinions, was initially applied to 30 secondary school students in a face-to-face classroom setting. This preliminary application aimed to determine the items' readability, the scale's response time, and any parts the students did not understand. Following this, the scales were prepared online, and a trial application was conducted with 351 secondary school students.

Initial analyses were conducted using IBM SPSS 2 with the data collected from the trial application. Exploratory factor analysis was used to determine the validity levels, and Cronbach's alpha coefficient was employed to assess reliability levels. After the trial application, items considered potentially misunderstood were removed based on the analysis results, reducing the number of items in the scale to 20. The wording of the scale items was also shortened and made more understandable. The finalized 20-item scale was then applied to a different group of 214 secondary school students, and detailed reporting of the collected data was undertaken. With the data collected from these 214 students, the validity and reliability study of the scale was conducted. All collected data were analyzed using IBM SPSS 2. Both exploratory factor analysis and confirmatory factor analysis were performed to determine the validity levels. Cronbach's α coefficient and McDonald's Omega (ω) coefficient were analyzed to assess reliability levels.

As a result of these analyses, the scale was refined to 14 items, and a single factor was determined to explain the scale. Additionally, to calculate the criterion validity of the scale, its correlation with the Mindfulness Scale presented to the participants in the same questionnaire form was examined. According to the results of Pearson correlation analysis, a positive and significant correlation was found between the Online Risk-Taking Scale for Adolescents and the Mindfulness Scale. This significant positive correlation indicates that the Online Risk Taking Scale for Adolescents meets the criterion validity.

In conclusion, a valid and reliable measurement tool has been developed, which will contribute to the literature by determining adolescents' online risk-taking levels.

3. Findings

In this study, data were collected from 214 participants using an online questionnaire to conduct validity and reliability analyses of the scale developed to determine the online risk-taking levels of secondary school students. The first version of the scale, consisting of 20 items, is shown in Table 2. The 9th, 10th, 13th, 16th, and 19th items

were determined to be reverse items and were reverse-coded before proceeding to the analyses. Exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) methods were used to determine validity levels, while Cronbach's alpha and McDonald's omega coefficients were used to assess reliability.

Table 2. First version of the scale

Scale items	Not true	Rarely true	Some-times it's true	Usually correct	Always right
1. I share my own identity information.					
2. I share my address details.					
3. I share my parents' credit card details.					
4. I share my images on social media sites.					
5. I click to access content such as gifts, discounts, prize money, etc.					
6. I open e-mails from people I do not know.					
7. I click on adverts that interest me.					
8. I set my profile information, including personal information, as public.					
9. I don't open my camera to people I don't know.					
10. I do not enter illegal gaming sites (betting, gambling, gaming) to earn money. *					
11. I participate in video challenges.					
12. I try to access sites related to sexuality.					
13. I open e-mails from people I know.					
14. I use fake accounts to follow others without letting them know.					
15. I meet people I meet on the Internet face to face outside.					
16. I do not try to enter prohibited sites.					
17. I send sexually explicit messages to others.					
18. I share personal information such as parents' name-surname and occupation.					
19. I don't share our phone number.					
20. I present myself as someone great or someone different.					

* Reverse coded items

Before the exploratory factor analysis, the Cronbach's alpha coefficient and the corrected item-total correlations of the scale items were analyzed to determine whether an item negatively affected the scale's reliability. In the first analysis, Cronbach's alpha coefficient was found to be 0.788, and the corrected item-total correlations for the 9th, 10th, 13th, 16th, and 19th items were between -0.182 and 0.184. These items were excluded from the analyses as they were thought to be not fully understood by the participants due to their inverted expressions, thus reducing the scale's reliability. In the second reliability analysis conducted with the remaining items, Cronbach's alpha coefficient was 0.914. The findings of this reliability analysis are shown in Table 3. Since none of the items decreased the reliability coefficient of the scale, the exploratory factor analysis phase was initiated.

Table 3. Initial Cronbach's alpha (reliability) analysis findings

Scale items	Corrected item-total correlations	Cronbach's Alpha when the item is deleted
1. I share my own identity information.	,623	,908
2. I share my address details.	,662	,907
3. I share my parents' credit card details.	,823	,905
4. I share my images on social media sites.	,540	,912
5. I click to access content such as gifts, discounts, prize money, etc.	,742	,906
6. I open e-mails from people I do not know.	,657	,907
7. I click on adverts that interest me.	,583	,910
8. I set my profile information, including personal information, as public.	,719	,906
11. I participate in video challenges.	,609	,909
12. I try to access sites related to sexuality.	,573	,910
14. I use fake accounts to follow others without letting them know.	,604	,909
15. I meet people I meet on the Internet face to face outside.	,707	,906
17. I send sexually explicit messages to others.	,831	,905
18. I share personal information such as parents' name-surname and occupation.	,653	,907
20. I introduce myself as someone great or different.	,398	,922

In the exploratory factor analysis conducted to test the scale's validity, the Kaiser-Meyer-Olkin (KMO) and Bartlett's test were used to determine the scale's suitability for factor analysis.

The KMO value was found to be 0.928, indicating that the sample size was sufficient. Additionally, Bartlett's test result was significant, indicating that the scale was suitable for factor analysis ($X2$ (105) = 1931.786, $p < .01$). In the factor analysis, the factor loadings of the items were examined using Varimax rotation. The 20th item, with a factor loading below 0.60, was removed, and the analysis was repeated.

In the second and final factor analysis, the KMO value was 0.927, and Bartlett's test result was significant ($X2$ (91) = 1883.213, $p < .01$) (Table 4).

Table 4. Kaiser-Meyer-Olkin and Bartlett results of the final EFA

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		,927
Bartlett's Test of Sphericity	X^2	1883,213
	df	91
	p	,000

This analysis showed that a single factor could explain the scale. The eigenvalue of this factor was 7.476, explaining 53.402% of the total variance of the scale. The scale's validity is high since this value is more than 50%. The findings regarding the factor eigenvalues are shown in Table 5. Additionally, the scree plot created according to the calculated factors is shown in Figure 1. The findings related to the factor loadings of the scale items are shown in Table 6. As a result of the analyses, the scale was reduced to 14 items and was explained by a single factor.

Table 5. Factor Eigenvalue findings related to EFA

Factor	Initial Eigenvalues		
	Total	Percent variance	Cumulative percentage
1	7,476	53,402	53,402
2	,956	6,825	60,227
3	,904	6,454	66,682
4	,775	5,533	72,215
5	,637	4,552	76,767
6	,565	4,036	80,803
7	,543	3,881	84,684
8	,479	3,421	88,105
9	,428	3,054	91,159
10	,340	2,431	93,590
11	,330	2,360	95,950
12	,255	1,822	97,772
13	,222	1,589	99,361
14	,090	,639	100,000

Subtraction method: Principal Component Analysis.
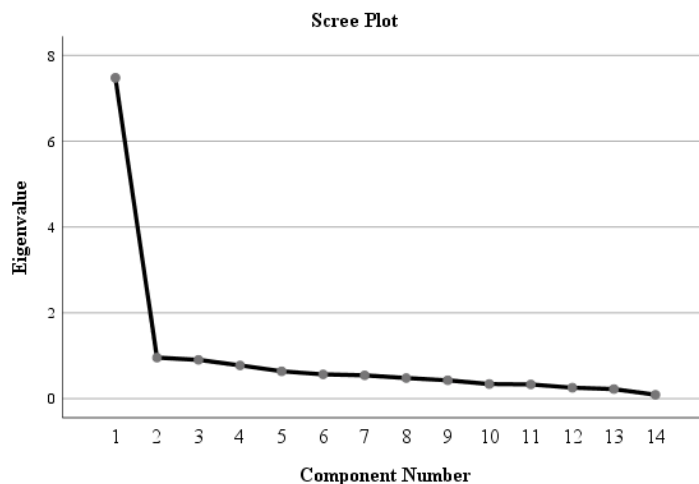
Figure 1. Slope accumulation graph to vectors

Table 6. Factor loadings of scale items

	Factor loadings
1. I share my own identity information.	,689
2. I share my address details.	,712
3. I share my parents' credit card details.	,883
4. I share my images on social media sites.	,591
5. I click to access content such as gifts, discounts, prize money, etc.	,813
6. I open e-mails from people I do not know.	,713
7. I click on adverts that interest me.	,608
8. I set my profile information, including personal information, as public.	,780
11. I participate in video challenges.	,666
12. I try to access sites related to sexuality.	,646
14. I use fake accounts to follow others without letting them know.	,639
15. I meet people I meet on the Internet face to face outside.	,791
17. I send sexually explicit messages to others.	,892
18. I share personal information such as parents' name-surname and occupation.	,727
Eigenvalue	7,476
Explained variance (%)	53,402
Cronbach's alpha	,922
McDonald's omega	,932

The reliability coefficients calculated for all the remaining items of the scale after the factor analysis were 0.922 (Cronbach's alpha) and 0.932 (McDonald's omega) (Table 7). These values indicate that the scale's reliability is relatively high.

Table 7. Cronbach's alpha and McDonald's omega (reliability) analysis findings after EFA

	Corrected item-total correlations	Cronbach's Alpha when item deleted	When the article was deleted, McDonald's omega
1. I share my own identity information.	,627	,917	,929
2. I share my address details.	,668	,916	,928
3. I share my parents' credit card details.	,828	,913	,922
4. I share my images on social media sites.	,547	,921	,932
5. I click to access content such as gifts, discounts, prize money, etc.	,751	,913	,925
6. I open e-mails from people I do not know.	,656	,916	,928
7. I click on adverts that interest me.	,563	,920	,931
8. I set my profile information, including personal information, as public.	,724	,914	,926
11. I participate in video challenges.	,615	,918	,930
12. I try to access sites related to sexuality.	,582	,918	,930
14. I use fake accounts to follow others without letting them know.	,594	,919	,930
15. I meet people I meet on the Internet face to face outside.	,726	,914	,926
17. I send sexually explicit messages to others.	,838	,913	,921
18. I share personal information such as parents' name-surname and occupation.	,662	,916	,928

Confirmatory factor analysis (CFA) was applied to verify the fit level of the factor obtained after EFA. The CFA fit indices of the scale model are shown in Table 8, and the CFA model of the scale is shown in Figure 2.

Table 8. CFA model fit indices of the scale

Indexes	Index values of the created model	Normal reference value	Acceptable reference value
CMIN/DF	1,892	<2	<5
CFI	,965	>,95	>,90
NFI	,930	>,95	>,90
RMSEA	,065	<,06	<,10
GFI	,918	>,95	>,90
AGFI	,880	>,95	>,90

Figure 2. CFA model of the scale
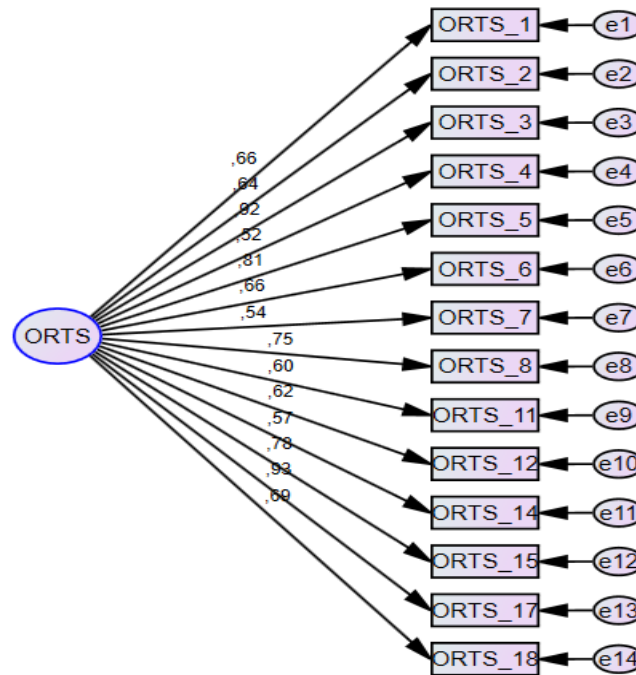
After the EFA, it was determined that the scale had a single-factor structure. The CFA fit indices of the scale model created according to this sub-factor are found in Table 8. According to the analysis, the CMIN/DF value was 1.892, below the standard reference value. The CFI and NFI values were 0.965 and 0.930, respectively, at the standard reference level (Baumgartner & Homburg, 1996; Marsh et al., 2006). The RMSEA value was also 0.065, which is acceptable (Byrne, 2001; Hu & Bentler, 1999). The GFI value was 0.918, above the acceptable level (Baumgartner & Homburg, 1996). Finally, the AGFI value was 0.880, which, although below the acceptable reference value of 0.90, is considered acceptable because it is close to the reference value (Schermelleh-Engel et al., 2003). These findings demonstrate that the construct validity of the scale is at an acceptable level.

To calculate the criterion validity of the scale, its correlation with the Mindfulness Scale, presented to the participants in the same questionnaire form, was examined. Since a single factor explained the Online Risk Taking Scale for Adolescents after the exploratory factor analysis, the online risk-taking variable for adolescents was created by calculating a mean score for the 14 items shown in Table 6. Additionally, the mean score for the eight items of the Mindfulness Scale was calculated to create the mindfulness level variable. Descriptive statistics for these variables are given in Table 9.

Table 9. Descriptive findings related to scales

	Average	S.S.	Multiply	Basque.
Online Risk-Taking Scale for Adolescents	1,24	,25	1,405	1,760
Mindfulness Scale	2,37	,87	,744	,335

Table 10. Pearson Correlation Analysis results for criterion validity

		Online Risk Taking Scale for Adolescents	Mindfulness Scale
Online Risk Taking Scale for Adolescents	r	1	,371
	p	-	,000
	N	214	214
Mindfulness Scale	r	,371	1
	p	,000	-
	N	214	214

The average risk-taking level of the participants was found to be 1.24±0.25, and the average level of mindfulness was found to be 2.37±0.87. Skewness and kurtosis coefficients were examined to determine whether these variables fit the normal distribution. Coefficients between -1.5 and +1.5 indicate that the variables fit the normal

distribution and meet the normality assumption (Tabachnick & Fidell, 2013). The skewness and kurtosis values shown in Table 8 are within this specified range, indicating that the variables meet the assumption of normal distribution. Therefore, Pearson correlation analysis was used to analyze the correlation coefficient between the variables.

According to the Pearson correlation analysis results in Table 10, a positive and significant correlation was found between the Online Risk Taking Scale for Adolescents and the Mindfulness Scale (r = .371, p < .001). This result suggests that as the mindfulness level of participants increases, their risk-taking levels also increase. The significant and positive correlation between the Online Risk-Taking Scale for Adolescents and the Mindfulness Scale indicates that the scale also meets the validity criterion.

4. Discussion, conclusion, and recommendations

The digital environment is a fundamental part of daily life for all individuals, offering enormous benefits and new channels for creativity, education, and social interaction. However, it also brings serious risks, such as blackmail, cyberbullying, and privacy concerns, especially for children. Therefore, creating a safe digital environment and providing children with the necessary digital skills to address these increasing risks is crucial. Consistent policies, training programs, and procedures are needed to balance the opportunities the digital environment offers and protect children from risks.

The first step is to identify children who engage in online risky behaviors. In the research aimed at developing a scale to determine the online risk-taking levels of children aged 10-13, data obtained from the draft scale were analyzed through a series of statistical analyses.

In the reliability analysis, Cronbach's alpha coefficient was 0.914. Since no item decreased the scale's reliability coefficient, the exploratory factor analysis phase was started.

In the exploratory factor analysis (EFA) conducted to test the scale's validity, Kaiser-Meyer-Olkin (KMO) and Bartlett's test were used to determine the scale's suitability for factor analysis. The KMO value was found to be 0.928, indicating that the sample size was sufficient. Additionally, Bartlett's test result was significant, indicating that the scale was suitable for factor analysis, X2 (105) = 1931.786, p < .01. The factor loads of the items were examined using Varimax rotation. The 20th item, with a factor loading below 0.60, was removed, and the analysis was repeated. In the second and final factor analysis, the KMO value was 0.927, and Bartlett's test result was significant, X2 (91) = 1883.213, p < .01. The eigenvalue of this factor was 7.476, explaining 53.402% of the total variance of the scale. This high value indicates that the scale's validity is robust.

The reliability coefficients calculated for all the remaining items of the scale after the factor analysis were 0.922 (Cronbach's alpha) and 0.932 (McDonald's omega) (Table 6), indicating that the scale's reliability is relatively high.

After the EFA, it was determined that the scale had a single-factor structure. The CFA fit indices of the scale model created according to this sub-factor were analyzed. The CMIN/DF value was 1.892, below the standard reference value. The CFI and NFI values were 0.965 and 0.930, respectively, at the standard reference level (Baumgartner & Homburg, 1996; Marsh et al., 2006). The RMSEA value was also 0.065, an acceptable level (Byrne, 2001; Hu & Bentler, 1999). The GFI value was 0.918, above the acceptable level (Baumgartner & Homburg, 1996). Finally, the AGFI value was 0.880, which, although below the acceptable reference value of 0.90, is considered acceptable as it is close to the reference value (Schermelleh-Engel et al., 2003). These findings indicate that the scale's construct validity is acceptable.

To calculate the criterion validity of the scale, its correlation with the Mindfulness Scale presented to the participants in the same questionnaire form was examined. The average risk-taking level of the participants was 1.24±0.25, and the average mindfulness level was 2.37±0.87. Skewness and kurtosis coefficients were analyzed to determine whether these variables fit the normal distribution. Coefficients between -1.5 and +1.5 indicate that the variables fit the normal distribution and meet the normality assumption (Tabachnick & Fidell, 2013). The skewness and kurtosis values were within this specified range, indicating that the variables meet the standard distribution assumption. Therefore, Pearson correlation analysis was used to analyze the correlation coefficient between the variables.

According to Pearson correlation analysis results, a positive and significant correlation was found between the Online Risk Taking Scale for Adolescents and the Mindfulness Scale, r = .371, p < .001. This result suggests that as the mindfulness level of participants increases, their risk-taking levels also increase. The significant and positive

correlation between the Online Risk-Taking Scale for Adolescents and the Mindfulness Scale indicates that the scale also meets the validity criterion.

This research found that the online risk-taking scale developed for adolescents is valid and reliable. Researchers can use the scale to determine the online risk-taking levels of secondary school students.

Developing an online risk-taking scale is crucial to protect children from dangers in online environments. In this way, children's behavior in online environments can be better understood, and they can be more aware of the dangers. Potential online risks for children and personal factors affecting online risk behaviors can be identified. In light of the information obtained, effective intervention methods can be developed to prevent online risky behavior. According to the scale results, parents and educators can be guided in ensuring their children's online safety. Special measures can be developed for children who engage in risky behavior online. It can contribute to developing preventive and protective programs to raise awareness about online security in environments such as schools and private teaching institutions where children are included. As a result of the data obtained, it is necessary to make legal regulations and develop effective policies to ensure children's online safety.

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