

Supporting Older Adults in the Digital Health Era: A Scoping Review of Peer Digital Literacy Courses

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Population aging and the digitalization of healthcare are reshaping European societies, posing both challenges and opportunities. Older adults, as primary users of healthcare services, often lack the digital skills needed to benefit fully from e-health innovations, increasing the risk of social exclusion. Digital literacy is therefore essential to support autonomy, wellbeing, and equitable access to care. While various instructional methods exist, peer-to-peer learning remains underexplored despite its established use in other healthcare domains. This paper presents a scoping review aimed at mapping existing studies on peer-to-peer digital literacy courses for older adults. Specifically, it examines the structural characteristics of these courses and how their effectiveness and impact on wellbeing are assessed. The review addresses a gap in the literature and informs future development of inclusive digital education strategies for older populations.

Keywords: digital competence; peer education; older adults; peer training; e-health; scoping review.

Introduction

Population aging, a phenomenon involving several countries worldwide (Uhlenberg, 2009), is reshaping the composition of contemporary societies. Among its various implications, it poses significant challenges to the sustainability of public welfare systems, including healthcare and care services (European Commission, 2018; 2020). Europe stands out globally with one of the highest proportions of older adults, and projections indicate this trend will continue due to persistently low fertility rates and increasing life expectancy (Eurostat, 2023a). These demographic shifts must be considered alongside the ongoing evolution of healthcare systems within the European

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Union, particularly the integration of digital technologies across the entire healthcare domain. Digital health technologies are promoted as tools to enhance the efficiency and sustainability of healthcare delivery, while also ensuring high quality, equity, and inclusiveness of services (European Commission, 2018; Poli *et al.*, 2021). However, the broad implementation of such technologies may also introduce risks for older adults, who are typically the primary users of healthcare services (Poli *et al.*, 2023). Many older individuals may not be adequately equipped to leverage the benefits of the digital transition, particularly in areas such as e-health and telemedicine. This digital gap can result in suboptimal responses to their health needs (Poli *et al.*, 2021; 2023). More broadly, the risk of social exclusion in later life due to limited digital competence remains a pressing concern (Pihlainen *et al.*, 2021; Tyler *et al.*, 2018; Walsh *et al.*, 2021). Currently, only 28.5% of individuals aged 65–74 in the EU possess basic or higher digital skills (Eurostat, 2023b), and the demand for constant skill updates is always renewed.

Digital literacy is therefore essential for older adults to capitalize on the opportunities offered by the digital transformation of healthcare and to mitigate its associated risks. Furthermore, it has been shown that digital technology has a positive impact on older adults' wellbeing, especially concerning the use of the Internet and social media (Caliandro *et al.*, 2021; Tyler *et al.*, 2018; Woodward *et al.*, 2013). The Internet offers older people the chance to maintain, reestablish, or build new social relationships in a period of life where old habits and practices may change compared to previous times (Gatti *et al.*, 2017). Moreover, specific digital technologies may support older adults in extending their independent life, maintaining autonomy and control, which are deemed significant for higher levels of perceived wellbeing (Pihlainen *et al.*, 2021).

Therefore, promoting digital literacy should be a recognized priority (Gatti *et al.*, 2017; Pihlainen *et al.*, 2021). When training is provided, improvements in digital skills among older participants are clearly observed (Woodward *et al.*, 2013). Various instructional formats have been used to enhance digital literacy in older age, including direct instruction, individual instruction, workshop formats, remote web-based training, and intergenerational learning. Despite not being widely covered (Ahmad *et al.*, 2022; Rasi *et al.*, 2021), peer-to-peer learning seems a valuable approach to digital training in old age (Freddolino *et al.*, 2010; Hunsaker *et al.*, 2020), as also suggested by the Technology In Later Life study conducted with adults aged 70 or older in the United Kingdom and Canada (Marston *et al.*, 2019).

Peer education has been widely used in other domains of healthcare, such as the promotion of healthy lifestyles (García-Camacha *et al.*, 2019), the sharing of self-care strategies among older adults with diabetes (Ghasemi *et al.*, 2018), and education on the benefits of vision rehabilitation (Buonocore, Sussman-Skalka, 2002), as well as in lifelong learning initiatives (Brady *et al.*, 2003).

Its potential positive impact on the teaching of digital skills is clearly summarized by an interview excerpt of an older person participating in such a training experience: «I always think that seniors' problems have to be solved by seniors. There are many subtle things that only we seniors can understand and solve. Young people are not necessarily aware of these subtle things; they don't necessarily know or understand the complex minds of seniors...» (Xie, 2007, p. 437).

Having been directly involved in the design, implementation, and evaluation of a peer-to-peer digital literacy course for older adults, which also covered topics related to e-health¹, we noted a lack of comprehensive and systematic accounts on this educational approach. Consequently, we conducted the scoping review presented in this paper. Among the many features of a scoping review, we are particularly interested in its feasibility to examine how research is conducted on specific topics and to understand how certain concepts are addressed in other studies (Aromataris *et al.*, 2024). More specifically, we aim to understand what the main characteristics (e.g., number of participants, number of peer tutors, course duration, etc.) of peer-to-peer digital literacy courses described in the literature are. We also aim to map how peer education courses have been evaluated and how the impact on participants' wellbeing has been assessed.

1. Methods

A review protocol for the present scoping review has been defined to guide the various steps of the research. It is publicly available on the website of the (Ageing Societies) research group.¹ This scoping review was guided by the JBI Manual for Evidence Synthesis (Aromataris *et al.*, 2024) and informed by relevant literature on scoping reviews (Arksey, O'Malley, 2005) and existing scoping reviews on similar topics in the field of studies on older adults (Walsh *et al.*, 2017).

¹ <https://ageingsocieties.unimib.it/activers3/> (15/01/2026).

Since one of the main goals of this scoping review is to map the available literature on digital literacy peer courses among older adults, it was decided to include only published contributions in the analysis. To align with this aim, no distinction was made concerning the methodologies employed in the analysed studies. Similarly, the year of publication was not considered an exclusion criterion, allowing all available studies to be included regardless of their publication year to maximize the number of eligible studies. English was selected as a language since most of international academic production is published in this way. This criterion was inherently included in the language of the keywords used in the search query and was later applied during the screening of the materials.

Based on these criteria and the goal of reviewing the scientific production on the topic, bibliographic databases were identified as sources of evidence. The following bibliographic databases were selected: EBSCO AgeLine, Communication Abstracts, Education Research Complete, ProQuest APA PsycArticles, APA PsycInfo, Periodicals Index Online, Publicly Available Content Database, Education Database, ERIC, International Bibliography of the Social Sciences, Social Science Database, Applied Social Sciences Index & Abstracts, Social Service Abstracts, Sociological Abstracts, Sociology Database, PubMed, Scopus, and Web of Science. These databases were included in the analytical strategy after discussion with research team members due to their broad relevance to the topics of interest.

As described in the protocol, a preliminary search was conducted on the Scopus and Web of Science databases in June 2023 with the following preliminary query: “ageing” OR “old* adult*” OR “senior*” AND “peer* educat*” OR “peer* teach*”. The query was then adjusted and expanded based on the preliminary browsing of abstracts and titles. The final search query that was inserted into each of the previously listed databases is as follows: “ageing” OR “old* adult*” OR “senior*” OR “adul* education*” AND “peer*” OR “peer* educat*” OR “peer* teach*” OR “peer* tutor*” OR “peer* assist* learn*” AND “digital* litera*” OR “information and communication technolog*” OR “comput* train*” OR “media litera*” OR “media educat*” OR “media-literacy educat*”. The most recent search was executed on May 8th, 2024, and the downloaded data constitute the materials of the present scoping review.

The contributions from the search query were screened for duplicates. After removing duplicates, titles and abstracts were analysed to identify studies that described the characteristics, evaluation, and impact on wellbeing of peer digital courses for older adults. Contributions relevant to these topics were then analysed in full text, leading to further exclusions if incon-

sistent with research aims. The same title and abstract evaluation was applied to references of selected contributions to identify additional works. Data charting followed the research protocol and was conducted by one researcher, with the following information recorded in an Excel spreadsheet: Author(s); Year of publication; Title, Location of the digital peer course; Partners included in the digital peer course; Number of participants in the course; Number of peer tutors; Number and duration of lessons; Type of lessons (e.g. defined program or shared approach, frontal classes or working groups); Topics covered; Measures for evaluating effectiveness; Measures for evaluating impact on wellbeing.

The charted data from the selected contributions will be presented in the following section. As defined in the research protocol, an adapted version of the analysis spreadsheet is presented as a table to synthesize the analysed metrics. Due to the number of eligible and selected entries, graphical representations of data are not feasible. Results are discussed accordingly in a discursive form that accompanies the tables.

2. Results

As Figure 1 shows, 836 contributions were downloaded from the selected bibliographic databases. After removing duplicates, 427 records were screened by considering their titles and abstracts. Among these records, 411 were excluded because they did not specifically refer to older adults, older adults in training, older adults in digital training, or older adults in peer digital training.² Sixteen eligible contributions underwent full-text screening. From this group, 12 records were excluded because they did not exactly cover the issues of interest regarding digital courses (6 records) or peer education (6 records). The cited references of the selected 4 contributions were browsed for possible additional material to include in the analysis, resulting in one additional record being added (Xie, 2007).

² The high number of exclusions resulted from the deliberately broad search string, which included non-specific terms like “senior” and “peer” to ensure comprehensive coverage. While this approach increased initial retrieval of irrelevant studies, it minimized the risk of missing relevant ones.

Figure 1 – Flow diagram of the review process.

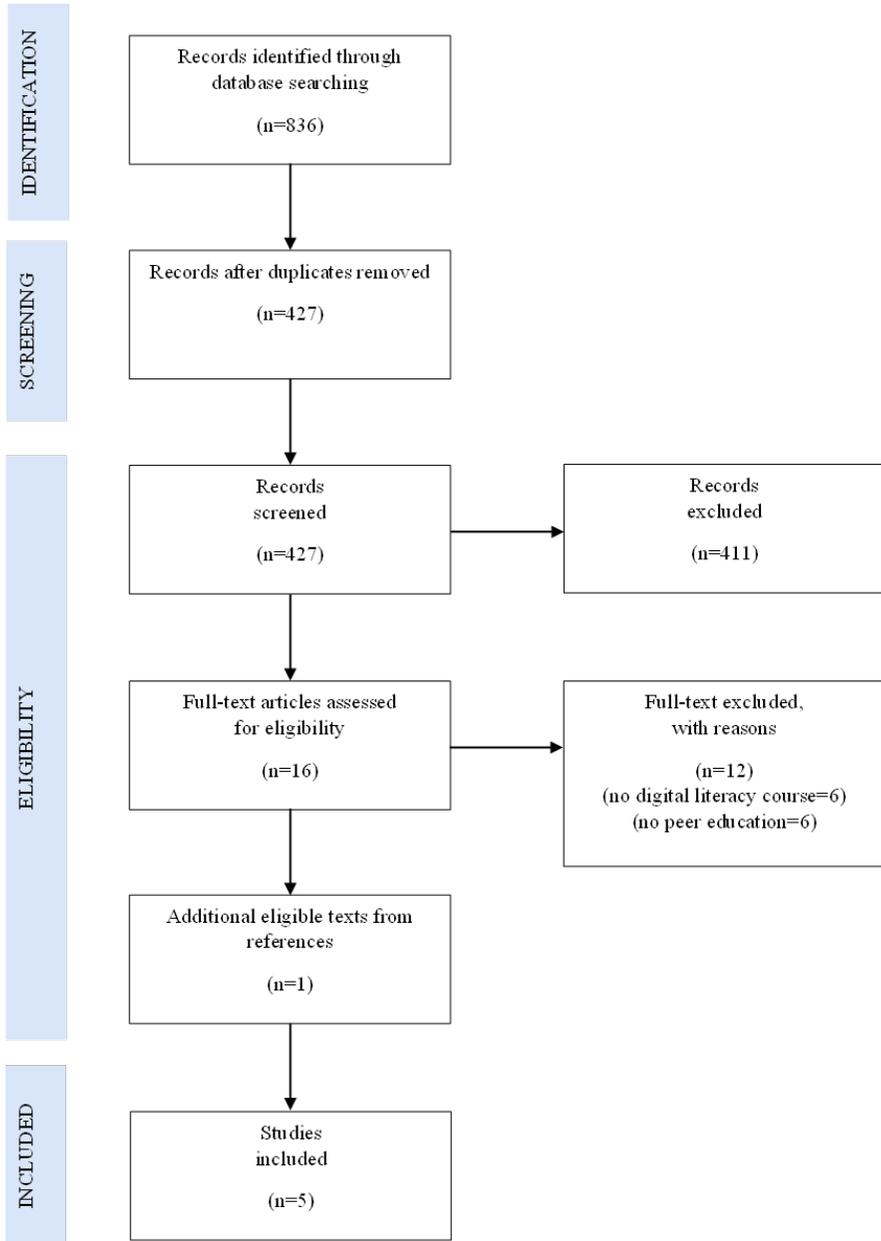


Table 1 - Analyzed studies' main characteristics.

Authors	Date	Title	Location	Partners	Participants
1 Woodward <i>et al.</i>	2013	Outcomes from a peer tutor model for teaching technology to older adults	USA	OCCOA: a community agency serving older adults in Michigan, USA	19
2 Birmeister <i>et al.</i>	2016	Enhancing Connectedness Through Peer Training for Community-Dwelling Older People: A Person-Centred Approach	Australia	Senior Citizen's Club	6
3 Russell	2011	Later life ICT learners ageing well	Australia	NPOs	16
4 Pihlman <i>et al.</i>	2021	Perceived benefits from non-formal digital training sessions in later life: views of older adult learners, peer tutors, and teachers	Finland	All national third-sector organizations that provide digital skills guidance for older adults and the Finnish Adult Education Association	n.a.
5 Xie	2007	Information Technology Education for Older Adults as a Continuing Peer-Learning Process: A Chinese Case Study	China	Oldkids, a senior-oriented IT training organization	n.a.

Teachers	Lessons/Hours	Type of lessons	Topics	Course effectiveness evaluation	Impact on wellbeing evaluation
1	6	20 weekly meetings - Fixed format (focused on specific topics + open choices) - In some sessions all tutors actively shared the instructional role, focusing on small groups of learners. - In other sessions, just one instructor teaching the whole class	See Appendix	- Data collection: baseline, three months, six months, and nine months (three months after the end of training). - Measured dimensions: Computer Self-efficacy, ICT's use, Tools for communicating with people in the social network	- Perceived social support measured using the Multidimensional Scale of Perceived Social Support - Loneliness measured using a six-item scale - Quality of life measured using a 16-item scale - Depressive symptoms measured using the Geriatric Depression Scale - Intended as social connectedness and gathered through interviews
2	1	Teacher following a defined program but also exploring issues of interest to participants	n.a.	Interviews (halfway and end), observations of training sessions, reports from peer trainer, weekly changes	Semi-structured interviews
3	n.a.	Small class with peer tutor or individual home lessons with peer tutor	n.a.	Survey (online or paper)	Survey (online or paper)
4	n.a.	n.a.	n.a.	Semi-structured interviews	Semi-structured interviews
5	n.a.	n.a.	n.a.	n.a.	n.a.

Table 1 summarizes key information about the selected studies. Among them, the 2013 study by Woodward and colleagues, titled “Outcomes from a Peer Tutor Model for Teaching Technology to Older Adults” (Woodward *et al.*, 2013), is the most detailed. Conducted in the United States, this study evaluated a six-month computer training course for adults aged 60 and over, implemented in collaboration with the Otsego County Commission on Aging (OCCOA) in Michigan. The course included 19 participants, grouped by digital skill level, and 6 tutors. Over 20 weekly sessions, participants engaged in lessons alternating between topic-specific classes and open clinics, with tutors teaching either the whole class or small groups. Details of the topics covered are available in the Appendix. The evaluation followed a four-stage design, measuring participants’ computer self-efficacy, technology use, and use of communication tools through surveys at four time points: baseline, three months into the course, at course completion, and three months post-course.

The study reported significant improvements in participants’ computer self-efficacy and use of digital technologies. However, no significant changes were observed in mental health outcomes. The authors suggest that participants’ already low depression scores, high quality of life, and strong social networks may have limited potential for change. These findings align with prior research that questions a direct link between digital training and overall wellbeing (Slegers *et al.*, 2008).

A second relevant study is by Burmeister and colleagues (2016), titled “Enhancing Connectedness Through Peer Training for Community-Dwelling Older People: A Person-Centred Approach”. This Australian study investigated a peer-led digital literacy program delivered through a Senior Citizens Club. Six participants were supported by one tutor across 16 weekly sessions lasting one to two hours. The course followed a predefined structure but was flexibly adapted to the learners’ needs. Though specific topics were not enumerated, the evaluation relied on qualitative data: mid-point and post-training interviews, field observations by a researcher, tutor reports, and participant diaries. The study underscored digital technology’s potential to foster social connectedness and enhance perceived wellbeing among older adults.

Helen Russell’s 2011 study, “Later Life ICT Learners Aging Well”, also employed a qualitative approach. It followed 16 older adults attending weekly digital literacy classes offered by a Sydney-based nonprofit over one year. The number of peer tutors and instructional content were not specified, but the study documented a range of instructional formats, from small group settings to one-on-one sessions conducted at home. Using

semi-structured interviews over a seven-year period, Russell found that participants experienced increased confidence and daily engagement through digital learning. Her findings challenge deficit-oriented narratives of aging, suggesting that digital skill acquisition fosters agency and enhances wellbeing.

The fourth study, conducted by Pihlainen and colleagues (2021) in Finland, focused on national third-sector organizations and the Finnish Adult Education Association. While the study does not provide detailed information on the number of participants, tutors, session formats, or specific topics, it assessed course impacts through online or paper surveys. The results highlighted moderate improvements in attitudes toward digital technologies and peer learning, with digital skill acquisition emerging as the primary benefit.

Finally, Bo Xie's study, "Information Technology Education for Older Adults as a Continuing Peer-Learning Process: A Chinese Case Study" (Xie, 2007), was included for its influence on subsequent research (notably, Woodward *et al.*, 2013). Although specifics such as participant and tutor numbers or training content were not disclosed, the study drew on semi-structured interviews to explore the structure and outcomes of a peer-led IT course run by the OldKids organization in Shanghai. Xie emphasized participants' preference for peer learning over intergenerational models and advocated for long-term, ongoing support beyond time-limited courses.

3. Discussion

The aim of this scoping review was to map the main characteristics (e.g., number of participants, number of peer tutors, course duration, etc.) of peer-to-peer digital literacy courses described in the literature, as well as to consider how these courses have been evaluated and how the impact on participants' wellbeing has been assessed.

3.1. The courses' characteristics

Concerning course characteristics, the analysed contributions present multiple features. Interestingly, all the peer digital literacy courses described in the five selected papers relied on partnerships with third-sector and non-profit organizations specifically engaged in older adult activities. Conversely, the number of participants in the different courses varied great-

ly, spanning from 19 (divided in two groups) (Woodward *et al.*, 2013) to 6 (Burmeister *et al.*, 2016), with no specific information provided by two contributions that covered the topic at a less granular level (Pihlainen *et al.*, 2021; Xie, 2007).

Similar variability was also found in the structure of lessons: two courses lasted between 16 and 20 weeks (Burmeister *et al.*, 2016; Woodward *et al.*, 2013), while another one took a full year with weekly appointments (Russell, 2011). Once again, two studies did not provide specific information regarding the schedule of the courses and the type of lesson or teaching approach (Pihlainen *et al.*, 2021; Xie, 2007). Woodward and colleagues (2013) provide a detailed account of the implemented teaching approaches, which involved mixed formats, focusing on specific topics or having open sessions, working in groups or having just the peer educator speaking. Burmeister and colleagues (2016) report having adopted a predefined teaching program, which, however, welcomed some changes based on participants' expressed needs. Helen Russell (2011) describes a teaching approach based on group sessions and one-to-one meetings.

Few details are available with respect to the topics covered during the course, as just one contribution precisely details them (Woodward *et al.*, 2013), and the number of peer teachers involved (Burmeister *et al.*, 2016; Woodward *et al.*, 2013). In general, unilateral indications on the length, style, and type of peer digital literacy among older adults do not emerge in the available literature. As already stressed, the work by Woodward and colleagues (2013) offers the most comprehensive reference points with respect to the implemented course's characteristics, mainly concerning the type and duration of lessons, as well as the number of participants in the implemented program.

3.2. *The evaluation of courses' effectiveness*

Again, Woodward and colleagues (2013) reported an articulated strategy based mainly on quantitative measures gathered at several points throughout course development. A similar diachronic approach was used by Burmeister and colleagues (2016), who relied on interviews with course participants, reports from the peer teacher, weekly diaries from participants, and participant observation of training sessions. Two other studies relied on a qualitative approach, implementing semi-structured interviews (Russell, 2011; Xie, 2007), while another one used online or paper questionnaires

(Pihlainen *et al.*, 2021). The analysed studies show that both qualitative and quantitative approaches can be useful for evaluating course effectiveness.

3.3. *Measuring the impact on wellbeing*

Clearly, the evaluation of the impact of the course on participants' wellbeing reflects the implemented approach for measuring the course's effectiveness. The studies relying on a quantitative approach (Pihlainen *et al.*, 2021; Woodward *et al.*, 2013) adopted specific measures to evaluate the feature of interest. Woodward and colleagues (2013) provided a detailed list of scales and measures implemented in their survey, which serve as a useful reference for structuring a measuring tool for the impact of the course on participants' wellbeing.

The qualitative approaches (Burmeister *et al.*, 2016; Russell, 2011; Xie, 2007), conversely, cannot precisely measure the change in perceived wellbeing, but can provide a deeper account of the evolution of this complex dimension in those who attended the course.

Conclusion

As discussed, the aging of Europe's population – combined with the digitalization of healthcare systems – presents complex challenges related to the sustainability of healthcare services and the inclusion of older adults. While digital health technologies promise more efficient care, they also risk leading to the exclusion of older individuals who often lack the digital skills necessary to access these services. To fully harness the benefits and mitigate the risks of healthcare's digital transformation for older adults, promoting digital literacy is essential (Gatti *et al.*, 2017; Pihlainen *et al.*, 2021). Among the various teaching approaches employed in digital training for older adults (Ahmad *et al.*, 2022; Rasi *et al.*, 2021), peer-to-peer learning is also mentioned, partly due to its established use in other areas within the healthcare domain (Buonocore, Sussman-Skalka, 2002; García-Camacha *et al.*, 2019; Ghasemi *et al.*, 2018). However, our scoping review has shown that only five contributions addressed peer-to-peer development of digital competence in old age in a structured format, describing, more or less extensively, courses' characteristics, their effectiveness, and impact on wellbeing.

The contribution by Woodward and colleagues (2013) is the most comprehensive, providing several details on an articulated learning approach. The work by Burmeister and colleagues (2016) also provides significant suggestions and evidence on the topics of interest, adopting a qualitative approach. The qualitative approach is central to the work of Helen Russell (2011) and Bo Xie (2007), who, however, provide fewer details on the considered peer education course. Conversely, Pihlainen and colleagues (2021) evaluated the effectiveness of the course and its impact on participants' and tutors' wellbeing through online and paper surveys.

As properly argued, several peer learning opportunities for older adults occur in non-formal settings, such as third-age universities or adult education centres (Pihlainen *et al.*, 2021) or even among friends and family members (Hunsaker *et al.*, 2020). One limitation of this scoping review could be the fact that it only considered scientific contributions available in bibliographic databases, thereby lacking visibility on additional digital peer learning experiences that have not been described in scientific literature. The focus on academic contributions was coherent with the initial aims, but to expand further knowledge on the topic, a similar review endeavour could be conducted on learning experiences available outside academic literature. Another limitation of this study is that the data charting and analysis were conducted by just one member of the research team, unlike what is suggested in the guidelines for scoping reviews (Aromataris *et al.*, 2024). Nevertheless, the results still seem relevant and worth sharing. They not only provide useful guidelines for better understanding the main characteristics of peer digital literacy courses, their assessments of effectiveness, and their impact on wellbeing, but also show that this is a research topic that still needs to be largely developed, starting with the promotion and actual implementation of peer digital literacy courses for older adults, perhaps placing greater emphasis on topics related to e-health.

This contribution has repeatedly stressed that digital education in old age is a viable solution to help these demographics navigate the substantial changes happening in present society, at the crossroads of digital transformation and an aging population, with a specific focus on shifts within healthcare systems. Literature shows that older adults could benefit from learning digital technologies from their peers since they have more similar interpretative frameworks that can be translated into more tailored teaching approaches, covering actually useful topics related to digital technologies and older age-specific needs (Xie, 2007).

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