Collaborative Learning Spaces: Using Professional Learning Networks and the Cloud in Blended Environments for Adult Learners

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Introduction

The work environment is evolving at an exponential rate due to technological advancement. Work environments are predicted to shrink, expand, and change in various ways due to automation (World Economic Forum, 2018). As machines take on rote work, humans need to be able to engage in thought work with the expectation that their jobs will continue to change. This continuous change will require people to access resources as needed rather than collecting them in advance. It will also require higher-order thinking skills rather than a fixed knowledge base, a general direction instead of a specific map, and creating "in the now" instead of planning for a particular future (Ito, 2014). The skills humans need to work, learn, and live in society have intersected and require a new way of thinking about change (Wagner, 2009). The need to upskill and reskill becomes nearly continuous in this new age. Upskilling is defined as "learning new competencies to stay in the current role, due to the change in skills required, or adding certain competencies for career progression" (World Economic Forum, 2019). Reskilling is "learning new sets of competencies to transition to a completely new role" (World Economic Forum, 2019). How might we effectively address the needs of adult learners in a constantly changing work environment?

Thesis

We need flexible adult learners in an ever-evolving workplace. Research supports using authentic experiences with heutagogic practices for adult learners. Professional learning networks and the cloud provide positive, collaborative spaces for continued professional development. With the proper implementation, we may curate, organize, and provide continuous access to collective intelligence in blended learning environments to support necessary growth. This literature review explores best practices for adult learners in collaborative learning environments, including professional learning networks and the cloud. It also shares the implications of the new culture of learning. Finally, it connects these practices as a foundation for an action research plan using collaborative spaces with adult learners.

The Why: Working with Adult Learners

History and Definitions: Andragogy

The history of studying adult learning is long, rich, and not without complication. While adult learning, or andragogy, can be traced back to Hellenistic Judaism (4th century BCE–2nd century CE), modern andragogy progressed from the labor movement in the 19th century (Loeng, 2018). An accepted definition of modern andragogy focuses on the role of the learner and teacher. As adults are independent learners, the teacher enables, facilitates, and collaborates with the adult learner with respect and openness (University of Illinois Springfield, n.d.). This definition directly contrasts with standard definitions of pedagogy or children's learning. With this definition, the teacher makes all learning decisions and is responsible for designing, imposition, and imparting knowledge to the learner (University of Illinois Springfield, n.d.).

The first time use of the modern term andragogy was in 1833. With the help of Plato's work, Alexander Kapp described adult education in terms of character formation and self-knowledge. He denoted that adults can learn both general knowledge and that specific to their trade. Kapp received criticism from Herbart in 1835, who didn't like the distinction between adult learning and learning in general. In the 1920s, historian and social philosopher Rosenstock-Huessy revisited the definition of andragogy. He said that the purpose of adult education should be to solve social problems to improve society. The discussion on andragogy continued after World War II, with German philosopher Pöggeler stating that andragogy is a continuation of pedagogy, while Yugoslavian professor Dusan Savicvic argued that adult education is a separate discipline (Leong, 2018).

In the 1970s, Malcolm Knowles brought andragogy to the west, who defined it as "the art and science of helping adults learn" (Leong, 2018). Adult learners, from his perspective, are independent and ready to learn, draw from vast experience, and have an immediate application of knowledge based on performance. American andragogy differed from the European perspective because it focused on individual development over social improvement. Regardless of this differentiation, questions arose and continued: Is the foundational definition of pedagogy accurate? (Leong, 2018). Modern reports of pedagogy that still focus on a schoolmaster do not

address learner needs. Thus began the concept that *all* learners are self-directed. This concept is the basis for heutogogy, or at least constructivist pedagogy and andragogy.

History and Definitions: Heutagogy

The term heutagogy is derived from the Greek "to discover" and first appeared in the educational lexicon in the year 2000 in Australia (Nikolovska et al., 2019). Before that, much of the history of heutagogy shares similarities with on-the-job training offered by trade apprenticeships in 13th century Europe (Willmott & Barry, 2002). It is an extension of andragogy and is defined as self-directed learning in which all learners are independent. The role of the teacher is to develop learner capability (University of Illinois Springfield, n.d.). Heutagogy draws from the teaching philosophies of humanism and constructivism; the informal learning style is more consistent with how people learn outside of a traditional classroom setting. Finally, the role of the teacher is one of a coach rather than a fount of information, and students identify problems on their own rather than relying on a strict curriculum to tell them what they should learn (Nikolovska et al., 2019).

Benefits and Barriers to Heutagogy

The most significant benefit of heutagogic learning is the ease of embedding it in the workplace context. There is a shift from theory to practice as adult learners immediately apply their learning to authentic, practical problems. Individuals receive personalized education, and the teacher acts as more of a coach or guide than a knowledge base (Stoten, 2020). The flexible curriculum is cyclical. As adult learners grow and change, their needs change. Therefore, the content is directed by the learning itself. Flexibility with curriculum also opens a door for continuous interactive feedback between the learners and their teacher. These qualities can positively engage adult learning practices (Hase, 2009).

The most significant barrier to applying heutagogic practice is changing the system and its teachers. For example, focusing on processes over content changes the teacher's role. A new teaching role requires a different skill set, as teachers become a compass rather than a map. On a larger scale, the entire system needs to shift and allow for flexibility in curriculum approval. Also, there are no fixed objectives, resources, or outcomes, which

introduces a need for flexibility with assessment (Hase 2009). More research is necessary; little empirical research is available and focuses on higher education rather than adult learners in a work context (Willmott & Barry, 2002). Further research on heutagogic communities of learning could address how these practices change the nature of participant interactions (Stoten, 2020).

These systemic challenges are less prevalent in the workplace than in formal education. Both adult learners and their teachers must continue to fight the internalized, outmoded understanding of good learning and teaching. How can we use heutagogic practices to create this environment and meet learner needs? (Stoten, 2020).

The How: Cooperative Learning

Definition

One way to integrate heutagogic principles is through collaboration via cooperative learning. Cooperative learning is defined as learners in "small groups working and learning together in a supportive manner to complete an assigned task" (Alansari & Rubie-Davies, 2021, p. 1). The key elements of cooperative learning are small groups with five or fewer learners who work in teams with equal participation. Group members become responsible and accountable for others through regular reflection, which creates an environment of positive interdependence (Alansari & Rubie-Davies, 2021). Another definition is learners who "work together to support each other's learning" (Abramczyk & Jurkowski, 2020). Teachers can use intentional structures that create cooperative environments where all groupmates win when everyone else does well (Abramczyk & Jurkowski, 2020).

Benefits and Barriers

The most significant benefit of cooperative learning is that they are effective over many exercises and diversity in groups is positive. Not only do cooperative learning groups improve learning, but they also improve social outcomes (Alansari & Rubie-Davies, 2021). With the proper support, teachers will be successful in their

use of cooperative learning strategies. For example, in a New Zealand study at a high socioeconomic, single-gender campus with first through eighth-grade students, the teaching and learning focus for the year was cooperative learning. Core curriculum teachers were trained and supported in best practices, and the study measured teacher and student feedback throughout four terms. Students knew that the goal was for teachers to increase cooperative learning in their classrooms. Teacher feedback focused on the effectiveness of the professional development. The results showed a positive statistical correlation between teachers' beliefs about cooperative learning and student perceptions about the effectiveness of cooperative learning in the classroom, as shown in Figure 1 (Alansari & Rubie-Davies, 2021).

Figure 1.

Hypothesized responses to teacher and student surveys.
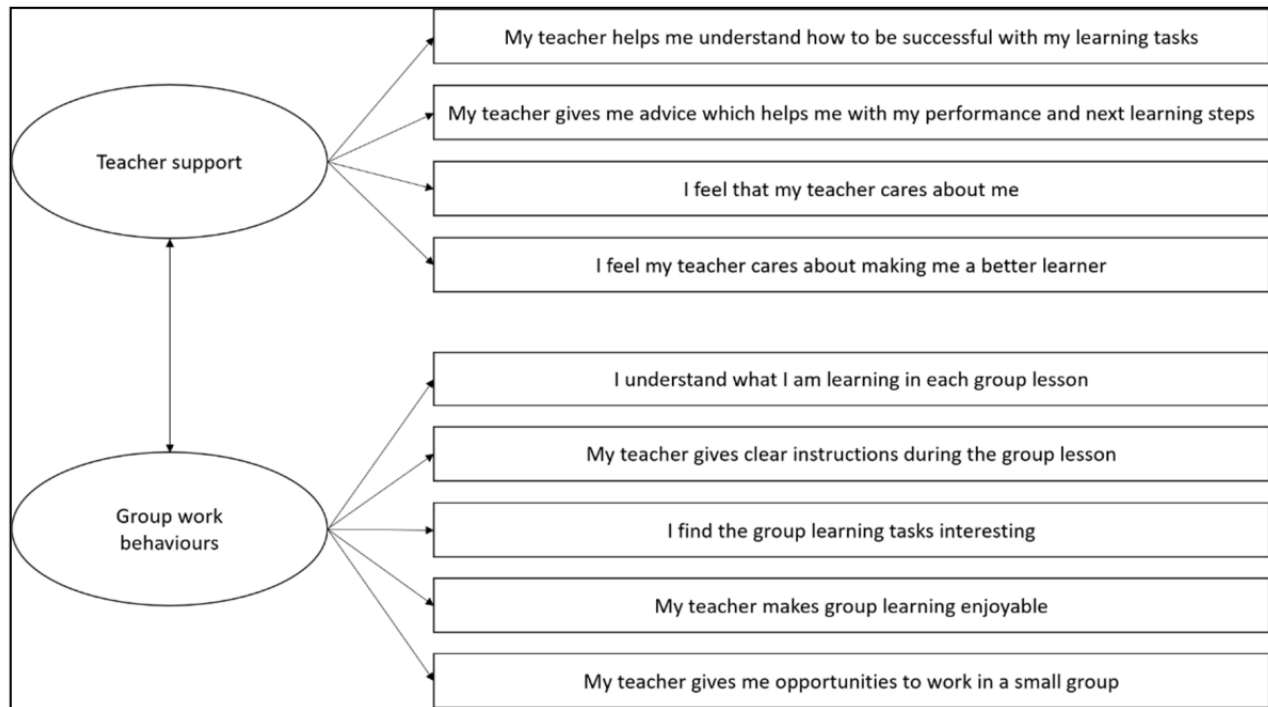
Note. This figure demonstrates the hypothesized relationship between teacher support and student perception survey responses (Alansari & Rubie-Davies, 2021).

There are other benefits of heterogeneous small groups in which learners work toward common goals. With activities such as Think-Pair-Share and Jigsaws, learners must argue, defend, discuss, remember, understand, and explain. Opportunities to debate, defend, and question using higher-order thinking skills like evaluation and synthesis. Moreover, confronting belief systems and current understandings triggers learner curiosity and want for more answers. In a study to attempt to find a connection between concept mapping, creative thinking, and cooperative learning practices, no strong correlation was found between creativity and concept mapping; however, there was a strong correlation between collaborative practices over lectures to support 21st-century thinking (Silva et al., 2022).

As with heutagogic practices, retraining teachers is the most significant barrier to cooperative learning. Notably, the teacher's dramatic role change from the classroom leader to the facilitator. Cooperative learning practices take time and effort. Teachers may find these practices challenging to implement. Moreover, teachers may deal with disciplinary issues when students aren't engaged. Additionally, assessment of individual understanding becomes more difficult for teachers. Finally, as already mentioned, teacher perception is the most significant predictor of proper cooperative learning use (Abramczyk & Jurkowski, 2020). Although collaboration through cooperative learning is well researched, there is little research geared toward adult learners in the workplace.

The How: Learning in the Cloud

Definition

Collaboration via cloud learning is a great way to integrate heutagogic principles in an increasingly connected world. Cloud learning is collaborative learning using available web infrastructure, also known as the cloud (Liao et al., 2014). Cloud computing is "now a widespread metaphor for describing, in simple terms, the location of data and applications – as no longer specifically residing on the device itself but stored, at any number of physical locations, on different internet servers and accessed through web-based platforms" (Stevenson & Hedberg, 2011, p. 322).

There are several models of cloud e-learning, as shown in figures 2 through 6:

Figure 2.

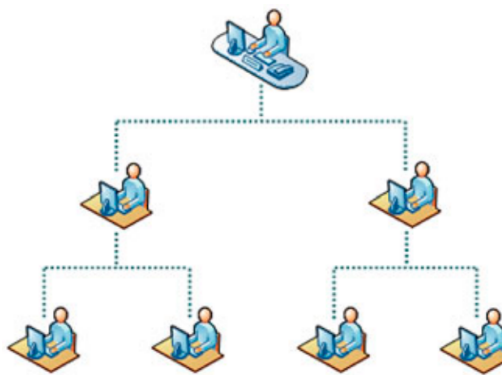**The traditional model with the teacher at the center.**
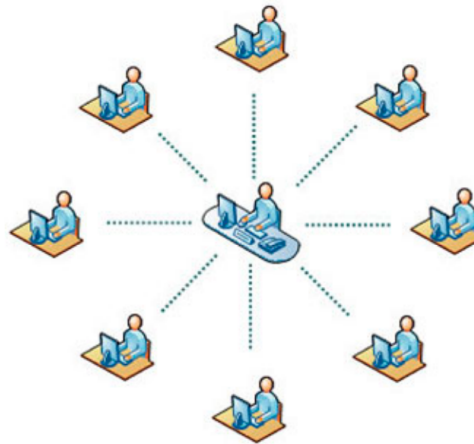
Topological structure of traditional e-learning.

Note. This model incorporates no peer collaboration (Liao et al., 2014).

Figure 3.
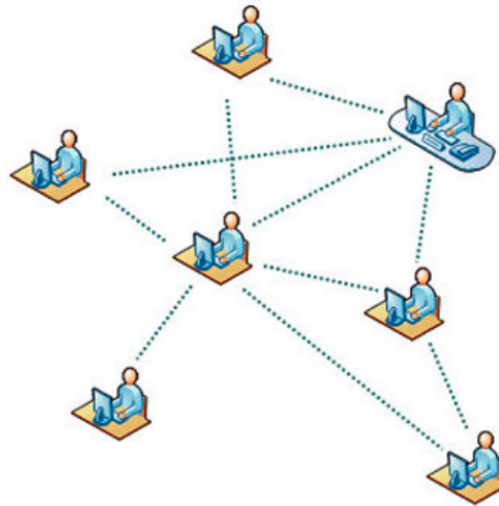
A team-based collaborative learning model.

Topological structure of team-based collaborative learning.

Note. This model incorporates collaboration among team members who work with a teaching assistant who reports directly to the teacher (Liao et al., 2014).

Figure 4.

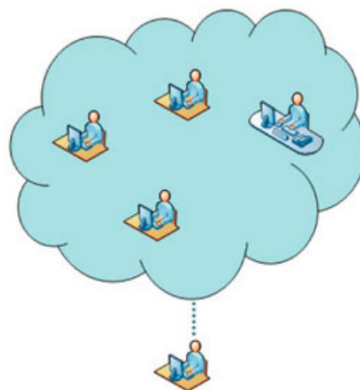**Discussion-based collaborative learning.**

Topological structure of discussion-based collaborative learning.

Note. This model incorporates collaboration among peers and the professor via discussion boards (Liao et al., 2014).

Figure 5.
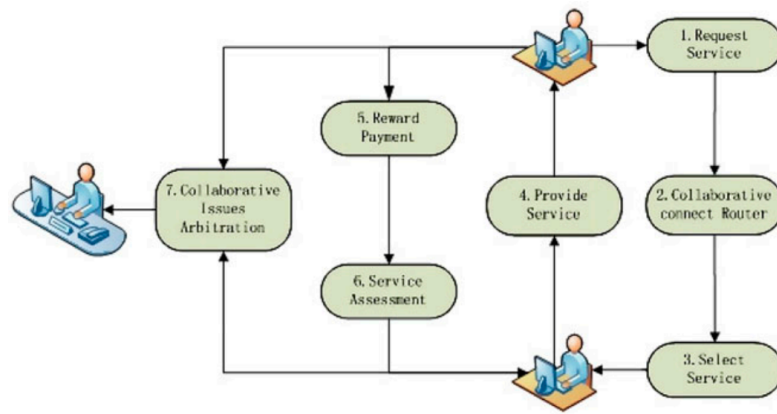
Collaborative learning in the cloud.

Topological structure of collaborative learning based on cloud computing.

Note. This model incorporates collaboration among peers and professors with flexible, evolving roles (Liao et al., 2014).

Figure 6.

Proposed collaborative learning in detail.

Collaboration flow in the collaborative learning cloud.

Note. This model details market-based collaboration among teachers and learners (Liao et al., 2014). The section below details the benefits and barriers to collaborative cloud learning, including a brief analysis of each model.

There are several low-stakes strategies to integrate cloud computing practices in blended environments, including group projects, peer assessment, student-constructed presentations, simultaneous class discussions, collaborative reflection, assisted writing, learning illustrated, class inventory, collaborative rubric discussion, and website publishing (Denton, 2012).

Benefits and Barriers

When well-implemented, like the models in Figures 5 and 6, collaborative cloud learning exhibits several benefits. For example, cloud applications allow learners to connect through knowledge retrieval and sharing information. Constructivism and heutagogical practices advise that large bodies of knowledge are co-created in a specific time and place context. Cloud-based applications affect this, for example, through activities like synchronous typing and publishing on the Internet. It is known that cooperative learning promotes social interdependence with activities like mutual support, direct communication, and sharing of resources.

Therefore, cloud learning positively correlates with 21st-century skills, like teamwork, problem-solving, and flexibility (Denton, 2012).

When poorly implemented, collaborative cloud learning exhibits several barriers. For example, in Figure 2, a high teacher-to-student ratio means that learners do not have as much access to help from the professor. The team-based model in Figure 3 also has several constraints, such as team size and issues with group dynamics when some learners do more work than others. Even with Figure 4, there is no guarantee that each learner receives necessary, individualized support. Also, learners only participate based on their personal interests and needs and do not necessarily interact with all essential information (Liao et al., 2014). As cloud collaboration is not often used in formal education, there is little empirical research on the barriers to implementation. However, teacher competency, student understanding within an educational context, and support from institution leadership are standard blocks to any educational reform. Teachers may also be impeded by the lack of a theory or practice available and specific contextual exposure (Stevenson & Hedberg, 2011).

The How: Professional Learning Networks

Definition

One way to integrate heutagogic principles in the workplace using collaboration is via intentional professional learning networks. Professional learning networks (PLNs) are a "vibrant, ever-changing group of connections to which teachers go to both share and learn" (Crowley & Chaffey, 2014). PLNs include organizations, communities, and individual people who support others as they learn and grow within a professional setting. Other articles provided different names for the same concept, including networked learning communities (NLCs), which integrate a "professional context into the learning experience that uses learning networks to promote self-efficacy and skill to learn" (Ashar et al., 2021, p. 202). It also includes informal learning networks (ILNs), which are "unstructured and voluntary communities of people interested in learning and growing through others within or beyond their organizations" (Eaves et al., 2022, p. 64). For this literature review, the term professional learning network refers to any professional learning community.

PLNs are free, flexible, informal, and autonomous in the modern internet era. Consumers and creators change the landscape of the PLN through interactions, creating a community of user knowledge (Hsiao & Lin, 2022). PLNs give access to connections, expertise, and information that may not be available in other workplace learning settings. The currency within a PLN is its members, in the form of social and professional capital. Professionals use PLNS to address specific business needs and create intentional, informal learning communities. The relational nature of PLNs helps manage specific, critical tasks (Eaves et al., 2022).

Benefits and Barriers

There are many benefits to employing and joining professional learning networks. For starters, groups can form organically over shared interests and passions. Shared interests create a meaningful group bond beyond the workplace. Also, because PLNs span organizations, industries, education levels, experiences, and backgrounds, they bring a diversity of thought unusual to traditional workplace learning. Furthermore, implementing PLNs is relatively easy as learners need no specific credentials to join, and monetary investment is minimal. PLNs are particularly useful for adult learning environments due to member shared information that is a product of multidirectional communication. Finally, learners still have resources for more formal learning environments and access to experts as needed (Eaves et al., 2022).

Regarding cooperative learning and collaboration, PLNs provide a sense of communal vitality. In one study, intentionally selected secondary ELA teachers joined a blended PLN. Beforehand, they felt incompetent and isolated, which created burnout. Because of the altruism, engagement, and empowerment provided through a PLN community, the relationships refueled individual energy. All members contributed to the collective vitality of the group, and teacher energy increased once their psychological needs were met by the cooperative learning environment (Hsiao & Lin, 2022). Ashar et al. (2021) called this building a collaborative capacity.

As usual, there are barriers to intentional implementation. For starters, a lack of empirical research, particularly around post-COVID PLNs, makes the current understanding of PLN application incomplete. There is also a question of creating sustainable spaces around equality and safety. While diversity of thought is capable, accessibility in every community is not the norm (Hsiao & Lin, 2022).

What are the implications of using collaborative practices with adult learners in a rapidly changing world?

The What: Cultivation and Collective

Definition

By introducing collaborative learning practices and heutagogic principles through the cloud and PLNs, we can create environments that support a new culture of learning. In the book *A New Culture of Learning*, Thomas & Brown (2011) were ahead of their time in their thinking about how the internet might shape information and learning. In this new learning culture, education is viewed in terms of the environment. Learning is defined based on context and boundaries. Finally, the learning environment is ever-evolving. Cultivation and the collective are two essential parts of learning in the 21st century. Cultivation is the gathering of information. Users take "nearly unlimited resources, consolidate them into a bounded, structured environment, and adjust as necessary" (Thomas & Brown, 2011, p. 19). The collective is a "community of like-minded people who help [people] learn and meet a particular set of needs" (Thomas & Brown, 2011, p. 21). Practical uses of cultivation and the collective are found in cooperative learning environments such as professional learning networks and use the modern web interface and cloud computing as the primary modality for communication and innovation.

Benefits and Barriers

In this world of constant change, our greatest hope for adapting to that change is to embrace this new culture of learning. Play, questioning, and imagination are the fundamental essence of lifelong learning (Thomas & Brown, 2011). Take blogging as an example as compared to traditional long-form, edited writing. Blogging is a "spontaneous expression of instant thought" (Sullivan, 2008) that is inherently transitory and meaningless without an immediate context. As this media requires active participation, accountability from the audience is essential. This interaction creates porous boundaries between reader and writer as they engage in a

vivid discussion. It speaks to a postmodern internet era without stable truth or a permanent perspective (Sullivan 2008). This connects to using a compass to guide learning rather than a map, as the map's bounds are constantly changing. As usual, implementation is the most significant barrier. In this case, that means people. The people who left traditional learning aren't looking to fix it, and those who stay don't see the outmoded system in a negative light (Godin, 2014). A new culture of learning will require a massive systemic shift and constant individual shifts. Overall, people tend to deal with miserable conditions rather than change, as change is messy and complicated (McMillan et al., 2008).

Conclusion

When working with adult learners, it is essential to address their specific needs. While andragogy still uses some traditional practices, heutagogic principles mirror constructivism and humanism. Professional learning networks and cloud learning apply heutagogy by using authentic learning that adults bring from continuous on-the-job changes. Teachers of adult learners can support professional development using positive, collaborative spaces for adult learners by creating professional learning networks and using the cloud. With the proper implementation, we can create a new learning culture so that all adult learners may harness their intrinsic innovation for exponentially evolving 21st century needs. There is an abundance of information on 21st-century skills and learning. However, there is not much application inside or outside of education. This body of literature provides a compass for applying futuristic learning practices to nontraditional learning environments. While this literature shares the long history of theoretical and practical applications of andragogy, it also highlights the divisiveness in the application method. While western culture touts individualized andragogy, eastern culture highlights a socially based andragogy. Also, this review highlights useful literature on cooperative learning environments. However, there is little empirical research on heutagogy, cloud learning, or professional learning networks.

Through my action research, I aim to provide more empirical research and show the interconnectedness of heutagogic principles, cooperative learning with cloud computing, and professional learning networks. "My goal is to create a collaborative, professional learning network for administrators and their assistants to access

intentionally curated resources that support district technology initiatives. This looks like intentional chat rooms using Google Spaces dedicated to supporting one another with technology questions. This also looks like intentional systems created around the use of Google Workspace, particularly Shared Drives and all the Google productivity applications" (Lewis et al., 2021). I will look for a correlation between the use of the professional learning network and the quantity and quality of help desk tickets (Lewis et al., 2021). Through these practices, we can create a new culture of learning. "Implications show that reskilling and upskilling current employees result in preparedness for the future of jobs. Finally, gains are made toward the evolution of a blended learning district by creating systems and modeling paperless expectations from administrators." (Stateler, 2021).

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