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An ecological psychology perspective in teaching Chinese online

https://doi.org/10.1515/jccall-2023-0012
Received March 27, 2023; accepted May 15, 2023; published online June 22, 2023

Abstract: In this paper, we first introduce three ecological principles for designing Chinese language online teaching and learning activities drawing from ecological psychology. The first principle – *perception and action cycles in an ecosystem*, advocates for situating online learning in a physical environment and creates activities with potentials to engage perception-action cycles. With the second principle – *intention and attention merge in an ecosystem*, we advocate for designing complex, flexible and dynamic activities and providing scaffolding for attunement. The third – *meaning-making and values-realizing coincide in an ecosystem,* calls for designing activities that allow for care-taking of oneself, each other, and the environment and cultivate curiosity and mindfulness for values-realizing and individual meaning-making. To highlight ways to tap into learners' interest and connect to people and places, we then share two example activities with both low-technology and high-technology options.

Keywords: Chinese as a foreign language (CFL); ecological psychology; online teaching

1 Introduction

In a face-to-face environment, teachers and students have access to various resources that facilitate multimodal teaching and learning. Teaching in a digital environment presents new challenges, and online teaching can be easily reduced to deliver information from the teacher to individual students without much interaction between the students and with the environment. This line of practice

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was the majority during the "emergency" online teaching period in spring 2020;[1] it was isolating and unidirectional (Lederman, 2020), as shown on the left in Figure 1. To engage students in the "new normal" or learn from the "new normal" in the post pandemic era, we, as language educators, may need to broaden the existing tool kits to help improve students' online learning experiences and reflect the impact of online experiences for broader education. Research has shown that technology facilitates language learning, such as providing extensive resources for students (Bull & Ma, 2001), allowing them to adjust the learning process (Pourhossein, 2013), and improving cooperative learning (Harmer, 2007). However, the availability and competency in using technology alone are not sufficient to motivate students to thrive (Barab et al., 2019). When language classes were suddenly moved from in-person to online, a major challenge was to keep students engaged from a distance (Barnum & Bryan, 2020). A pertinent goal for language educators is to create a socially and culturally enriched learning environment where every student can be included, appreciated, and engaged in ways possible. This calls for immediate action on adjusting teaching practices through which technological tools can be effectively utilized to serve the intended goals. Crucially, an understanding of the relational dynamics between features of technology and their affordances for pedagogically sound practices of instruction and learning must be taken prior to the selection and implementation of technological tools. In addition, subject area characteristics, in

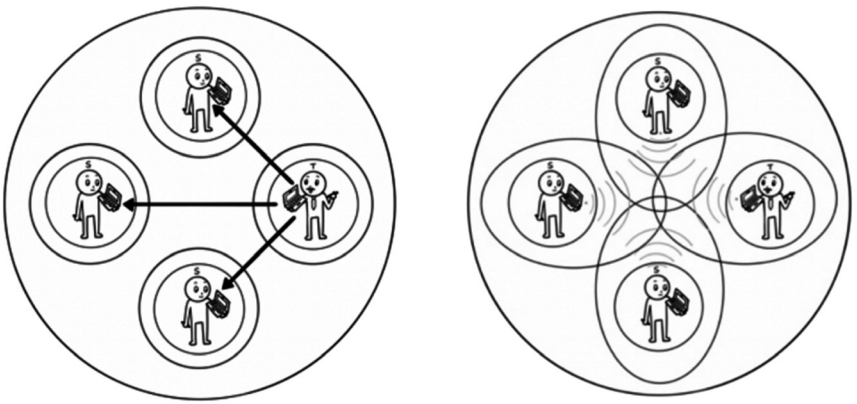

Figure 1: Online teaching practices. Notes. S: students; T: teacher; the most inner circle represents home; the second-layer circle represents the local community; the largest outer circle represents the learning ecosystem.

1 It was based on a survey of over 1,000 undergraduate students and 4,000 instructors from 1,500 colleges in the U.S. (Lederman, 2020).

this case, teaching Chinese as a foreign language (CFL) should also be weaved in the complexity of online language teaching.

To address the complexity of online teaching we introduce theory-driven pedagogical solutions that have been contested in the studies of educational technology and language learning. We mainly draw on studies grounded in ecological psychology because they provide pertinent insights in understanding the relationship between persons and technologies, and how the coupling enables successful online learning.

2 Context

Teaching language online presents various issues, including choosing the appropriate technology, understanding the virtual environment, and rethinking teaching methods (Romagnoli & Ornaghi, 2022). A crucial part of online teaching is to situate learning in a real-life situation. In this context, we propose to adopt an ecological psychology perspective to foster meaningful language learning.

From an ecological psychology perspective, learning is embedded "in the complexity of real-life situations" (Effken et al., 2009, p. 41); it highlights the learners' surroundings and the interactional nature of learning (Gresalfi et al., 2012). As shown on the right in Figure 1, it addresses the interconnectedness of individuals and the environment they reside in. Students might be separated in space, but they work together. This virtual presence of togetherness, following ecological perspectives, is achieved through meaning-making and values-realizing activities. This perspective has been effectively incorporated into various educational contexts, such as improving mathematics and science education in the K-12 curriculum (e.g., Cognition and Technology Group at Vanderbilt, 1992), advancing a participatory and collaborative experience in game-based learning (Barab & Arici, 2017), and building a second language (L2) learning community using mobile-technology (Zheng et al., 2018). However, this perspective has not been fully discussed in the CFL community. Adaptation of these design-based research findings can provide practical and immediate suggestions for teaching Chinese online. To fill this gap, we introduce three key concepts of ecological psychology and their extension in applied research, highlight their efficacy for online language teaching, and feature two example activities.[2] These principles encourage students to work together through communal meaning-making and values-realizing.[3]

2 In this paper, the term "activity" is used to refer to both short-duration and long-duration language activities, tasks, or projects.

3 Special thanks to Ivy Chen for creating the images in Figure 1.

3 Pedagogical considerations

When we hear the word "ecology" or "ecological," the first thing coming to mind might be protecting rare plants or endangered species from climate change or deforestation. The term ecology itself does not superimpose any value judgement on its own term. The environment is simply a repertoire of situations, provided to its participants, animals and humans. The main concept connecting the environment and human action is *affordances*, which can be understood as action potential (van Lier, 2004). An affordance leads to a direct opportunity to act (Gibson, 1979). Affordance is not a fixed property of the environment for all agents at all times; instead, it relates to a specific agent within time and space. For example, when the teacher brings a Chinese drum to an outdoor activity, a tired student may see it as a stool to sit on, but another student may perceive it as a hard surface to hit, which may lead to the perception of a new affordance, such as using the sounds to play music.

As Frensch (2001) puts it, ecological psychology focuses on human-environment interdependencies. A learning environment, whether it is a physical classroom or a virtual space like Zoom, is considered as an ecosystem, in which the relationship, such as student to students, teacher to students, students and material artifacts, forms the basic meaning-making unit for exploiting the affordances of learning environment. Among multifaceted educational and language learning research grounded in ecological psychology, we draw on three key principles to help build, regulate, and optimize such a dynamic relationship in an ecosystem: (1) perception and action cycles (Young, 2004), (2) intention and attention (Young, 2004), and (3) meaning-making and values-realizing (Zheng, 2012).

3.1 Principle 1: perception and action cycles in an ecosystem

The core assumption of ecological psychology is that thinking and learning are in dynamic relationship with the external world. Thus, the conventionally internal and subjective phenomena of thinking and learning are rethought as embedded, embodied, and situated in ecosystems. A typical learning ecosystem may include people, places, and resources from the school, the local community, and the sociocultural space. An online learning ecosystem also consists of the technologies and all resources that can be made available by technological means that may support learning (Uden, 2019), or become affordances for learning (Zheng, 2012).

The first principle is designing for ongoing perception and action cycles. Perception refers to the direct detection of the "possibilities for action" within a natural, real-world environment (Young, 2004, p. 171). In a cycle of perceiving and

acting with one affordance being linked to another, complex affordance networks can come into existence for each different learner (Barab & Roth, 2006). Therefore, perception and action can be seen as two sides of the same coin, and its trajectory is non-linear (van Lier, 2004). More importantly, the cycle of perception and action taking place in an ecosystem of education is usually supported by design. A classroom can be designed to become an ecosystem that attunes cycles of perception and action.

One example of doing so is using ecological role-play, a concept proposed by the Research on Integrating Distributed Language Learning Environments (RIDLLE) group. In their paper (Caselli et al., 2023), the researchers laid out what they called a distributed learning environment. For a classroom to be transformed into a distributed learning environment, scenarios, materials, space, the multifaceted roles of teachers and learners, and technology were proposed as elements for the design of a role-play environment that encourages students to perceive and act, make meaning with one another, and engage in values-realizing activity, a concept explained in Section 3.3. Key to ecological role-play is its complexity and openness supported by the environment, which allows for certain elements in the environment at play to be more salient than others, varied by student interest, intention and attention, goals and values. In contrast to classical role-play, ecological role-play is event-driven and leaves space for languaging, a process of making, hearing, and imagining verbal patterns (Cowley, 2019). Learners develop as persons as they are attuned to lexicogrammar (Cowley, 2011). Students in ecological role-play take their role to be agentic. Rather than following task plans and scripted procedures, students engage in the holistic linguistic embodiment by coordinating activities. Students can be assigned or self-select roles to coordinate with their group members. Their collaboration is to make meaning of a scenario situation or solve a problem from different perspectives. Students focus on both meaning and linguistic forms. Meaning-making processes evoke language forms. Unlike common role-play, even though ecological role-play does not deny form learning ahead of time, the play is emergent and mostly encourages new forms to be looked up, negotiated, and learned on the fly.

3.1.1 Insights of principle 1: perception and action cycles in an ecosystem

3.1.1.1 Situating online learning in a physical environment

Situating online learning in a physical environment means that we design activities to engage students holistically—mind, body, and physical surroundings. In a physical classroom, students can move around to do pair work and group work; they can touch, smell, and manipulate objects while completing tasks. In a typical synchronous online class, however, students' bodies are usually "glued" to chairs, and their eyes are fixed on the computer screen. The online "classroom"

encapsulated in Zoom-like technologies is reduced to an enclosed space inside an electronic device. Ecological psychology informs us of the significance of the interconnectivity of mind, body, and physical space. To connect to the body and resources in physical surroundings, teachers can start with material things. When teaching numbers in a synchronous setting, for instance, a short scavenger hunt may light up young learners' curiosity: In 3 min, each student finds 3–5 objects at home and counts them in Chinese. One student can hold up their items on screen for another student to count and summarize. When teaching self-introduction, students can introduce their pets or family members with the presence of the pet or the family member, connecting to different homes across space. When talking about shopping, the teacher and students can show an item from their closet, discuss its price and style, and ask questions about each other's items – where it was purchased, and whether or not it was a gift. As a follow-up, students can focus on one shared item, find a similar product online, and do a comparison.

An embodied experience can also be constructed within the local or global community. Teachers can assign offline homework that asks their students to walk around their city and share their experiences going grocery shopping in video recordings or take pictures of their favorite hangout spots and show them to their class. Using Flip to record videos in their own time, college students in our Chinese class gave directions on how to get somewhere by describing the route while physically walking and turning inside their house or in the neighborhood. The activity was designed to connect students with each other and with resources in the environments. The physical aspect was effective in consolidating the two grammatical patterns (1) "先*xiān*, first, 然后 *rán hòu*, then, 最后 *zuì hòu*, finally" and (2) "往 … 拐 *wǎng* … *guǎi*, towards … turn." For a different task, the students shared a video clip of their neighborhoods and described the weather on the day of filming. As the students lived in different places with different weathers on this specific day, the scenery varied, and the verbal descriptions diversified. Following this activity, the students initiated a conversation on social media and shared with each other their likes and dislikes of weathers and seasons in Chinese. The most important thing to keep in mind is that online learning does not mean all learning occurs on the screen, it can be distributed to a larger learning environment, online or offline activities, where learners can find and make meaning and take actions; and across time.

3.1.1.2 Creating activities with potentials to engage perception-action cycles

Human perception is invariably linked to acting upon the world. The activities that engage students the most are those that generate ongoing perception-action cycles or affordance networks. A Chinese food cooking activity can be turned into an ongoing cycle of activity. For instance, when making Chinese stir-fried tomatoes and eggs,

students follow recipes to read instructions and cook at the same time, add vegetable oil among various ingredients, pour it into the pan, find scallions, add them to the pan, and so forth. As can be seen, this series of actions can be considered one large perception cycle of cooking. If the activity stops here, students only practice vocabulary related to ingredients and the action of making the dish. However, if the design is informed by generating a perception-action cycle, the instructor can help students to engage in ongoing meaningful actions, such as learning about the nutrient value of the dish, which region this cuisine is typical of, why it is so popular, and so on. A third part can be sharing the activity, which includes taking a video of the cooking process or pictures to share on social media. The three or four large cycles together can offer a holistic experience of Chinese food cooking. Therefore, students can find their own ecological niche in the affordance networks of the cycles.

Activities with potentials to engage perception-action cycles can also be implemented asynchronously. There should be potentials for others to act upon and continue the activity. The cycle of perception and action draws on affordances. The richer the environment, the more complex the action, and the more impactful the learning result might be (van Lier, 2004; Zheng et al., 2018). In language learning, affordance is the possibility for action that creates opportunities for active engagement and participation (van Lier, 2004). Reed (1996) emphasizes that affordances should not be seen as stimuli as they are objective facts as opposed to subjective constructions of the mind. He further characterizes affordances of an ecosystem as opportunities for action. Along this line, teaching material should be designed to support diverse action-taking possibilities, and language activities should invite an ongoing cycle of perception-action. To reach this optimal learning experience, teachers can start with daily teaching materials. For example, the use of stuffed animals (e.g., panda, dragon) is popular in elementary school Chinese classes. However, it can be challenging to sustain the effect of a stuffed animal. It is not uncommon that students were highly enchanted by a plush but lost interest after a few classes. To create new affordance and maintain students' interest and encourage creativity, teachers may think along the line of contextualizing the panda or dragon in a storytelling activity that may evoke imagination in a follow-up writing activity. This continuation from reading (or hearing) a story to writing one on their own or with others, is called Xu ("续 *xù*"), a Chinese word with a composite meaning "completion, extension and creation," proposed by Wang (2016). Many studies used variations of Xu hypothesis (e.g., Zhang & Zhang, 2021) have shown positive effects on learning gains and affective development. The stuffed animals can be activated to be sick due to lack of food. This can trigger real-world events taking place in virtual field trips. In light of ecological role play (Caselli et al., 2023), Students can act as a vet, or a biological scientist to find out how they would solve the problem by using digital

resources, such as watching a documentary movie assigned by the teacher or finding their own movies online.

3.2 Principle 2: intention and attention merge in an ecosystem

The second principle relevant to online learning is "intention and attention". Intention, here, refers to an individual's goals. Every learner comes to our Chinese class with certain intentions, which may vary significantly from person to person. In an ecosystem, the intention of an individual is dynamically unfolding. It adapts, develops, and evolves as reactions to changes in the surroundings. Attention is what individuals *attend to* in detecting information, whether it is material or social. Gibson (1966) views attention as active exploration by an agent. Intention is the driving force of an individual's behavior and is coupled with the individual's effectivities (e.g., values, beliefs, abilities). It is with intention that the individual attends to aspects of the environment. Thus, intention gives rise to the perception and action process and in the meantime, perception and action direct and regulate intention. It connects the perception-action cycle for a person to respond, react, and make a move when encountering every given situation (Gibson, 1966). Learners become more "sophisticated detectors of information" (Young et al., 2000, p. 299) when their learning goals are dynamically emerging. From this perspective, the learning process includes continuously detecting useful information, more efficiently when based on the learner's needs. For example, an individual's needs may start off self-centered but can become more ecological and community-driven towards the end of an activity (Zheng & Newgarden, 2012). When the learning environment is situated in an ecosystem, students' self-focused intentions may evolve to be more community driven, such as from solely gaining Chinese language skills to using their language skills to serve the community or care for others (see Section 3.2.1.1 for an example).

Under this principle, the instructional design aims to structure materials and pedagogies that can help students to become agents who detect and attend to useful and relevant information; as well as create space to attune action and take action ("values realizing", Zheng et al., 2018; see Section 3.3 Principle 3). The more students are able to pay attention to the details of material artifacts, and linguistic information, such as lexicogrammar; the finer-attuned their language in service to action could be. Zheng et al. (2017) found co-players translanguage more as they manipulated more objects when decorating a virtual living room together. Through the coupling of the individual with someone more experienced (human or computer), learners attend to phenomena, actual things, and linguistic information that they might not initially recognize. Once attending, the individual practices, learns and improves through "the perceiving-acting of a trainer with the perceiving-

acting of a learner" (Young, 2004, p. 170). The trainer scaffolds the learning experience through perceiving-acting cycles.

3.2.1 Insights of principle 2: intention and attention merge in an ecosystem

3.2.1.1 Designing complex, flexible and dynamic activities

To attune new intentions, our work responds to the pandemic or post pandemic online language education urgency by introducing the design of online instruction and making suggestions to help enact complex, flexible, and dynamic activities. Design-based researchers, Sasha Barab, Kurt Squire, Julio Rodriguez, Thomas Reeves, find that this design principle allows for individuating and incorporating each student's intentions and capabilities dynamically. What makes an activity complex and flexible is usually it being "ill-defined" (Ozverir et al., 2017). In "ill-defined" activities, students are invited to create and define activities themselves and complete them in a sustainable period of time. An "ill-defined" activity thus allows individuals to find meaning and relevance in the whole environment. Furthermore, adding dynamicity to the picture students can enact things and events relevant to them in the process of dynamic coupling. Resources become specific affordances for each person in their unique trajectories.

The use of a thematically organized curriculum in STARTALK programs illustrates this idea. For example, STARTALK program themes like "A musical journey to China," "My world," and "Let's go somewhere" give students many opportunities to explore, create, and contribute (STARTALK, 2022). Similarly, in a semester-long creative writing project, CFL college students in an online beginners' class completed a writing product under the theme "An adventure" (Paul & Haq, 2022). During this project, students worked cumulatively to complete a four-chapter story by writing a chapter after each of the four lessons studied. Students came up with various topics reflecting personal interests, and their final products varied, including paper books, e-books, comic strips, digital storytelling, and YouTube videos. Through collaboration with peers, new intentions emerged, such as from writing dialogues purely for the assignment to designing a digital book as a gift for a friend.

3.2.1.2 Providing scaffolding for attunement

Young (2004) views learning as "education of intention and attention" (p. 172), or *attunement*. Drawing learner's attention to relevant information is best done by providing scaffolds, namely, to narrow the distance between the novice and experts (Vygotsky, 1978). With time, the intensity of the scaffolds, will fade away with careful dynamic evaluation of the learning progress. Learners, with time, become more equipped to detect useful information themselves. Thus, they become more

independent learners who are able to actively seek support and resources and embody new skills in their practices and actual events in life and work.

Providing instruction and materials that are in service of scaffolding is necessary for complex and flexible activities. For teaching Chinese online, we emphasize social scaffolding. Social scaffolding refers to "the processes by which co-regulated exchanges with other persons direct development in novel directions" (Mascolo, 2005, p. 188). In teaching Chinese online, it refers to the scaffolding process between the student and the more experienced. The lowest level of social scaffolding includes a minimum amount of online support from the teacher. The highest level of social scaffolding involves "different forms of concurrent modelings and imitation" (Mascolo, 2005, p. 189). The latter can be seen as the interaction between a novice and an expert in a video game, such as an L2 English learner and a native English speaker completing quests together in the World of Warcraft (Newgarden et al., 2015), or a group of CFL learners and a native Chinese speaker decorating a room cooperatively in a Virtual China world (Zheng et al., 2017). Here we suggest that the concept of attunement can be especially useful when dealing with different levels of social scaffolding. Attunement, an ecological concept, refers to a gradual nudging between two interactants on a metaphorical device, called Intentional Spring, which can be imagined to vividly describe the notion of dynamic relationship. Ecological psychological researchers also use such a metaphorical device further the relationship to be reciprocal in that the role of expert and novice can be interchangeable at any given moment or task of interaction (Young, 2004; Zheng et al., 2009). When the teacher or the more expert learner nudges the more novice learner to move to a new cycle, the attunement can encourage the learner to say something she has never said before, and more importantly, it can allow the novice learner to look up a word or detect patterns of language used in the attunement and imitate an utterance with creativity. Zheng et al. (2009) find that attunement is common in open-ended quest-driven activities between native and non-native speaker's problem-solving activities. On the Intentional Spring, the native speaker does not act as an input provider, but an agent on one side of the intentional spring, nudging the intention of the non-native speaker who therefore takes actions on the other side of the device (see Figure 1 in Zheng et al., 2009, p. 493). Depending on the nature of the task and the non-native speaker's agency, the non-native speaker assumes the role of an expert and nudges the native speaker to attune to the non-native speaker's culture and take appropriate actions.

Regardless of the level of scaffolding, students have to feel safe in online environments in which making mistakes or saying something inaccurately would not have any negative consequences. Instead, making mistakes is considered as

normal while learners are tinkering the most appropriate expression, right tense, or grammatical structure. We encourage teachers to treat students not as input receivers, but persons embodied with a unique repertoire of knowledge and resources, which can be turned into affordances for supporting their own agentic actions. Teachers should also act as mobilizers who welcome and adapt technological resources inside and outside of the classroom to sustain dynamic and reciprocal relationships. A more experienced someone can be a peer, a tutor, a parent, or an active social media participant. There are many more resources in the learning ecosystem to be deployed. When appropriate, we encourage teachers to include a volunteer, a learner from a more advanced class, or a Chinese-speaking parent in class activities.

3.3 Principle 3: meaning-making and values-realizing coincide in an ecosystem

Perception and action as well as intention and attention are integral parts of human cognition. While being essential components themselves, they also constrain meaning and value (Reed, 1996). Being one of the forerunners of values-realizing theorists, Hodges (2007) states that meaning and value constrain affordances and thus activity.

Therefore, using language is to be seen as more than merely using a code to transfer meaning from one person to the next. It is dynamic, holistic, and intertwined with action. It is based on the relational dynamics between what people do to make meaning and what they care for, i.e., values-realizing (Zheng & Newgarden, 2017). Values, in this theory and as opposed to common definition appear in heterarchical relationships with each other, and their priority depends on the given situation (Hodges, 2009). A common phenomenon is that learners use their first language for value-realizing, but not the foreign language they are learning. Because of this, a CFL classroom may be perceived as a 'pretended' place. Viewing our classroom as an ecosystem means giving values to what we say and what we do. Being honest about someone's outfit can be an act of caring in one situation and an act of humiliation in another. Showing interest in someone's life can be an important gesture or unfitting, depending on the dynamics of the situation. While it might be unconscious, linguistic values-realizing means caring about those values as well as ourselves, each other, and our surroundings by constantly evaluating how to act and what to say next when conversing (Hodges et al., 2012; Zheng et al., 2012). The adaptation of behavior is due to the values cared for by the individual in the ecosystem. These values are always in

tension as they are defined in terms of heterarchical and reciprocal relationships (Hodges et al., 2012). Since values-realizing is part of action-taking and linguistic meaning-making similarly, it has been applied in a variety of contexts, including perception-action (e.g., Hodges, 2007), social-development (e.g., Hodges, 2017; Hodges & Baron, 1992), and language-cognition (e.g., Hodges, 2009, 2014).

3.3.1 Insights of principle 3: meaning-making and values-realizing coincide in an ecosystem

3.3.1.1 Allowing for care-taking of oneself, each other, and the environment

Meaning-making and values-realizing are essential throughout all of human life and strongly interlinked with culture. One integral part of teaching language is teaching mindful action-taking according to careful and on-the-fly evaluation of surrounding materials and artifacts based on dynamic situations and their respective ecological niches – people need to balance social solidarity with striving for success, figure out which values to act on as the one they want to work towards, and which language to use with each individual action in each individual situation. From this perspective, language teaching needs to offer opportunities for learners to experience these ever-changing situations. Students cannot merely solve predefined and sequenced tasks. In order to offer values-realizing opportunities meaningful to the students, we encourage teachers to incorporate unscripted conversations in relation to the immediate environment and participants present. While students might be hesitant at first, they will learn to negotiate meaning and take action, which builds their trust in the process of emergence.

Along this line, activities are designed to help students take action at their own pace, based on their own interests, or others' interests if it is a collaborative project, for example. The learners should be encouraged to take initiatives to research material on their own, and create their projects and activities, deemed rich and open. Projects should leave space for students to explore their values and encourage them to think about and reflect on their actions and consequences. While this can be guided by the teacher into different directions, the learners will take action in finding, formulating, questioning, and realizing dynamic values, which will sustain students to become *empowered learners* (Barab et al., 2019). Project-based learning has shown to be effective in promoting language learning for a sustainable period of time (Stoller & Myers, 2019). The three discussed principles of ecological psychology add to project-based and problem-based learning by encouraging these two types of teaching to have more "ill-defined" instructions, allowing for individual values-realizing, and the inclusion of the whole environment as the source from which meaningful communication emerges.

3.3.1.2 Cultivating curiosity and mindfulness for values-realizing and individual meaning-making

These types of activities also cultivate curiosity and mindfulness for the learner. Thinking emerges from involvement with what is around, the involvement being characterized by various values-realizing processes. In order to help students to value participation, the activity needs something the students care about as a driving factor to make mindful decisions. When learning Chinese, some students might want to learn how to communicate with or talk about their family and friends, and other students might want to focus more on the environment, politics, or animals. Meaning-making in these cases would result from dynamic negotiation, and personal as well as collaborative values-realizing. If students can brainstorm and take action in the areas that they care about, such as helping out a friend who is struggling, supporting local farmers, participating in or organizing a campaign about a problem – which can all be turned into classroom activities – following Hodges et al. (2012), they might be able to act according to their own dynamic and situational goals, values, and what they want to achieve in every given situation.

4 Practice and rationale

Effective online learning "must acknowledge the complex non-linear dynamics that unfold as an intentionally-driven learner interacts with a technology-based purposefully designed learning environment" (Young et al., 2002, p. 48). It is the design for perception and action cycles that drives the activity, the students' intention and attention lead the way, and their meaning-making and values-realizing shape the story. The teacher can be a guide or a resource depending on where students are on the non-linear trajectory of action. In this section, we provide two example activities: "A Chinese New Year Party" and "A Documentary of Tea." For both activities, we provide low-technology and high-technology options.

Activity 1: A Chinese New Year party.

- Level: novice – advanced (ACTFL proficiency scale).
- Age: high school – college.
- Skills: presentational speaking or writing; interpersonal speaking.
- Time duration: multiple lessons.
- Objectives: using verb-object phrases in context and practicng topic-comment sentences.
- Goals: appreciating customs and traditions, realizing values of lunar calendar activities and understanding cultural values behind words, such as "拜年 *bài nián*"

- Activity: The teacher introduces the Chinese New Year celebration by showing videos of various New Year activities, such as "包饺子 *bāo jiǎozi*, to make dumplings", "写春联 *xiě chūnlián*, to write couplets", and "发红包 *fā hóngbāo*, to give red envelopes". Students work in teams to research the Chinese New Year activities; each team selects one activity, explores the reasons behind it, and acts/tries it out. In connection to the learning outcomes in which students are expected to demonstrate and describe a Chinese New Year activity, the team members create materials and products, conduct and describe the activity, and make a video that features the group members' work, such as a scene of making dumplings, a play of the story of the Chinese Monster "年 *nián*, Year", or an episode of "拜年 *bài nián*, to pay a New Year visit". In those videos, students create their Chinese New Year decorations for a festive environment, by drawing on paper or digitally, or building items using Legos or in a virtual world such as Minecraft. The teacher creates a YouTube channel, public or private, with all videos uploaded for the entire class to view on the New Year's Day. The focus of language can vary, such as using adverbial modifiers and adjectives to describe feelings, using topic-comment sentences to ask about specific activities (e.g., "饺子你会包吗? *Jiǎozi nǐ huì bāo ma?* Do you know how to make dumplings?"), or using "先……再…… *xiān … zài*, first … then" to describe a sequence of actions. By working in groups, the team members can consolidate learned information and their skills and negotiate meaning with each other. In the preparation of an episode of "拜年 *bài nián*, to pay a New Year visit", for instance, they can work together to decide who will be invited to the party, which items will be brought, and what food will be made, based on the cultural tradition and available resources. The group conversation can be pre-planned but not scripted as it should allow for spontaneous perception and action cycles, dynamic intentions and attunement through dynamic novice and expert relationships. In the week of the Chinese New Year, students watch each other's videos, view the most recent new year celebration shows from China, compare, and discuss. Alternatively, these activities can be broadcasted live in different Zoom breakout rooms, and students can do a virtual gallery walk to visit those stations and ask questions. Connecting to the New Year celebration in their own country, students can present by speaking or writing about the similarities and differences.
- Alternative ideas: other Chinese holidays.
- Low technology: Zoom and YouTube videos.
- High technology: video games such as Minecraft where students can build Chinese New Year scenes.

Activity 1 is designed to connect students and integrate their work into a culturally rich product with every student's language, cultural practice and skills interwoven. The students are provided with an opportunity to explore, create, and express in the process of learning, appreciating, and understanding the Chinese New Year.

Activity 2: A documentary of tea.

- Level: intermediate-advanced (ACTFL proficiency scale).
- Age: high school – college.
- Skills: presentational speaking or writing.
- Time duration: multiple lessons.
- Objectives: describing activities in chronological order and comparing similarities and differences of products by using business Chinese terms.
- Goals: understanding the reasons why there are many different types of tea, learning what kind of tea your body likes, and appreciating traditional tea ceremonies and modern fast-tea habits.
- Activity: Students in groups select an episode card with specifications from a few options provided by the teacher (e.g., history of Chinese tea; the process of tea-to-go; human rights or environmental damage of tea plantations; an internet-famous tea brand; the most famous Chinese tea varieties). The final product of each team is to create a documentary with a digital format of their preference. The class final product is to create a documentary about tea with a combination of team projects. To further connect to their societies students can create a website informing others about the environmental or human rights issues of the tea business.[4] For example, the process of tea-to-go can start with describing facts, such as the different kinds of tea for to-go (e.g., green tea, oolong tea; hot or cold; sweet or unsweet), and the process of tea from a plantation to a restaurant. To take a step further, students' attention can be directed to the conflicts between the fast-paced to-go culture and the slow-paced traditional Chinese tea culture. If appropriate, a comparison between tea cultures from different countries (e.g., Chinese tea culture vs. Japanese tea culture) would afford a new opportunity for students to explore and discuss. Alternatively, the students can work in groups to focus on a specific issue, such as how a family-owned small tea plantation sells its products, and how to run a tea company more efficiently and profitably online. To connect to Chinese culture and history, ideally, a long-spout Chinese tea ceremony is demonstrated on Zoom; a virtual museum tour is arranged to learn about Chinese agriculture. With the least accessibility, however, YouTube videos can be utilized to show a tea ceremony; TV programs

4 When applicable, students can use Kickstarter or GoFundMe to crowdsource funding to further support extended projects.

can inform students of Chinese agriculture; Google Maps in its street view (or Google Earth) can "take" students to a popular tea shop or a tea plantation; and WeChat public channels can show students the daily life on a plantation. The key is to utilize technology to connect to people and places and help students find the most relevant aspect and cultivate a deeper understanding of the topic. Connecting to specific lesson goals, the evaluation of students' documentary videos could include the accuracy and fluency of students' voice-overs in Chinese, richness of Chinese cultural products, practices and perspectives, and depth of opinions.

- Alternative ideas: Coffee; Rice; Bamboo; Noodles; Honey.
- Low technology option: Videos.
- High-technology option: Virtual Reality, Augmented Reality (e.g., ARIS technology).[5]

Both activities are multidirectional and non-linear, which allow students to take multiple routes or trajectories of action (Young et al., 2002; Zheng, 2012). It *enables* students to explore and interact (Barab et al., 2019).

5 Reflection

To address the challenge of integrating learner, physical space, and community in online Chinese teaching, we presented three principles informed by ecological psychological studies on learning and highlighted their relevance in advocating students' interest and connecting to place and people. In relation to the first principle "perception and action cycles in an ecosystem", we suggested "situating learning in a physical environment" and "creating activities with potentials to engage perception-action cycles". With regard to the second principle "intention and attention merge in an ecosystem", we suggested "designing complex, flexible and dynamic activities" and "providing scaffolding for attunement". For the third principle "meaning-making and values-realizing coincide in an ecosystem", we propose to "allowing for care-taking of oneself, each other, and the environment" and "cultivating curiosity and

5 ARIS is a software for making location or QR code-based games, stories and arts. The group documentary could be adapted as individual stories embedded with quests linked to a main mission using ARIS. The use of interactive Virtual Reality or Augmented Reality would add to situational awareness and the inclusion of the visionary sense into the experience. While VR is expensive and requires a lot of programming knowledge if it is interactive, ARIS is an easy-to-use software open to the public that allows people to design treasure hunts using Augmented Reality. It allows users to be in different places but experience the same target-language/culture place and interact with target-language-speaking non-player characters (NPCs) and other cultural artifacts.

mindfulness for values-realizing and individual meaning-making". In essence, we argued for adopting an ecological psychology perspective as a guiding concept in embodying learners in a situated environment in sustainable online Chinese teaching.

Ecological psychology views learning as being extended in a larger, open-ended learning environment, including all surroundings that each individual can perceive and act. It is important to keep in mind that online Chinese classes take place in an ecosystem of interconnected cycles. Students should be embodied; physical places should be incorporated; the community should be invested; and the large ecosystem should be considered. We, language educators, not only connect people, places, and resources, but more importantly, we cultivate a learning environment for students to conduct meaningful activities. It is through contextualizing the principles in the familiar activities that teachers may find aspiration to rethink their current online instructional practices.

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