



## Missed opportunities on Webkinz when developmental abilities are not considered<sup>☆</sup>

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### ABSTRACT

Webkinz World is a popular virtual world for elementary school-aged children, attracting millions of unique visitors per month. Despite its popularity, research has yet to explore how Webkinz World connects to children's emerging abilities or influences their cognitive and social development. Using in-depth observation and content analysis, this study examined the activities and educational affordances of the site using a developmental perspective. Results show that while Webkinz World has the potential to support learning, many of the activities require sophisticated cognitive and social skills with which children often struggle. Specifically, we focus on how class-inclusion tasks and the use of multiple perspectives are embedded throughout Webkinz World without offering feedback, scaffolding, or guidance to support children's skills in these domains. While this popular site is a self-proclaimed "educational tool," this study found that many educational opportunities were missed from the failure to consider developmental abilities of the target-aged users.

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Webkinz World is one of the most popular and rapidly growing virtual environments for elementary school-aged children. Attracting more than 24 million visits and 4 million unique users each month (Compete, 2009), the site provides a variety of activities for young children, from simple games (e.g., Arcade) to academic, physical, and creative coursework (e.g., KinzAcademy) as well as opportunities to interact with other users (e.g., KinzChat) and personalize aspects of the environment (e.g., My Room). Given the popularity of the site and the diversity of activities that it offers for young children, it seems appropriate to question whether Webkinz World promotes children's cognitive and social development, as well as whether the site capitalizes on children's emerging abilities. Unfortunately, no research to date has explored the developmental appropriateness of this virtual environment and only a few studies have addressed the potential educational benefits (Black, 2010) and interactive components (Black & Reich, 2011) of this space where so many elementary school-aged children spend their time.

In this article, we take a sociocultural approach (Vygotsky, 1978) to understanding this website as a socially and culturally constructed context that mediates children's learning. In particular, we focus on how the site does and does not support two particular areas of young people's development, class inclusion and perspective taking. In our discussion, we provide concrete suggestions for how designers of such

spaces might capitalize on literature on children's development to improve the developmental appropriateness of their websites.

### What is Webkinz World?

In Webkinz World, users navigate the virtual space as, or with, their Webkinz animal. To gain access to the site, a Webkinz stuffed animal (produced by Ganz) must be purchased. Attached to the animal is an access code, which when registered at [www.webkinz.com](http://www.webkinz.com), creates a digital version of the stuffed animal on Webkinz World. The registering child is then provided with a certificate of adoption for his or her new online pet as well as details about the pet's likes and dislikes. The child is also given an empty digital room for the pet to live in and for the child to furnish, decorate, and expand by earning KinzCash (the currency on Webkinz World) on the site (see Black, 2010 for more details about the structure of Webkinz World). The digital version of the pet will remain on the site for only 12 months unless a new pet is purchased/"adopted." With a new adoption, the membership is extended 12 more months. All pets added to the same user's account are given a room connected to the other pet's room on the account. The user will then have the option of which pet to use to navigate the virtual space; however, only one pet can be the focus of play at one time (i.e., a single user's pets cannot play together).

The main goal of Webkinz World is to ensure that one's pet is healthy, happy, and well fed. To facilitate this goal, health, happiness, and hunger meters are located on the lower left-hand corner of the screen. Playing with the pet as well as visiting other areas of the site (e.g., Arcade, Kinzville Park, Kinzville Academy), shopping (W-shop, Curio Shop, KinzStyle Outlet), and bathing/grooming the pet will

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increase health and happiness, while feeding the pet food that is won, given, grown, or purchased will keep the animal from hunger. In addition to the meter on the screen, the pet will, using text in a bubble above its head, ask to go shopping, be bathed, entertained, or fed, and express appreciation for having its needs met.

### Theoretical Framework: Webkinz World as a Sociocultural Context for Learning and Development

From a sociocultural perspective (Vygotsky, 1978), Webkinz World is a social and culturally constructed context that may shape children's social and mental activity. Subrahmanyam (2009) points out that as "youth are growing up enmeshed in media, it is becoming evident that interactive media must be viewed as an important social context for development" (p. 1069). Given the popularity of this interactive media site and its marketing claim of being an educational space that "is a great place to learn and play!" (Ganz, 2012), we thought it would be worthwhile to explore the ways in which the virtual world, as a "cultural tool" (Subrahmanyam, 2009, p. 1070), mediates children's activity through symbolic tools (language, image), technologies (user interface, game design), and artifacts (game objects, instructions, tutorials). From this perspective, the digital space serves not only as a sociocultural context for interaction and play but also as a more competent other (Vygotsky, 1978) that may support or shape learning (Beals & Bers, 2009; Black & Reich, 2011; Subrahmanyam, 2009).

In viewing the digital space as a more competent other, we paid particular attention to the ways in which the design and content of the site might support children's current and emerging abilities in the target age group for the site, which is 6 to 13 years of age. This process (which will be discussed in more detail in the Method section) involved constant attention to theories of children's learning and development that were relevant to the skills and abilities required by games and activities in Webkinz World. In the subsequent section, we introduce two cognitive skills, *class inclusion* and *perspective taking*, that are in active development for children in early and middle childhood. These skills emerged in our analysis as abilities that were *necessary for* but not necessarily *supported by* the majority of the site's communication features and some of the most desirable games and activities.

#### Class inclusion

Inhelder and Piaget's (1964) classic studies of children in early and middle childhood identified challenges that children face when classifying objects and understanding their relationships to one another. Of particular interest is children's understanding of the "intension" (defining properties) and "extension" (members) of classes (p. 7). Since then, developmental scientists have been very interested in children's abilities to classify, especially when classification involves some or all of a class and when these categories are hierarchical in nature. For instance, do children understand that the colorful blooms on plants are "flowers" and that the red ones with thorns are both *roses* and *flowers*? When asked for some of the flowers, will children only select the roses or the tulips as well? When asked for all of the flowers, will they select all of the roses and tulips? This type of reasoning brings together children's understandings of hierarchies, classification, and relations, and is an indicator of logical, rather than intuitive, reasoning (Ginsburg & Oppen, 1988; Inhelder & Piaget, 1964).

Research over the past 40 years has explored how children reason about class membership and hierarchical relationships as well as questioned at what ages these abilities emerge and solidify. The bulk of these studies have found that children develop class-inclusion abilities over the course of elementary school (Winer, 1980). More specifically, four and five year olds perform worse than chance on class-inclusion activities while six, seven, and eight year olds typically answer about 50% correctly. Nine and ten year olds answer about 75% correctly and even

eleven year olds still do not score 100% correct (e.g., Siegler & Svetina, 2006). This pattern of horizontal decline (the differential performance of children on classification and conservation tasks; Inhelder & Piaget, 1964), is seen throughout middle childhood. Although research suggests that the wording of a given question can influence children's performance (Shipley, 1979), it is clear that children often struggle with class-inclusion tasks and understanding hierarchical relationships throughout the elementary school years. Research also suggests that there may be a connection between children's language development and their performance on certain class-inclusion tasks, as children perform better on class-inclusion tasks that are presented in alternative formats rather than with relational language (Siegel, McCabe, Brand, & Matthews, 1978). Thus, the multimodal format of websites such as Webkinz World may offer potential for presenting class-inclusion tasks in alternative formats to support children's abilities in this area. As an emerging developmental skill for children within Webkinz World's target age range, it is worthwhile to explore how class-inclusion tasks are embedded in the site and whether supports are available to assist users in more sophisticated thinking about nested or hierarchical relationships.

#### Perspective taking

Another cognitive (and social) skill that is emerging throughout early and middle childhood is children's thinking about their own mental state as well as their ability to consider the cognitions of others (Flavell, 1992; Flavell, Green, & Flavell, 1995). Understandably, developmental scientists have been intrigued with not just how children develop a sense of self, but also from that sense of self develop increasingly complex perspective taking skills. For instance, realizing that others have different thoughts and are privy to different information seems to emerge in the later preschool years (e.g., Flavell & Miller, 1998), while the ability to step into another's shoes and take his or her perspective does not typically occur until 7–10 years of age (Selman & Byrne, 1974). More sophisticated abilities such as taking a third person's perspective occur even later (Flavell, 2004), with evidence that even adults can struggle to take another's perspective into consideration (Epley, Morewedge, & Keysar, 2004; Wu & Keysar, 2007). Theory of mind skills, that is, the ability to consider mental states (e.g., beliefs, wants, intentions, knowledge) of oneself and others (Premack & Woodruff, 1978), emerge in the preschool years but seem to still be developing throughout adolescence (Dumontheil, Apperly, & Blakemore, 2009).

As they develop, children master skills in understanding perspectives from different vantage points. For instance, from an egocentric or first person view children only consider their own feelings, beliefs, wants, etc. (e.g., "I want that."). At the most basic level, there is no appreciation that others might have different thoughts than the child (undifferentiated perspective taking). In a second person perspective, children are able to consider the cognitions of another person (social perspective taking) and perhaps even step into his or her shoes (self-reflective perspective taking) (e.g., "you might want something different than me"). With a third person perspective, children can consider the mental processes of a generalized other or the perspectives of others in an interaction that does not involve the child (e.g., "We both want different things. If someone walked in now, they would not understand why we are fighting."). Additionally, children can be challenged to think about other's thinking about their thinking, a recursive process (e.g., "I think that she thinks that I think she is selfish for wanting that.") (Landry & Lyons-Ruth, 1980; Miller, Kessel, & Flavell, 1970; Selman & Byrne, 1974).

Given that Webkinz World is designed around the expectation of caring for a pet and is designed to enable users to interact with other users, this paper explores the opportunities for perspective taking offered throughout the site. Additionally, considering that theory of mind and perspective taking skills are still developing for target-

aged users (6–13 years), exploring the level of perspective taking (1st, 2nd, 3rd) is worthwhile.

## Method

This study is part of a larger cross-case analysis of the educational, social, and developmental affordances of several virtual worlds targeting early and middle childhood populations. To assess the potential that *Webkinz World*, as a sociocultural context, affords for children's learning and development, this study analyzed data stemming from in-depth observation and a qualitative content analysis of *Webkinz World* ([www.webkinz.com](http://www.webkinz.com)). As participant-observers, both authors "adopted" *Webkinz* pets and spent collectively over 1000 hours (from May 2009 to May 2011) exploring the site and observing interactions among users on the site. Both authors gathered images from their exploration of every feature of the site and kept detailed field notes throughout the process. These field notes and screen captures were then compared and discussed on a bi-weekly basis during the two years of data collection. A primary focus of data collection efforts was the creation of a comprehensive map of the site activities and spaces, as well as the collection of artifacts (e.g., in-game texts, screenshots). As in other sociocultural settings, the sort of language used, and the forms of instruction, guidance, and feedback provided are relevant sources for scaffolded learning and guided participation (Rogoff, 2003); thus, we paid particular attention to these aspects of the site (e.g., content of chat systems, video tutorials, text and image-based instructions, feedback, social interactions).

As communication features in *Webkinz World* (Kinzchat) are public, efforts were made to observe users' interactions in social spaces (i.e., *Webkinz Clubhouse* and *Kinzville Park*) as well as their personalization of their *Webkinz* pet (e.g., clothes, accessories). While users were observed on the site, no effort was made to communicate directly with other *Webkinz* pets. Rather, their public appearances and conversations (appearing as text bubbles over their pet's head) were observed. Since *Webkinz World* has limitations to its communication system (described more below), there is no way to disclose our presence as a researcher in the virtual world. This method of lurking has been considered "analogous to a researcher taking notes on a public bench" (Buchanan & Ess, 2008, p. 285) and has been used in the study of other online spaces such as chat rooms (Subrahmanyam, Greenfield, & Tynes, 2004). Since no individually identifiable information was collected and the focus of this study was on design features, our presence had minimal risk to users on the site. A university institutional review board approved all study activities.

## Analysis

This content analysis was conducted using an open-ended, qualitative protocol that focused on the design features (technical and aesthetic) and the interactive artifacts and activities of the site. Both authors gathered images from their exploration of every feature of the site and kept detailed field notes throughout the process. These field notes and screen captures were then compared and discussed on a bi-weekly basis during the two years of data collection.

Data analysis involved both a top-down and bottom-up approach (Saldana, 2009). As researchers focused on child development and educational practices, we used our disciplinary lenses (developmental psychology and applied linguistics) to identify key domains of learning and social abilities that were required for or relevant to the site activities. Then data were interpreted in light of these higher-order categories. Further, themes were identified using a grounded theory approach, in which patterns emerged from the data (Strauss & Corbin, 1997). Once identified, more data were collected to support the integrity of the patterns, and themes were modified as appropriate. Thus, data collection and analysis were iterative processes throughout the entire project period. Once data were coded, we used a peer

debriefing technique (Lincoln & Guba, 1985) in which a colleague (educational psychologist) reviewed our notes (including screen captures, artifacts, and thick descriptions) and considered whether these analyses were aligned with theories of child development and learning, as well as supported by the available sources of data.

While numerous developmental domains were identified during the different stages of data analysis (e.g., emergent literacy, prosocial behaviors, memorization, emotion recognition), space constraints necessitate narrowing the focus for this article. Thus, data are discussed in relation to two cognitive abilities that are actively developing for children between 6 and 13 years of age, *class inclusion* and *perspective taking*. These skills were particularly salient in our analyses as we focused on how the sort of language used, and the forms of instruction, guidance, and feedback provided in *Webkinz World*, might be relevant sources for scaffolded learning and guided participation (Rogoff, 2003) in this context.

Table 1 illustrates how these areas of development became salient in our analyses, as we progressed from initial codes that identified site features and specific locations, to more refined codes which identified specific skills and abilities needed for players to successfully understand or navigate these features (e.g., phonemic awareness, perspective taking in first person, class inclusion and extension), to still further refined codes assessing the appropriateness (e.g., correct grade level skill) or relevance (e.g., feedback to promote understanding in that domain) of these features. The progression of coding is followed by an example from the game along with abbreviated researcher notes.

## Results

### *Does Webkinz World capitalize on children's existing and emerging abilities?*

*Webkinz World* is replete with text and image-based activities and artifacts that have the potential to support children's access to site activities. For example, many of the pivotal characters (e.g., Ms. Birdy, Dr. Quack, Mrs. Cowoline, T. von Meow) furnish instructions to young players both by speaking and by delivering overhead bubbles of corresponding printed text. Directions for all games are provided in print, generally with illustrative images, and navigating the site involves selecting words with corresponding icons from a drop-down menu. The combination of modalities, such as those used in *Webkinz World* (e.g., text, image, sound, movement), has been shown to be an effective means of supporting early readers' understanding of printed texts that are beyond their skill level (Mayer, 2001; Mayer & Moreno, 2003). Therefore, such a design capitalizes on children's emerging literacy abilities, provides support for development in that area, and increases access to site activities. However, some of the more desirable aspects of the site, such as lucrative games and the in-world communication systems, do not provide similar supports. In fact, as we will discuss in the subsequent sections, our analysis revealed that these features require abilities, such as class inclusion and perspective taking, that likely pose difficulties for the target age group in *Webkinz World* and are presented without any of the aforementioned multimodal supports.

### **Class-inclusion abilities**

Decades of research have demonstrated that understanding the relationships between items in a set, especially when the relationship is hierarchal, is challenging for children throughout early and middle childhood (Piaget, 1952); nonetheless, we found that the bulk of the social and lucrative (i.e., earning the most *KinzCash*) components of *Webkinz World* rely on class-inclusion abilities that may present challenges for the target age group of the site. In this section, we will highlight some of these activities and discuss how they relate to class-inclusion properties.

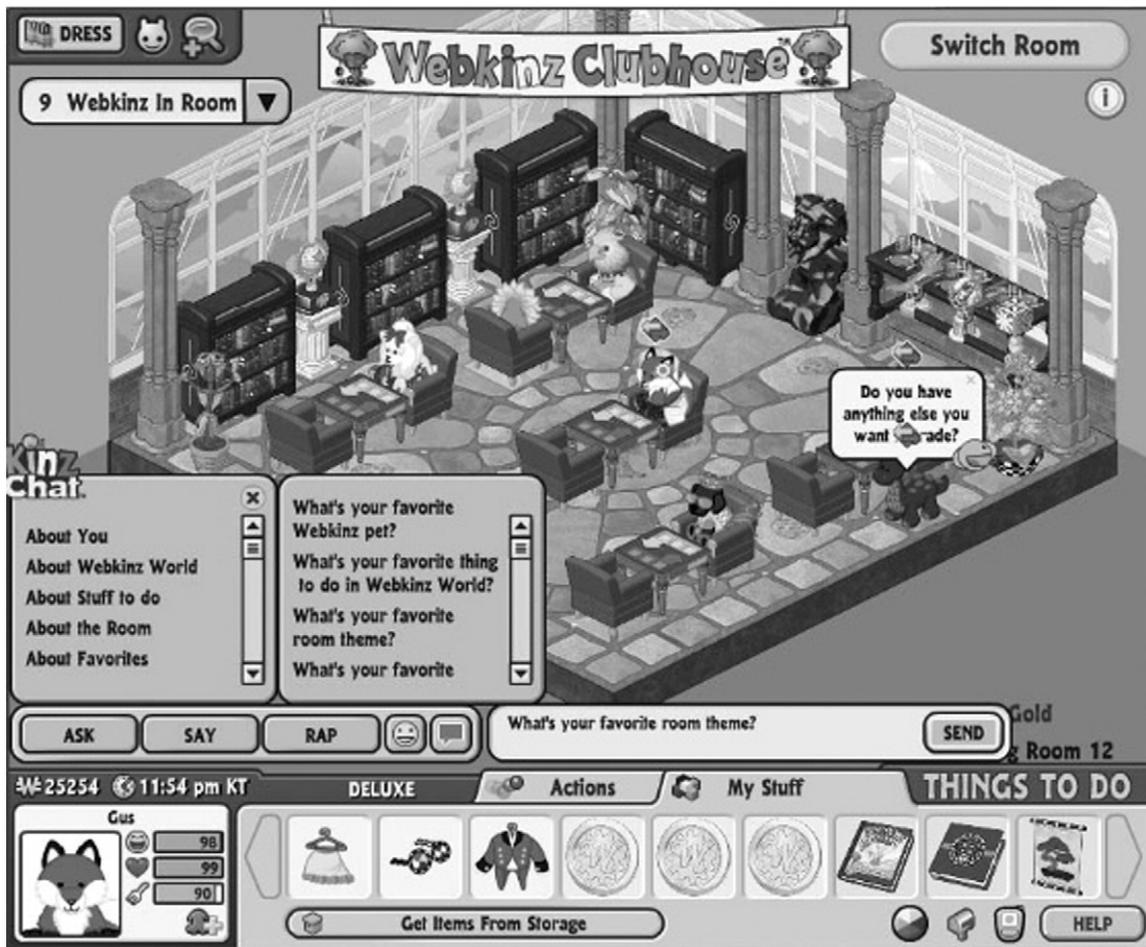


Fig. 1. Example of hierarchical categories for communication Webkinz Clubhouse.

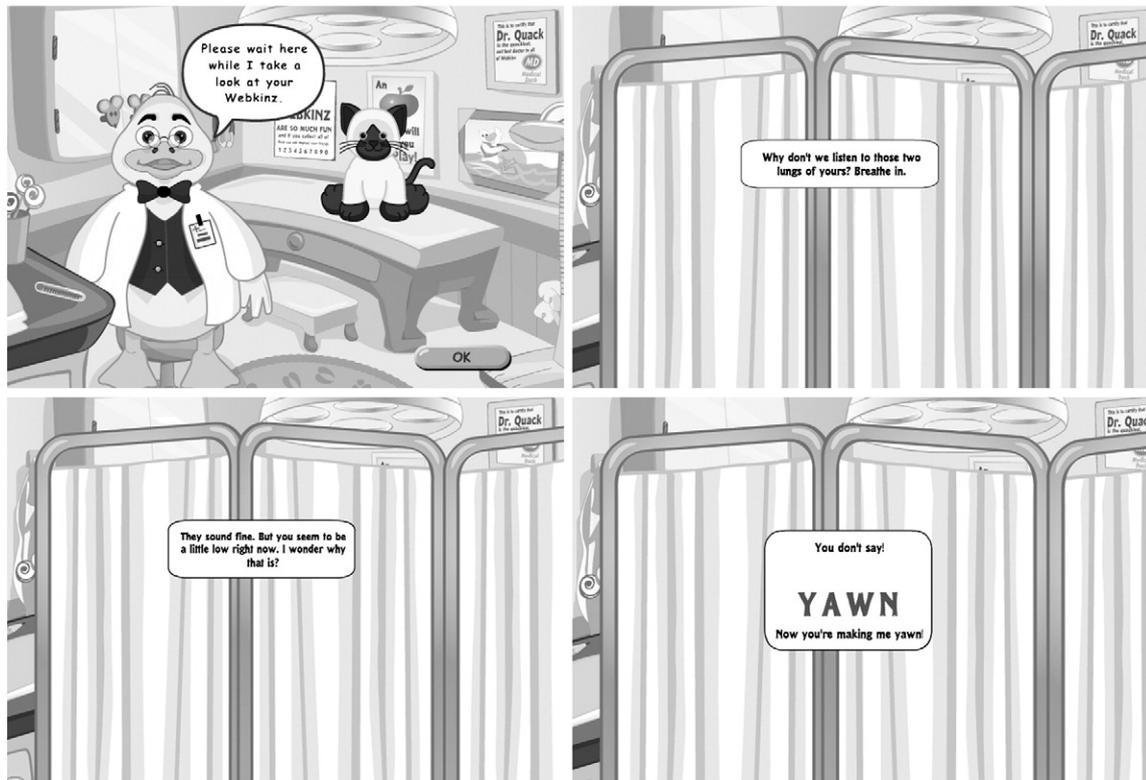


Fig. 2. Third person perspective needed when visiting Dr. Quack's clinic.

**Table 1**  
Sample coding grid for Webkinz activities.

Initial codes	Skills	Assessment	Example
Activity: Kinzville Academy enrollment	Activity: Kinzville Academy enrollment: perspective taking (first person)	Activity: Kinzville Academy enrollment: Perspective taking (first person): appropriate	Screenshot of activity in which player is being addressed by a non-player character while enrolling pet in the Kinzville Academy
Feedback: QOC	Feedback: QOC: class inclusion (extension)	Feedback: QOC: class inclusion: relevant	QOC feedback: Apples, grapes, and limes are all part of the fruits and vegetables group! (Note: This would be clearer if they just used "fruits")
Communication: Kinzchat	Communication: Kinzchat: class inclusion (intension) Perspective taking (first and perhaps second—pet or user)	Communication: Kinzchat: class inclusion: inappropriate Perspective unclear	Ask: About you: <i>How was your day?</i> <i>How was school today?</i> (Note: Player must choose from multiple, nested categories; category/perspective is unclear [e.g., "you" vs. "other webkinz"]; challenging for preteens)
Activity: QOC	Activity: QOC: phonemic awareness	Activity: QOC: phonemic awareness: appropriate (standard: 1.R.1.9 Segment single-syllable words into their components)	QOC LA 5–6 Which word starts with the same letter as "bear"?  a. Pink b. Pony c. Barn d. Dream (Note: Some 5–6 year olds may need someone to read this question to them)

### Social interactions on Webkinz World

Many sites for young children place great emphasis on ensuring the safety of their users and minimizing the risk associated with interacting with potentially unknown others online (Black & Reich, in press). On Webkinz World, this security issue is addressed by limiting users' ability to converse freely with other users. Instead, communication is done through the use of predetermined questions and phrases in the KinzChat messaging system and the Kinzville Post mail system and through a "dictionary" of permissible words in the KinzChatPlus messaging system. Unfortunately, the drop-down menu options for the former systems rely completely on children's class-inclusion abilities, and the restrictive nature of the latter system disregards important aspects of children's language development.

### KinzChat

KinzChat is a feature that allows users to interact with other Webkinz pets on the site. Of approximately fourteen different areas of the site, users only have access to KinzChat at the Clubhouse, Kinzville Park, and in their own rooms. In order to "chat" with other Webkinz pets, users must first select whether they want to "ask", "say" or "rap"—that is ask a question, say a sentence or make a casual statement. Once users have selected a type of response, they must then pick the topic category for the content from 9 categories (e.g., about the room, about me, about you, stuff to do). Once a topic is selected, the specific question then needs to be chosen from a list of about 9–15 possible questions. To put this in context, if a child would like to suggest to another user that they play a game, the child would need to click on "say" which will bring up a scrollable list of categories. The child would then scroll "stuff to do." This would bring up another list of scrollable questions. From that the child selects "Let's play some Go Fish!" (see Fig. 1). In order to answer, the user would need to click on "rap" then on "answers" to choose from simple 1–4 word options such as "yes", "no", "you're welcome", "I don't think so." There is no capacity to offer more sophisticated answers, such as those that are relevant to the specific question (e.g., "how about bowling instead?" or "thanks, but I don't like Go Fish.").

The KinzChat communication feature relies completely on children's understanding of categorization and higher-order class-inclusion properties. Unfortunately, ample research has demonstrated that these cognitive skills are challenging for children younger than 11 years old (e.g., Winer, 1980). Another complication of the KinzChat feature is that users must be in the same room or on the same zone (determined by the color of their phone) in order to communicate. Thus, children who only want to interact with known others will have difficulty finding each other on the site unless they happen to agree on the zone prior to logging on to the game, as there is no mechanism on Webkinz World for discussing zone color choices with others. Thus, while the idea of "chat" on the site is laudable and the opportunity for reading text is high, the execution of the "chat" feature may limit interactions given that the design of KinzChat requires sophisticated class-inclusion abilities that may be beyond the skills of the target-aged users.

### KinzPost

In addition to the KinzChat feature, users can send and receive messages from other users through the use of KinzPost, the Webkinz World mail system. They can also receive messages from the administrators of the site, such as holiday and birthday greetings. Like KinzChat, the KinzPost relies on lists of preselected categories for which users must identify their topic (e.g., "Friendship", "Birthday", "Have a great day!") and then scroll through options within that category to select a desired utterance. Within each of these 11 categories are 4–10 statements for children to select. As with KinzChat, this feature relies on children's sophisticated class-inclusion abilities to determine which higher-order category will contain the desired message. Furthermore, communication about topics not in the 11 categories is not possible.

For instance, while there is a “Thank You” category, there are no other response options in which a child receiving a letter could reply appropriately—other than to state, “Thanks for the letter!” Thus, the *Kinzpost* system offers little opportunity for authentic communication and expressive language development.

#### *Conversing with your Webkinz pet*

Another opportunity for dialogue on the site is the users’ ability to talk with their own Webkinz pet. When the users are in their own digital room (My Room) they have a “speak” option in which they can click on a drop-down menu of things to say to their pet. The animal usually answers these questions and statements. For instance, a user might say “You’re such a good pet!” and the pet will reply with “You’re the best-est friend I ever had!” The Webkinz pet will also speak to the user unsolicited. These speech bubbles typically remain over the animal’s head for 5 seconds. Unfortunately, few of the “speak” options are appropriate responses to what the pet might say. For instance, the animal, after using the toilet often says, “I’m glad I took a time out” but the only possible response options that might be relevant are “Did anything happen while I was gone?”, “Want to read a newspaper?” or “You’re such a good pet!” Thus, the ability to communicate with one’s pet does not optimally support children’s understanding of conversational structure, effective communication, or category associations.

#### *KinzChatPlus*

Recently, a new feature was added to Webkinz World, *KinzChatPlus*, which allows users to type messages rather than rely on drop-down menus. This feature can be used, with parental approval, in the Webkinz Clubhouse or Kinzville Park, during specified hours of the day. *KinzChatPlus* is a dictionary messaging system, which means that users can type messages as long as they do not use words “on the list of excluded words and phrases” (Ganz, 2009). Proper names, profanity, numbers, and misspellings are prohibited on the system. Unfortunately, the exclusion of misspelled words makes it nearly impossible for early writers who rely on invented, phonetic spelling to use the system. Moreover, the exclusion of numerous words and phrases (e.g., “baby”, “on you”) makes it difficult for inexperienced writers to convey their ideas in grammatically correct formats (i.e., instead of typing “that hat looks good on you” a user must type “that hat looks good for you”), thus reducing the opportunity for young children’s, as well as English language learners’, development of early literacy skills and communicative competencies on the site. In one observation of Webkinz pets sitting around a campfire in the Kinzville Park, a player typed “A lot of people are come in now.” This grammatically incorrect structure was most likely the player’s attempt to convey the sentiment that many Webkinz pets were coming to join them around the campfire; however, the system prohibits use of the word “coming,” so the player was forced to substitute with “come in.” Thus, rather than providing a platform that supports players’ emerging language abilities, the system mediates symbolic interaction in a way that fails to capitalize on children’s existing literate abilities and may provide grammatically inaccurate models for other players witnessing the interaction.

While there is mounting concern over children’s safety online, little to no research literature has addressed how decisions are made about which words and phrases are included or excluded from these messaging system dictionaries (Grimes & Shade, 2005). However, it is worth noting that although the system limits emergent literacy benefits for users, *KinzChatPlus* bypasses the class-inclusion challenges that are inherent in the *KinzChat* and *KinzPost* systems and provides users with a degree of freedom to communicate while at the same time addressing parents’ concerns about safety.

#### *Quizzy’s Question Corner*

Quizzy’s Question Corner is a trivia game that is popular in Webkinz World because it is a reliable way for players to earn substantial amounts of KinzCash with which to purchase food, clothing, and furniture items to increase their pets’ health, satiety, and happiness. According to the Webkinz FAQs for parents, Quizzy’s Question Corner contains “over 1000 age-appropriate, curriculum-based questions that make KinzCash faster than any of the games.” To play Quizzy’s trivia game, players are given 50 questions to complete about a specific topic (i.e., the arts, social studies, health, math, language, and science), and these questions are divided into age categories (5–6, 7–8, 9–10, 11–12, 13+, and everyone). For each question, the question stem is printed on the screen for 5 s and then 4 response options are added. The child has 20 seconds to answer the question and every 5–6 s an option disappears until only the correct answer is remaining. If the user provides the correct answer when all choices are available, they receive the maximum 5 KinzCash. If an incorrect answer is given, a red X appears next to that response and then the option disappears, giving the child another chance to answer. Payment for the correct answer is lowered after each incorrect response or the disappearance of other response options. After a delay in responding, a printed clue will appear below the response options. Interestingly, the amount of time given to read and respond to questions is the same for all age groups. Thus, 5–6 year olds are given the same amount of time to read the question and answers as the 13 year olds and older.

Many of Quizzy’s questions target information that is aligned with age-appropriate curriculum standards. Also, the design of the game (eliminating incorrect responses, providing hints) has the potential to support children’s ability to answer difficult questions. However, subsets of the information necessitate a clear understanding of categorization and oftentimes the need for hierarchical categories. For instance, common science questions ask about items in categories such as “Which one is not a level?” or “Which one is a mammal?” Answers for these questions include “Rake, Wheel, See-Saw, Ramp” or “Eagle, Cobra, Shark, Bat”, respectively. Analogies are also a common form for questions; however, many of the response options are not clear-cut. For instance, “Word is to book as note is to: Trombone, Score, Singing, Notebook.” While the answer is “score”, notebooks are filled with notes and songs are composed with notes just as books are filled with words. To help with this challenging question, the following clue was given to the user, “score!” (a clue that is unrelated to the analogy as well as leaves little for the child to figure out).

At Quizzy’s, once the question is answered correctly or all incorrect options are removed, an additional piece of trivia is printed on the screen. Unfortunately, the additional information given is oftentimes incorrect (e.g., Skin is waterproof!), or largely irrelevant to the question. For example the question, “What is the plural of donkey?” is followed with “Donkeys live for 25 years or more!” or “When a kettle boils, what comes out from the top?” is followed with “To be ‘steamed’ means to be angry.” Thus, the added trivia after each question does not help develop mental schema or domain knowledge for the topic, nor does it support classification abilities, or help to demonstrate hierarchical relationships in ways that might improve children’s overall analogical reasoning abilities. While the site creators clearly have made some noteworthy efforts to design engaging and academically focused content for Quizzy’s Question Corner, the learning potential of the game could be much improved with features that take developmental and pedagogical literature into account, such as giving younger children more time to read and respond to questions, providing hints that activate children’s prior knowledge, and providing feedback that foreshadows material for subsequent questions.

Research on class-inclusion and hierarchical categorization skills has shown that young children struggle with these processes (Chiesi, Gronchi, & Primi, 2008; Cormier & Dagenais, 1983) but can improve with assistance and guidance (Siegler & Svetina, 2006). Unfortunately,

while class-inclusion tasks are embedded throughout the site, none of the activities offer feedback or support that would improve children's skills in these domains. As a result, many social (e.g., interacting with other users) and cognitive (e.g., retrieving and encoding hierarchical information through trivia games) opportunities are missed.

### Perspective taking skills

Webkinz World is structured around caring for a pet. As such, one might expect the perspective to remain constant with an egocentric (first person) perspective of a child doing things to care for, feed, and entertain a pet. However, our in-depth analysis of the virtual world found that children are challenged to use different perspective taking skills depending on the areas of the site they visit.

#### *First person perspective*

Users can enjoy parts of Webkinz World from a first person perspective in which they are a pet owner who makes autonomous choices on the site. In their initial interactions with the site, children visit Ms. Birdy, a grandmotherly penguin wearing a bun, spectacles, and pearl necklace who helps with the "adoption" paperwork and formalizes them as the responsible party for their Webkinz pet(s). When visiting "My Room," the space provided to each Webkinz pet, children are able to decorate the space by moving furniture, planting gardens, and hanging pictures. They can "speak" to their pet, and the pet will respond. Children also can go shopping at the W-Shop where they select furnishings, food, wall treatments, and toys for their pet. Users can play games in the Arcade or mine for gems through the Curio Shop, and for many of these activities their pet (pictured on the bottom left corner of the screen) will cheer them on with such phrases as, "You've really improved. Look at your score" or "I really like going to the W-Shop with you." However, the feedback can, at times, confuse perspective slightly. For instance, when playing the same game, a user's pet may say "Your new high score. I knew you could do it!" or "Yee haw. That's our best score ever!" In such cases, the child is acting as an individual or as part of a team with the pet.

Webkinz World also has many activities in which there is no differentiation between the user and the Webkinz pet. As such, there is little reason for a child to specify a vantage point for the information. For instance, when navigating a shopping area, children often see a Webkinz character that provides a greeting and an explanation of what to do. For instance, when entering the Curio Shop, Arte, a well-dressed dog, will say, "Welcome to the Curio Shop. I hope you find what you are looking for." or "Well, if it isn't one of my extra special customers." Similarly when visiting the KinzStyle Outlet, P.J. Collie, another fashionably dressed dog, introduces herself and explains what can be found at the outlet. For these types of interactions, there is no need for children to differentiate their thinking from their pet's, as they are treated synonymously by the in-game characters. While these first person perspective activities are not very cognitively challenging for young children, many activities on the site require users to think about their Webkinz pet's wants and needs (second person perspective taking skills), to passively watch interactions between their pet and other characters on the site (third person perspective taking skills) and to switch between first and second perspectives repetitively (recursive perspective taking skills).

#### *Second person perspectives*

Oftentimes children need to take a second person perspective in which they must think about the needs and wants of their Webkinz pet. For instance, children need to know what things their pet wants, how the pet will respond to food, baths, gifts, etc., and what might make their pet happy, healthy, and less hungry. Children are often

given feedback about their ability to take their pet's perspective into account. The status bar for the pet's health, happiness and hunger will change throughout play and if the Webkinz is not cared for well, the pet will turn green and a thermometer will appear in its mouth. The pet also will provide feedback to the child for shopping, playing, and bathing them via overhead bubbles of text with phrases like, "I feel energized", "Thanks for taking care of me", "Just move the mouse over my fur to brush it" and "Thanks for buying this for me."

While children are given feedback from the Webkinz pet, they also can manipulate the pet's actions in the space. For instance, users can dress their pet, alter their pet's facial expression (e.g., make it smile), and make the pet move (e.g., walk, wave, jump, sleep). In such cases, no perspective taking skills are needed as children's cognitions and their pets' are the same.

#### *Third person perspectives*

At times, children are asked to use a third person perspective when their pet interacts with Webkinz characters on the site. For instance, when their pet becomes ill, children can take their Webkinz to Dr. Quack's clinic. Upon arriving at the clinic, children are greeted by Dr. Quack, a duck with a vest, bow tie and white coat, and told to wait while their pet is examined. After clicking "OK" a screen blocks the user's view of Dr. Quack and the pet. Only speech bubbles are visible in front of the screen. Children are able to read the conversation between Dr. Quack and their pet but not see the interaction or participate in any way (Fig. 2).

A third person perspective is also needed when sending a pet to the spa for relaxation. Children can visit the travel agency and purchase a spa trip for their pet. Upon paying, they are told that their pet is off having a relaxing time. Then a screen appears that reads, "Wow! Your pets had a great time! Their happiness, health, and hunger levels have been improved!" and the travel agent, Debbie Dragon says, "I bet they feel FABULOUS after all that pampering." While a very short vacation, children are left knowing that their pet went on an enjoyable trip with other pets, not them.

#### *Recursive perspective taking*

When taking courses at the Kinzville Academy, performing jobs through the Employment Agency, and interacting with others at the Webkinz Clubhouse and Kinzville Park, children are required to continually switch perspectives in which they are their pets, they are interacting with their pets, and they and their pets are interacting with others. For example, when the user goes to the Kinzville Academy, Mrs. Cowoline, a conservatively dressed cow behind a desk, greets the user and asks whether his or her pet is planning to enroll in a course. The child can then select a course for their pet and pay the 50 KinzCash tuition. For registration, the child uses a first person perspective to interact with Mrs. Cowoline and perhaps a second person perspective to select which course the pet would like. Then, the course begins, and the child must complete different activities, such as clicking on matching patterns, moving the mouse to make the pet run, or replicating outfits and hairstyles from memory. For most courses, the pet is shown engaging in the activities, but the child must perform the functions for the pet. Thus, children pseudo-act as their pet, in which they perform the task and watch the image of their pet execute them. At the completion of the course, the child is shown a bubble of text about how his or her pet performed (e.g., "Your pet will need to hit those targets faster next time", "Your pet is great on the griddle") and then Mrs. Cowoline will provide feedback about the pet's passage or failure of the course (e.g., "Such a splendid student you are raising", "That bell curve is a slippery slope."). Then a report card is shown with a picture of the pet, a list of the courses completed, and the pet's current level in each area. While the child may not have completed the tasks adequately during the course, all discussion about failure is centered around the pet's poor performance. Post-

course interactions revert to a first person perspective in which children are once again their pet's owner and the pet is a separate entity. Thus, children must repetitively switch perspectives and if viewed as a recursive loop (you think that I think...), this would involve 3 to 7 loops. Since research has shown that recursive loops are challenging for elementary school-aged children (Oppenheimer, 1986), this is likely to be a complex process for the Webkinz World's target-aged user.

There are various areas of Webkinz World that involve recursive perspective taking, although none with as many loops as the Kinzville Academy, including some activities that build on success at the academy. For instance, cooking contests or beauty pageants at the Webkinz Stadium require that contestants (pets—or more accurately, children switching from self, pet, and outsider) complete numerous courses at the Kinzville Academy. For example, to successfully compete in the beauty pageant, children's pets must have completed numerous courses on grooming and style at the Kinzville Academy. Then children can visit the Webkinz Stadium and if registration is open, enter a pet in a beauty pageant that will begin 30 min later. This process involves a first person perspective as users act as themselves, clicking the "Enter Pet" registration button. After this, children then can select what their pet will wear. This seems to involve a second and third person perspective taking process, as the child must decide what their pet would like to wear as well as what will be viewed as most attractive and make the pet more successful in comparison to other pets in front of the unknown judges. Once the competition begins, children must use a third person perspective as they watch their pet and four other pets walk the runway in front of the judges (the user does not control the pet's movement during the pageant). At the completion of the pageant, the child is informed of their pet's ranking in the tournament. This process reverts back to first person perspective taking skills as the feedback is given directly to the user (Fig. 3).

Social interactions on Webkinz World, in the Webkinz Clubhouse, Kinzville Park, Coral Hut (on tropical vacations), or when friends visit My Room, also require recursive perspective taking skills as children navigate the space as their pet. For instance, if my Webkinz pet is a Siamese cat named Molly, I would visit the Webkinz Clubhouse as Molly and select things for Molly to say and do. When I select vocalizations for Molly, they appear as a bubble over Molly's head. Even as an adult in such situations, I would be challenged to act as myself—selecting what I would like to do and say (first person), considering what activities would make Molly happy and healthy (second person), as well as considering how other users will respond to Molly's actions in these social situations (third person). Thus, social interactions throughout the site necessitate sophisticated perspective taking loops in which children must use multiple perspectives as they navigate the space.

While opportunities for children to explore role taking and different perspectives through unguided play can be beneficial (Roskos & Christie, 2000; Vukelich, Christie, & Enz, 2008), research has shown that explicit assistance with perspective taking can benefit children's ability to step into another's shoes (Chalmers & Townsend, 1990). Although Webkinz World is structured in ways that require first, second, third, and recursive perspective taking skills, none of these processes are explicit, scaffolded, or guided (and perhaps not even well-planned). Instead, children must rely on skills that are nascent or just beginning to develop.

## Discussion

The bright colors, rich graphics, and pet-centered focus of Webkinz World make it an appealing play and learning space for many young children. The text-rich environment and explicitly academic content of many games and activities can provide opportunities for children to develop literacy (see Black, 2010, for an overview) and technology-related skills (e.g., using a keyboard, manipulating an avatar, choosing from drop-down menus). In addition, the site includes unofficial life skills lessons related to saving and spending money, maintaining property, and caring for pets, to name just a few. Nonetheless, as

a self-proclaimed "educational" resource (Ganz, 2010, Take a Tour) with "age-appropriate, curriculum-based" materials (Ganz, 2011, FAQ), the site is missing some educational opportunities by overlooking, rather than promoting, some of children's developing abilities. From our content analysis of class-inclusion and perspective taking opportunities, Webkinz World does not appear to capitalize on what developmentalists and educators know children can do at these ages, nor does it provide activities or features to support the development of these concepts and skills with which they may be struggling.

One of the most striking shortcomings of the site's design is reflected in the lack of attentiveness both to children's class inclusion abilities across the target age group for the site (6–13 years) and to potential ways of scaffolding these emerging abilities. While this wide age range may present developers with a challenge in addressing the needs of all players, the multimodal format of the site offers numerous possibilities for providing optional features that could support younger children's learning while still challenging older players. Research on class inclusion has found that explicit details about the hierarchical relationship between descriptors can have big impacts on children's abilities to classify. For instance, talking with a child about how dogs are animals too can help 5 years old children solve questions about whether there are more dogs or animals (Siegler & Svetina, 2006). Given the numerous class inclusion challenges that are embedded in Webkinz World, explicit instruction embedded in the site activities could be a beneficial learning tool for young users. For instance, clues on Quizzy's Question Corner could make these associations more explicit (e.g., "only one of these animals does not lay eggs; mammals do not lay eggs") and messages in *KinzChat* could highlight the class pathway that the statement came from (e.g., "ask"—"about you"—"How are you feeling today?"). In our review of the site, we did not see evidence of practices that help children develop more sophisticated thinking about hierarchical relationships.

Another notable shortcoming of the site design is the multiple and inconsistent perspectives that children are required to take during game play (e.g., Kinzville Academy courses that require first, second, and third person perspectives). Research has demonstrated the benefit of perspective taking skills and how they are related to children's increased persuasiveness, better conversational skills, and higher social competence (Clark & Delia, 1977; Jones, 1985). Interventions also suggest that perspective taking skills may also help curb aggressive impulses (Dodge, 1993; Hartup, 1976), reduce aggressive behaviors (Chalmers & Townsend, 1990), and promote prosocial behaviors (Johnson, 1975; Zahn-Waxler, Radke-Yarrow, & Brady-Smith, 1977).

While virtual worlds can provide valuable opportunities for young children to explore different social roles and perspectives through unstructured fantasy and socio-dramatic play activities (Marsh, 2010), in Webkinz World these shifts in perspective are enforced through site design rather than elected by the players. Moreover, these shifts between first, second, third, and at times recursive perspectives, often bear little relationship to the activity at hand and offer little scaffolding to help children understand when and why these shifts are taking place.

A game design informed by developmental literature, however, could facilitate young children's understandings of perspective taking by providing changes to the status bar in which a picture of the person interacting is changed. For instance, if the user is acting as the user, their uploaded image or a cartoon avatar could be used. When interacting as the pet, the pet's picture could be used in the space. These images could serve as a guide to orient the child's thinking about the target's perspective. As another example, the site could maintain one consistent perspective throughout each activity (as most virtual worlds do; Ducheneaut, Wen, Yee, & Wadley, 2009) in order to avoid the confusion about whose perspective to take. This could also be reinforced through game-generated language. For instance, when a user is participating in an activity as his or her pet, the non-player characters (e.g., Ms. Cowoline, T. von Meow) could



Fig. 3. Beauty pageant catwalk portion.

explicitly reference this shift linguistically (i.e., “Welcome back to the Employment Agency, Molly! Are you ready to earn more Kinzcash so your owner can buy you some cool new furniture at the W-Shop?”). Given the benefit of being able to take others’ perspectives and the evidence that these skills can be supported and developed with assistance (Burack, Flanagan, Peled, Sutton, & Zygmuntowicz, 2006; Day & Howells, 2008), it is unfortunate that Webkinz World necessitates that users change their perspective often without feedback, explicit instructions, or consistency in which perspective is to be used during specific games and interactions.

#### Limitations

This exploration of one of the most popular virtual worlds for children (Compete, 2009) is based on participant-observation and content analyses that link to developmental and educational theories. Individual children were not studied directly. As such, it is possible that children react differently to the cognitive challenges throughout the site. For instance, children may not switch perspectives while playing and, instead apply an undifferentiated, first person perspective to all in-game activity regardless of the site’s instruction or wording of responses to the user. Further, it is quite feasible that the perspective taking demands of the site are treated differently by different aged users, with older children being better equipped for the task. The next phase of this study involves observing and interviewing children during their Webkinz World use. Another limitation with this content analysis is the potential to miss aspects of the site that facilitate some of the skills highlighted in this paper. While our method involved an in-depth content analysis over an extended period of time, it is possible that areas were not assessed. Further, although we utilized a peer debriefing procedure, it is possible that other researchers would draw different conclusions from these data sources. In considering replicability of these findings, it is also worth noting that according to Ganz, the design of Webkinz World is an iterative process that is in part based on user feedback. Thus, the site is continuously adding features aimed at improving functionality and addressing problems. Lastly, this analysis was focused exclusively on Webkinz World

and may not apply to other virtual worlds for children. Future work should explore how other virtual worlds may incorporate emerging and developing cognitive abilities. The framework of this study may prove useful in exploring some of the developmental skills needed for successful game play and learning.

#### Conclusion

In their discussion of using a developmental lens for designing virtual worlds for young children, Beals and Bers (2009) point out that offline spaces, such as homes, schools, and playgrounds, are replete with opportunities for children to engage in both structured and unstructured activities at developmentally appropriate levels. They go on to argue that virtual worlds “are just one more type of environment that can serve children” (Beals & Bers, 2009, p. 53) in their processes of social, emotional, and cognitive development. However, activities in virtual worlds, by virtue of their design, may be more constrained and limit the range of developmental skills needed to successfully participate. Given the increasing popularity of virtual worlds for young children and the growing prominence of such spaces as sociocultural contexts for learning (Black & Reich, 2011), more emphasis should be placed on their educational affordances, especially with regard to cognitive development. Children are interested in these spaces, are motivated to play, and visit them regularly. Thus, they provide an exciting new “playing ground for developmental issues from the physical world” (Subrahmanyam & Greenfield, 2008, p. 124). However, this opportunity is in many ways lost if designers fail to capitalize on existing knowledge of children’s developed and emerging abilities.

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