

## Math in a Zoo < – > Math in the Wild

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### Abstract

I claim that there are two basic kinds of learning games being played in our classrooms. I call them the 'sense-making game' and the 'knowledge game'. In this paper I outline the differences between these two games and the significance of these differences. I do this by comparing a trip to a zoo with a trip into the wilderness, in the belief that the differences between these two trips are equivalent to the differences between these two learning games.

### Introduction

In the paper The Two Fundamental Learning Games We Play: A Framework for Discussion and Reflection (2006), I say: *The classroom can be thought of as an arena in which 'the learning game' is played. At first glance, there would appear to be myriad variations of this game. When stripped to their essentials, however, the number of learning games reduces to two. I label one 'the knowledge game', the other, 'the sense-making game'. These two learning games are quite different in character and purpose. They make different demands on the players. They are governed by different rules. They have different goals. They foster and reinforce different dispositions, habits, and beliefs in the players. (Of course, there are knowledge and sense-making components in both games. However, knowledge is acquired and used very differently in the two games and the purpose, nature, quality, and quantity of the sense-making is also very different in the two games. ) In addition, the habits, and dispositions fostered by one game act as impediments to playing the other game. I then go on to say, *Played well, both learning games can prepare players for success in school. However, only the sense-making game prepares players for life beyond the classroom. Unfortunately, .... the knowledge game is the learning game played most frequently, in most classrooms.**

It is important to recognize just how different these two games really are, and to appreciate the significance (and consequences) of these differences. These two learning games differ in ways similar to the ways that a trip to a zoo differs from a trip into the wild. In the table below, I set out a brief comparison of zoos and the wild under the headings, Environment, Creatures, Visitors / Guests, and Staff .

### The Metaphors

The creatures, in a zoo or in the wild, are metaphors for knowledge, conceptual and procedural knowledge. This knowledge may be associated with a specific discipline, with some interdisciplinary study, or be cross-disciplinary knowledge related to such things as problem-solving, critical thinking, communications, and the use of technology.

The people who work in zoos or in the wild are metaphors for teachers or facilitators of learning activity.

The clients, guests, participants, or visitors are metaphors for students or learners.

The zoo and the wild are metaphors for two kinds of learning environments within which learning tasks, learners and facilitators of learning come together and interact for the purpose of learning and personal development.

The following table sets out a brief comparison of these two environments and the actions that take place in these two environments. I claim that the typical differences between these two environments, and the activity that takes place in them, closely parallel the differences between the two learning games referred to in the introduction of this paper. Teachers playing these two learning games differ in ways similar to the ways that zoo keepers and zoo staff differ from 'expedition' leaders. The two learning games differ in ways similar to the ways in which life in a zoo differs from life in the wild. The two learning games differ in ways similar to the ways in which a visit to a zoo differs from a trip into the wilderness.

### **A Zoo and the Wild: A (Brief) Comparison**

<u><b>A Zoo</b></u>	<u><b>The Wild</b></u>
<p><b>Environment</b></p> <ul style="list-style-type: none"> <li>a) not self-sustaining</li> <li>b) governed by / in harmony with human policy</li> <li>c) artificial, some natural elements</li> <li>d) simplistic, sterile, inorganic, arbitrary, neat, compartmentalized, ordered, sanitized</li> <li>e) same information presented to all visitors, in same authoritative, precise, concise way</li> <li>f) a place where the visitor can observe animals (that they might not otherwise see live) in artificial lab-like surroundings</li> <li>g) in many ways a zoo is like a taloned / fanged / finny / feathered form of a text book.</li> </ul> <p><b>Creatures</b></p> <ul style="list-style-type: none"> <li>a) small (usually non-representative sample) population</li> <li>b) unable to survive outside the zoo</li> <li>c) usually exhibit only a narrow range of behaviors; animals constrained by their artificial surroundings</li> <li>d) dependent on captors for their survival</li> <li>e) healthy animal in captivity often inferior to its healthy wild counterpart</li> <li>f) often lacks skills to survive in the wild</li> <li>g) isolated from their community, competitors, predators, and food sources</li> <li>h) presence guaranteed at specified time</li> </ul>	<p><b>Environment</b></p> <ul style="list-style-type: none"> <li>a) self-sustaining</li> <li>b) governed by / in harmony with laws of nature</li> <li>c) a natural ecosystem</li> <li>d) textured, complex, organic, subtle, coherent, surprising, spiritual, aesthetically pleasing</li> <li>e) information may reach individuals in many modes and amounts</li> <li>f) a place where the visitor can learn about, or interact with, animals in their natural habitat, behaving naturally</li> <li>g) the wild is a potentially rich learning situation</li> </ul> <p><b>Creatures</b></p> <ul style="list-style-type: none"> <li>a) all life in any given wilderness</li> <li>b) sustainable / self-sustaining populations</li> <li>c) behave naturally; surroundings allow animals to display broad range of behaviors</li> <li>d) look after themselves; affected by human activity / inactivity</li> <li>e) healthy animal in wild often superior to zoo counterpart</li> <li>f) part of the food chain; learns / possesses survival skills</li> <li>g) shares habitat with competitors, predators and food sources</li> <li>h) presence likely only at certain times and places</li> </ul>

<p>and place</p> <p>i) constrained by artificial surroundings</p> <p>j) limited interaction with other creatures</p> <p><b>Visitors / Guests</b></p> <p>a) travel from cage to cage, exhibit to exhibit, encountering animals and snippets of information about the animals</p> <p>b) limited opportunity to revise activity to better fit with things of personal interest</p> <p>c) little inducement to look at things differently / in a different way</p> <p>d) often provides visitors an opportunity to engage with contrived / non-authentic tasks ( quizzes, petting zoo, feeding animals, participating in animal shows, ...)</p> <p>e) tasks available to visitor are usually short and simple</p> <p>f) the attention of visitors is directed in a variety of ways / told where to look / what to see</p> <p>g) opportunity to observe limited behavior of creatures in their unnatural habitat</p> <p>h) experiences may generate interest and liking for zoos that may not transfer to love / respect / concern for the wild (or comfort in the wild)</p> <p>i) little opportunity to problem solve or carry out investigations / inquiries; little opportunity to make sense of things</p> <p>j) fosters passivity and detachment; tends to confer observer status on visitors; flow of information / ideas is essentially one-way; reinforces the notion that an expert is someone else and that the zoo visitor has little to bring / offer to issues related to zoos or the wild</p> <p>k) self-appraisal not a priority item</p>	<p>i) constrained by their natural surrounding</p> <p>j) broad interaction with other creatures</p> <p><b>Visitors / Guests</b></p> <p>a) opportunity to engage in a wide range of activities and behaviors</p> <p>b) may direct activities to focus things of personal interest / significance</p> <p>c) gives visitors an opportunity to 'get their eye in' (a process of moving from informal seeing to more formal seeing)</p> <p>d) provides participants with the opportunity to engage in a wide variety of authentic tasks ( wildlife photography, environmental protection activity, scientific study, painting, ...)</p> <p>e) level of engagement, complexity, and length of activity often greater than that offered in a zoo.</p> <p>f) participants learn to direct their own attention / to notice things on their own / to be attentive / persevere</p> <p>g) opportunity to observe behavior of creatures in their natural habitat</p> <p>h) experiences likely to generate interest in the wild and love / respect / concern for the wild (and for zoos); learn to be comfortable / at ease / capable in the bush and being around animals</p> <p>i) the wild presents visitors with problems and opportunities for problem solving and inquiry, for making sense of things</p> <p>j) fosters active involvement of participant; fosters sense of being a part of an interest group; information / ideas flow in many directions ; 'we are all learners' (becoming more capable / expert) ; more intimately involved with fellow participants and facilitators</p> <p>k) opportunity to develop a realistic appraisal of strengths, weaknesses, interests, and vulnerabilities of observer (and the observed)</p>
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<p><b>Staff</b></p> <p>a) provide visitors with a map showing the exact location of the animals (including feeding times and other special events.)</p> <p>b) first priority: care of the animals; majority of time spent with animals</p> <p>c) power resides with zoo staff</p> <p>d) don't expect visitors to want to get too involved in the subject matter related to zoos</p> <p>e) little attempt to cater to the individual differences of zoo visitors</p> <p>f) activity: 'one size fits all'</p> <p>g) safety built in, safety virtually guaranteed</p>	<p><b>Staff</b></p> <p>a) provide visitors with maps (advice, personal experience) directing / guiding visitor to areas where (safe) encounters with certain animals are likely</p> <p>b) first priority: safety and success of visitors; significant portion of time spent interacting with visitors</p> <p>c) power shared with staff and visitors</p> <p>d) expect visitors to be actively involved in investigation / expedition / outing and to make valuable / interesting observations, ask questions, make predictions ...</p> <p>e) don't expect everyone to do or take away the same thing from the activity</p> <p>f) adjust interaction / task to better fit needs of individual guests</p> <p>g) safety consciousness (for self and animals) stressed / taught</p>
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**Conclusion**

A classroom learning episode can be like a trip to a zoo or a trek into the wild. It depends on such things as the learning environment in the classroom, the nature of the tasks focused upon, the ways in which the tasks are engaged, the interaction between students, the interaction between teacher and students, and on past learning experiences, expectations, beliefs and values of students and teachers. If it feels more like a trip to zoo, the learning game being played in the classroom is likely the 'knowledge game'. If it feels more like a trek into the wild, the learning game being played is likely the 'sense-making game'. The latter prepares students for a life in the wild, for a life of playing the 'sense-making game'. The former prepares students for a life in a zoo, for a life of playing the 'knowledge game'.