

Virtual Manipulatives in Mathematics

January 15, 2009

Chris Rakes, Doctoral Fellow

Todd Brown, Assistant Professor of Mathematics Education

What is a virtual manipulative?

- Examples:

- <http://www.ies.co.jp/math/java/conics/focus/focus.html>
(High School Level - Algebra)

- http://nlvm.usu.edu/en/nav/frames_asid_324_g_3_t_2.html?open=instructions&from=category_g_3_t_2.html
(Middle School Level - Algebra)

- http://nlvm.usu.edu/en/nav/frames_asid_106_g_2_t_1.html?from=category_g_2_t_1.html (Elementary Level – Fractions)

Student Engagement and Exploration

- What are some ways we can engage students?
- What are some of the tools we can use, technology or otherwise, to facilitate exploration?
- What makes a virtual manipulative effective?
- What obstacles prevent a virtual manipulative from being effective?

Teacher Exploration:

- Explore some of the links below and find one Virtual Manipulative to share – be ready to share why you like it!
 - National Library of Virtual Manipulatives – <http://nlvm.usu.edu/en/NAV/vlibrary.html>
 - Educational Java Programs – www.arcytech.org/java/
 - A Hotlist on Math Virtual Manipulatives - <http://www.kn.pacbell.com/wired/fil/pages/listmathkc.html>
 - Computing Technology for Mathematics Excellence - http://www.ct4me.net/math_manipulatives.htm#Manipulatives
 - Illuminations – NCTM - <http://illuminations.nctm.org/ActivitySearch.aspx>

Virtual Manipulatives
January 15, 2009

- 1) What are some ways we can engage students?

- 2) What are some of the tools we can use, technology or otherwise, to facilitate exploration?

- 3) What is a virtual manipulative?

- 4) What makes a virtual manipulative effective? What obstacles prevent a virtual manipulative from being effective? Examples:
 - a. <http://www.ies.co.jp/math/java/conics/focus/focus.html>
(High School Level - Algebra)

 - b. http://nlvm.usu.edu/en/nav/frames_asid_324_g_3_t_2.html?open=instructions&from=category_g_3_t_2.html
(Middle School Level - Algebra)

 - c. http://nlvm.usu.edu/en/nav/frames_asid_106_g_2_t_1.html?from=category_g_2_t_1.html
(Elementary Level – Fractions)

- 5) Explore some of the links below and find one Virtual Manipulative to share – be ready to share why you like it!

National Library of Virtual Manipulatives – <http://nlvm.usu.edu/en/NAV/vlibrary.html>

Educational Java Programs – www.arcytech.org/java/

A Hotlist on Math Virtual Manipulatives -
<http://www.kn.pacbell.com/wired/fil/pages/listmathkc.html>

Computing Technology for Mathematics Excellence -
http://www.ct4me.net/math_manipulatives.htm#Manipulatives

Illuminations – NCTM - <http://illuminations.nctm.org/ActivitySearch.aspx>