

More Online!

David Blair

Readers may be interested to look at three articles that are to be found in their entirety on the website of the *Research Bulletin* (<http://www.waldorflibrary.org/ResearchBulletin.htm>). The first is Saralea Chazan's study of the Children's Developmental Play Instrument (CDPI), reviewed in this issue by Renate Long-Breipohl. Though not prepared by or for Waldorf teachers, the study does reflect a growing scholarly interest in childhood play and its role in learning. Perhaps after reading Dr. Breipohl's review, one might be inclined to follow the above link to examine the actual study more closely.

Also of note is a study of *Why Peer Discussion Improves Student Performance on In-Class Concept Questions*, by M.K. Smith, W.B. Wood, W.K. Adams, C. Wieman, J.K. Knight, N. Guild, and T.T. Su. This is also a non-Waldorf inspired work but not without thought-provoking implications for Waldorf teachers as well as anyone practicing or studying education. The basic premise of the study might be summarized in this way: Students learn better (measured in the study by greater success on in-class tests) when they engage each other in discussion of a topic, rather than simply receiving a presentation from a teacher or lecturer. The study was also designed to examine the role of discussion in learning, specifically to identify how students benefit from such discussion. That is, do they just learn better when a peer explains something to them instead of the teacher, or is something more mysterious at work? According to the carefully designed study, the latter seems likely, because students in those discussion groups with no participant having a previous understanding of the topic had similar success to groups that

contained student "plants" who had already demonstrated understanding of the material and who were therefore placed in a group to help promote successful results. According to the findings, students weren't simply copying the wisdom of others in the groupings but were finding solutions on their own quite successfully.

Finally, readers may want to take a look at Peter Glasby's review of a Kolisko Conference workshop that took place in Sydney, Australia, on the topic of *Adolescents: Their Relationship to the Night and Senses in Connection with Their Own Development*. This intriguing workshop report makes one wish, first of all, that one had been present to benefit directly from the imagination and planning of the presenters. Of special note was the effort to imbed the theme of the course (night learning) into the work of the participants during the course of the workshop itself. Taking as its starting point Rudolf Steiner's statement to the first Waldorf teachers that we must teach the children how to sleep, the course tried to answer more deeply the questions: What is taking place in the night and how is it related to what has come before in the classroom and what will follow the next day? Specific examples were examined in relation to the science curriculum and the phenomenological study of physics in particular. Weaving together practical classroom experiments with thoughts of Steiner's and Goethe's as well as biographical sketches from the life of Helen Keller, the group was asked to consider the relationship between their daytime experiences with the 12 senses and the complementary journey at night into the 12 zodiacal directions of space. The report also establishes interesting connections

with the Rittelmeyer and Guttenhöfer articles in this issue of the *Research Bulletin* on the human body as resonance organ and the form of the main lesson, respectively. There is much food for thought, though as a report from a conference, one accompanies the workshop members through the activities without, of course, coming to conclusions that might have been more fully appreciated had one been present.

Among many powerful quotations cited is this one:

When we look up to the wonder of the starry world, when we contemplate the whole process of the universe with its glories and marvels, then we are at last led to the feeling that all of the glory that lies open to our view in the whole universe that surrounds us only has meaning when it is reflected in the admiring human soul.

– J.W. Goethe

Is Technology Producing a Decline in Critical Thinking?

David Blair's review of an article by Patricia Greenfield

As technology has played a bigger role in our lives, our skills in critical thinking and analysis have declined, while our visual skills have improved, according to research by Patricia Greenfield, UCLA distinguished professor of psychology and director of the Children's Digital Media Center, Los Angeles. Learners have changed as a result of their exposure to technology, says Greenfield, who has analyzed more than 50 studies on learning and technology, including research on multi-tasking and the use of computers, the Internet, and video games. Her research was published in the journal *Science Daily*. "Reading for pleasure, which has declined among young people in recent decades, enhances thinking and engages the imagination in a way that visual media such as video games and television do not," Greenfield said.

How much should schools use new media versus older techniques such as reading and classroom discussion? "No one medium is good for everything," Greenfield said. "If we want to develop a variety of skills, we need a balanced media diet. Each medium has costs and benefits in terms of what skills each develops."

Schools should make more effort to test students using visual media, she said, by asking them

to prepare PowerPoint presentations, for example. "As students spend more time with visual media and less time with print, evaluation methods that include visual media will give a better picture of what they actually know," said Greenfield, who has been using films in her classes since the 1970s. "By using more visual media, students will process information better," she said. "However, most visual media are real-time media that do not allow time for reflection, analysis or imagination—those do not get developed by real-time media such as television or video games. Technology is not a panacea in education, because of the skills that are being lost.

"Studies show that reading develops imagination, induction, reflection and critical thinking, as well as vocabulary," Greenfield said. "Reading for pleasure is the key to developing these skills. Students today have more visual literacy and less print literacy. Many students do not read for pleasure and have not for decades. Parents should encourage their children to read and should read to their young children."

Among the studies Greenfield has analyzed is a classroom study showing that students who were given access to the Internet during class and were encouraged to use it during lectures did not

process what the speaker said as well as students who did not have Internet access. When students were tested after class lectures, those who did not have Internet access performed better than those who did. "Wiring classrooms for Internet access does not enhance learning," Greenfield said.

"Studies show that reading develops imagination, induction, reflection and critical thinking, as well as vocabulary," Greenfield said. "Reading for pleasure is the key to developing these skills. Students today have more visual literacy and less print literacy. Many students do not read for pleasure and have not for decades. Parents should encourage their children to read and should read to their young children."

Another study Greenfield analyzed found that college students who watched "CNN Headline News" with just the news anchor on screen and without the "news crawl" across the bottom of the screen remembered significantly more facts from the televised broadcast than those who watched it with the distraction of the crawling text and with additional stock market and weather information on the screen. These and other studies show that multi-tasking "prevents people from getting a deeper understanding of information," Greenfield said.

Yet, she added, for certain tasks, divided attention is important. "If you're a pilot, you need to be able to monitor multiple instruments at the same time. If you're a cab driver, you need to pay attention to multiple events at the same time. If you're in the military, you need to multi-task, too," she said. "On the other hand, if you're trying to solve a complex problem, you need sustained concentration. If you are doing a task that requires deep and sustained thought, multi-tasking is detrimental."

Do video games strengthen skill in multi-tasking? New Zealand researcher Paul Kearney measured multi-tasking and found that people who played a realistic video game before engaging in a military computer simulation showed a significant improvement in their ability to multi-task, compared with people in a control group who did not play the video game. In the simulation, the player operates a weapons console, locates targets and reacts quickly to events. Greenfield wonders, however, whether the tasks in the simulation could have been performed better if taken one at a time.

More than 85 percent of video games contain violence, one study found, and multiple studies of violent media games have shown that they can produce many negative effects, including aggressive behavior and desensitization to real-life violence, Greenfield said in summarizing the findings.

In another study, video game skills were a better predictor of surgeons' success in performing laparoscopic surgery than actual laparoscopic surgery experience. In this procedure, the surgeon makes a small incision in the patient and inserts a viewing tube with a small camera. The surgeon examines internal organs on a video monitor connected to the tube and can use the viewing tube to guide the surgery. "Video games skill predicted laparoscopic surgery skills," Greenfield said. "The best video game players made 47 percent fewer errors and performed 39 percent faster in laparoscopic tasks than the worst video game players."

Visual intelligence has been rising globally for 50 years, Greenfield said. In 1942, people's visual performance, as measured by a visual intelligence test known as Raven's Progressive Matrices, went steadily down with age and declined substantially from age 25 to 65. By 1992, there was a much less significant age-related disparity in visual intelligence. In a 1992 study, visual IQ stayed almost flat.

Greenfield believes much of this change is related to our increased use of technology, as well as other factors, including increased levels of formal education, improved nutrition, smaller families, and increased societal complexity.

Source: "Is Technology Producing a Decline in Critical Thinking and Analysis?" *Science Daily*. Accessed February 3, 2009, <http://www.sciencedaily.com/releases/2009/01/090128092341.htm>.