Drawing and doodling can help you learn science: study

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(Medical Xpress) -- According to a new study students should be encouraged to use freehand drawings in science class because it will help them learn more quickly.

The researchers, Associate Professor Shaaron Ainsworth of the University of Nottingham's School of Psychology, and colleagues from La Trobe and Deakin Universities in Australia, report that freehand drawing can inspire students to learn and retain information, and can help them engage with the educational materials, when they might not pay attention otherwise. Freehand drawing or doodling can also help them later to recall and communicate what they have learned.

Drawing may be particularly useful for science students, since science often uses visual aids such as graphs, drawings, videos and still images to explain hypotheses, theories, and findings, but Dr Ainsworth stressed that drawing should complement other activities such as writing and talking, rather than replacing them. She also said that drawing should be a key component and should enhance creativity rather than being a mere "coloring in" activity.

Dr Ainsworth said science students applied more effort to learning when they read and then drew pictures of their understanding of the text. The amount of enjoyment they derived from the activity was "striking," when compared to just reading or from reading and then writing summaries. She said that in her experience it was both more effective and enjoyable to learn through drawing.

The researchers suggested that drawing should be regarded as a valuable element in science education, along with reading, writing, and verbal discussions. The scientists also suggest that if students were allowed to draw when exploring science they could become more motivated to learn than if they are required to learn by rote, as is often currently the case. Students also tend to enjoy their learning activities more than if they are asked to remain passive recipients of their education.

Informal science education opportunities are often represented as merely being "fun," but the research suggests these activities might be undervalued, and that activities that seem like play can actually stimulate the interests of students and be used by them to explore their scientific interests. Stimulating an interest in science is important if students are to be motivated to engage in scientific research over the long term.

The new study, reported in an article in the journal Science adds to research reported in 2009 in *Applied Cognitive Psychology*, which found that college students who doodled during routine tasks had improved memory recall over those who did not. The research suggested that doodling prevented the students from daydreaming, which would have distracted them from the task at hand.

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Abstract
Should science learners be challenged to draw more? Certainly making visualizations is integral to scientific thinking. Scientists do not use words only but rely on diagrams, graphs, videos, photographs, and other images to make discoveries, explain findings, and excite public interest. From the notebooks of Faraday and Maxwell (1) to current professional practices of chemists (2), scientists imagine new relations, test ideas, and elaborate knowledge through visual representations (3–5).