

**Hattie's Six Factors: Relation to Technology**

**Part I:**

According to John Hattie, there are six main factors that influence a student's academic achievement; these factors include: the child, the home, the school, the curriculum, the teacher, and approaches to teaching (31). As technology increasingly becomes an integral part of the learning atmosphere and process, it is important to note its impact on student achievement--especially as it relates with other influences. Although all six factors are extremely significant, and often overlap, they also vary in function with technology. Which of Hattie's factors is the most influenced by technology? Which offers the most promise from the inclusion of technology? Which factor is least affected? Since technology does not inherently work positively with each factor, one must also consider those with the most problematic relationship with its use.

Of the six factors mentioned, *the child* would be the most influenced by the use of technology in the educational process. From cell phones and smart phones, computers, and musical devices, to portable DVD players, wireless internet, and social networking websites, subsequent generations have been purported to be in the "technological age" and have started using various forms of electronic technology at earlier ages than ever before. Even though most children come into contact with technology (especially with use of media devices) before ever entering the school environment, one should be aware that not everyone has had such an opportunity. Utilizing technology is not only vital for fostering the interests that already exist in students, but to bring technology to those who may not have had such experiences, while making curriculum relevant to all.

Technology is not only beneficial when used systematically as a subject of education, it is also useful as a tool *to* educate. Students bring their prior knowledge to classrooms, which leads to expectations of what learning should look like (Hattie, 31). Breaking the mold of what is expected (i.e. the use of YouTube videos to teach) may spark interest in topics. Simply asking students to learn from textbooks, newspapers, and videos--although still highly useful--is not enough for those used to faster, more efficient forms of data transfer; it is also not enough to prepare students for 21st century globalized competition. Education, as Hattie describes, is not limited to getting students to think, but is

"teaching people things that are worth learning" (Hattie, 27). Becoming proficient in various forms of technology is, of course, highly worthwhile and can be applied by students immediately. Hattie goes on to argue that "a major goal of schools should be to turn us on to learning and to assist us to be open to new experiences in learning" (32); for today's learning community, that typically involves the purposeful use of technology. As students become increasingly proficient with the use of technology, as with any educational tool, they will develop "the self-regulatory attributes that seem most desirable for learners" (Hattie, 22) and will become their own teachers as curiosity causes them to branch out. Students need to be engaged with applicable curriculum. Thus, children are highly impacted by the use of technology in academia.

The influential factor of *teaching approaches* thus offers the most promise from the use of technology. A teacher that uses technology as an approach to the educational process is likely to provide for multiple opportunities for intentional teaching and learning. S/he will be able to create challenging tasks while creating the framework with which the teacher will know whether one has been successful at attaining educational goals. This is often manifested in the way that students learn material and/or are tested for mastery. According to a study by Brown (2002) with 700 New Zealand teens across the subjects of English, mathematics, and science, students thought that learning was equivalent to showcasing surface knowledge through the reproduction of material. Their teachers, on the other hand, said they were teaching toward deep learning outcomes (Hattie, 28). As Hattie explains, "students can be strategic in their approach because most questions and examinations relate to surface knowledge" (28). Technology provides the opportunity for teachers to test student knowledge in various ways, instead of traditional true/false, multiple choice, or short answer questions. The deliberate use of technology, coupled with alternative forms of assessment, could turn the examination or assignment specifically into a learning process, not simply a tool to gauge students' learning. This is further illustrated by Gall (1970) who mentions that 60% of teachers' questions are fact-recall, 20% are procedural, and only 20 % required thought by students (Hattie, 28). With a different teaching approach (i.e. with the use of technological tools), the curriculum may be altered so that students are able to increase the amount of procedural knowledge and "thinking" required to complete tasks--which in turn, fosters better understanding for future self-regulatory behavior.

Technology may also provide the teacher with the methods which s/he can plan and talk about teaching (via networking), can receive regular feedback from students (i.e. student polls or blogs), as well as helping to understand the "critical role of teaching appropriate learning strategies" (Hattie, 36).

A solid approach to teaching, as provided by technology, can "lead to further engagement in the curriculum, leading to the development of problem solving skills, and to the enjoyment of some control over one's learning [which] then leads to further developing learning strategies to master content and understanding" (Hattie, 36).

The factor that is least likely to be influenced by technology is the school itself, since it is described by Hattie as mainly being the "climate of the classroom" and "peer influences," which he goes on to explain that, "...they are among the least beneficial influences on student achievement" (33). The teacher, on the other hand, directly impacts the way a classroom is run (whether safe or hostile) and can also shape the influence of peers. Even though technology can impact both of these aspects of the school, it has the smallest effect on them overall.

While the use of technology can positively (or even negatively) impact student achievement in academia, the factor with the most problematic relationship with its use is *the home*. One of the main issues associated with the home as it relates to student achievement is a parent's knowledge of the "language of schooling" (Hattie, 33). Parents may either be completely unfamiliar with the technology being introduced into the school system, or not have the most up-to-date knowledge. This may in turn affect the ability for the home to be an extension of the learning environment created within a school. Also, how parents view the role of technology--as either important or not--in the education of their child may directly impact a student's outlook. According to Hattie, "the home can be a nurturing place for the achievement of students, or it can be a toxic mix of harm and neglect with respect to enhancing learning" (33). Unfortunately, even parents who may highly support the use of technology, may not be able to foster such learning in the home where the technology is not available--or is unknown. Thus, in order to strengthen the relationship between the home and technology, schools "have an important role in helping parents to learn the language of schooling so that the parents can provide every possible assistance to their children in terms of developing the child's learning" (Hattie, 33).

**Part II:**

<b>Factor influencing student achievement</b>	<b>Common Technologies</b>	<b>Opportunities</b>	<b>Challenges</b>
Child	<ul style="list-style-type: none"> <li>*cell phone</li> <li>*computer/internet</li> <li>*television/movies</li> <li>*music device</li> <li>*toys</li> <li>*video games</li> <li>*textbooks</li> </ul>	<p>*provides for alternate forms of communication, social networking, forms prior knowledge &amp; expectations, creates interest in technology, develops applicable skills</p>	<p>*child may become frustrated by technologies, may have limited access, lack skills necessary to utilize them, form faulty prior knowledge or expectations, may not represent "reality"</p>
Home	<ul style="list-style-type: none"> <li>*phone</li> <li>*computer/internet</li> <li>*television/movies</li> <li>*music device</li> <li>*newspapers, magazines, books</li> </ul>	<p>*gives parents knowledge of technology to help child with learning, is an extension of tools used in school, provide commonality between children and parents which transcends to academia, links home to school</p>	<p>*may not be "up-to-date", technological frustrations of parents may transcend to child, may create unreasonable expectations, may form faulty prior knowledge</p>
School	<ul style="list-style-type: none"> <li>*television/videos</li> <li>*computer/internet</li> <li>*projector</li> <li>*copy machine</li> <li>*papers/pencils/pens</li> <li>*craft materials</li> </ul>	<p>*gives students access to multiple tools with which to learn information, provides various ways to share views safely, helps students with special needs access information otherwise difficult to attain</p>	<p>*limited uses, may be used incorrectly by staff/students--which can also lead to negative peer influences, may not lend itself to a "caring" environment, easily run with limited teacher-student involvement</p>
Curriculum	<ul style="list-style-type: none"> <li>*computer/internet</li> <li>*educational software</li> <li>*television/movies</li> <li>*electronic grade book</li> <li>*data director</li> </ul>	<p>*allows teachers to gauge student comprehension and achievement, to figure out if lessons/assignments are effective, provides for more individualized educational plans, helps teachers plan lessons deliberately, develops deeper and surface understanding, increases procedural and deep knowledge</p>	<p>*may not always provide accurate information, may not be the best strategy for all students, may become too mechanical or systematic in nature, may be used to simply teach procedural knowledge</p>
Teacher	<ul style="list-style-type: none"> <li>*phone</li> <li>*computer/internet</li> <li>*television/movies</li> <li>*music device</li> <li>*textbooks</li> <li>*copy machine</li> </ul>	<p>*links home and school through direct/indirect communication, increases teaching quality, focuses on learning, increases teacher expectations, fosters the</p>	<p>*may make errors seem unwelcome, may reduce clarity, teachers not as prepared for surprises, unreasonable expectations, too many assumptions</p>

	<ul style="list-style-type: none"> <li>*projector</li> <li>*electronic grade book</li> </ul>	effort & engagement, may increase teacher clarity	made, self-fulfilling prophecy
Approaches to Teaching	<ul style="list-style-type: none"> <li>*computer/internet</li> <li>*television/movies</li> <li>*music device</li> <li>*musical instruments</li> <li>*interactive programs</li> <li>*craft materials</li> <li>*E-mail</li> </ul>	<ul style="list-style-type: none"> <li>*makes learning more interactive &amp; engaging, makes teaching more fun, helps set challenging tasks, provides for multiple learning/teaching opportunities, helps teacher plan/talk about practice, gets feedback from students, aids teacher understanding in success/failure of goal-reaching, fosters deliberative use of tools for teaching</li> </ul>	<ul style="list-style-type: none"> <li>*may lead to unreasonable expectations for teacher/students, complicates teaching, limits home accessibility to school assignments, feedback (teacher/student) may provoke necessary response, limited proper evaluation of goal-reaching</li> </ul>