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CONTENT KNOWLEDGE IS THE KEY TO LEARNING

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EXECUTIVE SUMMARY

There is a longstanding debate among educators about how best to provide students with a well-rounded education. This debate, often defined as progressive vs. traditional, largely focuses on the proper role of specific content knowledge in the curriculum. Generally speaking, progressive educators favour a non-content specific learning process while traditional educators emphasize the importance of ensuring students learn specific content knowledge.

The 21st Century Learning movement, with its emphasis on non-content specific skills, critical thinking and creativity, is the latest manifestation of the progressive approach to education. A number of provinces, most notably Alberta, British Columbia, and Ontario, are currently making substantial curriculum changes to reflect the priorities of the 21st Century Learning movement. If this trend continues, content knowledge will receive even less emphasis in classrooms than it does now.

However, the shift away from content knowledge should give all Canadians cause for concern. The reality is that content knowledge is essential in all subject areas and at all grade levels. This report outlines three specific reasons in support of this position.

First, content knowledge is essential for reading comprehension. Reading is often described by educators as a transferable skill. This is only partially true. While the ability to decode individual words is largely transferable to different texts, the same cannot be said for reading comprehension. Students are most likely to comprehend what they are reading when they already know something about the topic. The more they already know, the more effectively they can read and understand. Simply put, reading comprehension depends on background knowledge.

Second, content knowledge makes critical thinking possible. In many schools, the development of critical thinking skills is considered more important than the acquisition of specific content knowledge. However, this assumption overlooks the fact that critical thinking cannot take place in the absence of specific content knowledge. Ignorant people do not think critically. While subject-specific content knowledge does not guarantee critical thinking, knowledge is a prerequisite for critical thinking to take place.

Third, content knowledge empowers students from disadvantaged backgrounds. Students do not come to school from equally advantageous circumstances. Far too many students come from low socioeconomic status (SES) homes where they have not had the same learning opportunities as their more affluent classmates. As a result, they enter school at a significant disadvantage. However, schools can compensate for this gap by ensuring that all students receive content-rich instruction from an early age. Providing all students with content-rich instruction is the key to empowering students from disadvantaged backgrounds.

Students deserve the best education that teachers can provide. Knowledge is a powerful thing and good teachers know how to make their subjects come alive. Teachers should be experts in their subject areas and not afraid to challenge their students to deepen their thinking. By restoring knowledge to its rightful place, we can help ensure that all students receive a top-quality education.

INTRODUCTION

All Canadians agree that schools should be places of learning. There is also near-universal agreement that school is for everyone, not just for the privileged elite. This is one of the reasons why schooling is mandatory to age 16 or 18 in every Canadian province and territory. Whether students attend public school, private school, or homeschool, they must learn how to become productive citizens and take their place in Canadian society.

Despite this broad-based consensus, there are significant disagreements about what effective instruction looks like. Some educators believe that the process of learning is more important than any specific content knowledge. They argue that it is more important for students to learn how to learn than to pass on a defined body of knowledge. This educational philosophy is often described as the progressive approach to education. Progressive educators are more interested in helping students construct their own knowledge — knowledge that has meaning to them — than in making them memorize what they often consider to be a bunch of outdated and irrelevant facts.

The 21st Century Learning movement, with its emphasis on non-content specific skills, specifically critical thinking and creativity, is the latest manifestation of the progressive approach to education. A number of provinces, most notably Alberta, British Columbia, and Ontario, are currently making substantial curriculum changes to reflect the priorities of the 21st Century Learning movement.

The objectives of the 21st Century Learning movement stand in sharp contrast with what is often described as the traditional approach to education. Traditional educators believe that there is a defined body of knowledge and skills that needs to be passed on to the next generation. Despite the widespread stereotype of traditionalists as old-fashioned and outdated, traditional educators are not opposed to new ideas, and they are certainly not against critical thinking and creativity having a place in schools. They just believe that schools are often too quick to throw out time-tested methods and subject matter that remain important for students to understand.

The divide between progressive and traditional educators is not new. In fact, the divide has been around for centuries. Unfortunately, much of the debate today tends to focus on secondary issues such as no-zero policies, social promotion, standardized testing, the use of technology in classrooms, report cards, and teacher merit pay. These issues, while important in their own right, do not get to the heart of the matter and often distract parents and students from what really matters.

The key question is whether it is essential for all students to acquire specific content knowledge in all subject areas and grade levels. Ensuring students learn specific content knowledge is either a top priority or it is not. For example, Canadian history teachers will either focus on ensuring students have a solid knowledge base about key historical events and personalities or they will emphasize a generalized and non-content specific process of historical understanding. While many teachers claim they do both, the reality is that it is virtually impossible to make content knowledge and a non-content specific learning process equally important in a classroom. One approach will invariably dominate over the other. The area of emphasis on this issue sets the tone for everything else that happens in school.

Given these two options, content knowledge must take top priority. Not only does content knowledge provide students with the skills they need to function effectively as Canadian citizens, it is absolutely essential to the development of critical and creative thinkers. Only by giving content knowledge its rightful emphasis will schools ensure that students receive the level of education they deserve.

CONTENT KNOWLEDGE IS BEING UNDERMINED

In order to assess the importance of content knowledge, we must define what this term means. Simply put, content knowledge means specific facts and concepts. Content knowledge in history, for example, includes dates, names, and major events while in science content knowledge includes details about how scientific laws were discovered and explanations about how they work. In math, content knowledge includes the memorization of multiplication tables and the use of standard algorithms for operations such as addition, subtraction, multiplication, and division. Content in English Language Arts includes the study of classical authors such as William Shakespeare along with the mastery of the conventional rules of English spelling and grammar, and the structure of persuasive and creative works. Of course, these are only representative examples of content knowledge in a few subjects. In fact, any concrete piece of information can be described as content knowledge. Curriculum specialists determine the grade-level where specific content should be taught and at what depth.

However, content knowledge does not include the so-called 21st Century Competencies that are popular in many schools today. Ontario's Ministry of Education defines 21st Century Competencies as process skills such as critical thinking, communication, collaboration, and creativity.¹ While these are obviously important skills for students to learn, they are not content specific. In other words, these skills can be used in any subject area regardless of academic content and at any grade-level. To 21st Century Learning advocates, these generalized skills are more important than the specific content being studied.

British Columbia is currently redesigning its curriculum documents to emphasize 21st Century Competencies rather than specific content knowledge. On its curriculum website, the BC Ministry of Education makes this quite explicit.

What and how we teach our students has been redesigned to provide greater flexibility for teachers, while allowing space and time for

students to develop their skills and explore their passions and interests. The deep understanding and application of knowledge is at the centre of the new model, *as opposed to the memory and recall of facts that previously shaped education around the globe for many decades.* (Emphasis added.)²

By contrasting the memory and recall of facts with deep understanding and application of knowledge, the BC Ministry of Education is sending a clear message that content knowledge is of secondary importance and that teachers at all grade-levels should emphasize the broader objectives of communication, getting along with others, critical thinking, and creativity rather than the specific facts traditionally included in subject matter. Apparently, the ministry believes it is possible for students to have a deep understanding about a subject without understanding specific content knowledge or committing it to memory.

Alberta's education system is undergoing a similar transformation and its curriculum documents for all subject areas will be rewritten over the next few years.³ The relatively content-free approach is already having an impact in Alberta schools. Recently released curriculum planning documents for social studies, for example, contain little in the way of content, such as knowledge of historical facts and events, and much in the way of social activism.⁴ While some content will no doubt be added to the final version, it is clear that content is, at best, a secondary focus in Alberta's curriculum redesign.

While provinces like Ontario, Alberta, and British Columbia may think they are on the cutting edge of a revolutionary transformation in education, the reality is that there is nothing new about the 21st Century Learning movement. Many of the same ideas were espoused nearly a hundred years ago by William Heard Kilpatrick, an education professor at Columbia Teachers College. Writing in 1936, Kilpatrick argued that older teachers focused primarily on the subject matter (content) while a good teacher "understands how it is the process itself, especially as socially conditioned, that educates."⁵ Kilpatrick was a popular and influential professor so his ideas came to largely dominate in educational circles.⁶ Now many of his ideas have been renamed and repackaged by the 21st Century Learning movement.

WHY CONTENT KNOWLEDGE MUST BE CENTRAL

Not all educators were persuaded by Kilpatrick and some decided to challenge his ideas directly. In 1987, E. D. Hirsch, Jr., then an English professor at the University of Virginia, published a ground-breaking book entitled *Cultural Literacy: What Every American Needs to Know*.⁷ In it, Hirsch argued that schools were failing to transmit the knowledge students needed to function effectively in society. The book contained an extensive list of facts that he thought every American should know, a list that has been expanded and revised by Hirsch over the last thirty years.⁸ Today his Core Knowledge Foundation publishes detailed curriculum standards for each subject area and grade-level that have been adopted by many schools around the world.⁹

Hirsch was right that content knowledge is essential — not just for Americans but for Canadians too. In fact, there are many reasons why content knowledge must be central in schools. The following section outlines three specific reasons for the importance of content knowledge. Each reason is explained in detail and backed up with references to research studies.

Reason #1: Content Knowledge is Essential for Reading Comprehension

Reading is probably the most important skill taught in school. Anyone who lacks the ability to read is at a serious disadvantage in Canadian society. Not only is reading a foundational skill, the printed word is everywhere. Ordinary activities such as ordering a meal in a restaurant, surfing the internet, securing a loan, and casting a ballot are quite difficult without the ability to read. All students need to learn how to read and to read well — the sooner, the better.

It should come as little surprise that there has been significant debate among educators about how reading should be taught. The longstanding phonics vs. whole language debate has dominated this discussion. Teachers who use phonics focus on the sounding out of words based on letters and groups of letters. In contrast, whole language advocates reject the need to

teach students letter-sound relationships and instead encourage students to guess the words based on the immediate context.

In short, the phonics vs. whole language debate centred on the best way to teach students how to decode individual words. Fortunately, this debate has largely been resolved. Fifty years ago, Jeanne Chall, a former education professor at Harvard University, reviewed the research and found that the evidence overwhelmingly supported phonics instruction.¹⁰ More recently, John Hattie, Director of the Melbourne Education Research Institute, concluded that “whole language programs have negligible effects on learning to read — be it on word recognition or on comprehension.”¹¹ The evidence is clear. When it comes to decoding words, phonics is superior to whole language.

However, decoding words is not, by itself, sufficient to make someone an effective reader. Students must also be able to comprehend, or understand, what they read. There is little use in being able to decode individual words if the reader cannot understand what the words mean in sentences, paragraphs, articles, and stories. This is where content knowledge comes into play. Students are most likely to comprehend what they are reading when they already know something about the topic. The more they already know, the more effectively they can read and understand, and consequently, the more they will learn and thus they will become even better readers with this increased understanding.

Give students an article to read about a topic they know nothing about, and they will struggle to comprehend it. However, they will have little difficulty reading an article or book when they already possess background knowledge about the topic. The more background knowledge they have, the easier the reading of the new work will be. Simply put, reading comprehension depends on background knowledge. Cognitive psychologist Daniel T. Willingham explains it this way:

Research shows that reading depends on broad knowledge of all subjects: history, science, mathematics, literature, drama, music, and so on. Furthermore, it makes sense that subject matter knowledge be sequenced. It’s commonly appreciated that mathematical concepts build on one another, and they are easier to learn if they are sequenced properly. The same is true of other subjects. It’s easier to understand why the

last remnants of European colonialism crumbled in the 1950s if you know something about World War II. It's easier to understand World War II if you know something about the Great Depression. And so on. So the content that students will learn in the earliest grades is hugely important. It's the bedrock of everything that is to come.¹²

It is important to note that knowledge is highly specific. In order for students to understand an article or book about World War II, they need to know specific things about that war. It is not sufficient to have a general understanding of the concept of war or a vague notion about why conflict can lead to tragic consequences. The key to understanding an article or book about World War II is for students to have considerable prior background knowledge about that particular war. Nothing else will do.

Reading is often described by educators as a transferable skill. This is only partially true. While the ability to decode individual words is largely transferable to different texts, the same cannot be said for reading comprehension. Subject-specific background knowledge is needed to understand what you are reading. The more you already know about a topic, the more you are able to learn about it. Thus, content knowledge is essential for reading comprehension.

Supportive Study #1: "Effect of Prior Knowledge on Good and Poor Readers' Memory of Text"¹³

In this study, Donna Recht and Lauren Leslie divided sixty-four junior high-school aged students into four equal-sized groups. These groups were based on assessed reading ability (high and low) and prior background knowledge about baseball (high and low). Students were told to read an account of a half inning of a baseball game and then they were assessed on their comprehension of the article. Regardless of their general reading ability, students who had a high knowledge of baseball were better able to comprehend the article than students with low knowledge of baseball. The researchers were not surprised as their findings "replicated the vast majority of research on the effect of prior knowledge on memory."¹⁴ Background knowledge about baseball was more important to reading comprehension than the ability to decode individual words. Of course, this principle is true of all reading, not just reading about a baseball game.

Supportive Study #2 – "Domain-Specific Knowledge and Memory Performance: A Comparison of High- and Low-Aptitude Children"¹⁵

Researchers Wolfgang Schneider, Joachim Korkel, and Franz E. Weinert conducted a study of 576 children from grades three, five, and seven. Students were placed in groups based on their verbal aptitude as assessed by a German cognitive ability test and prior background knowledge about soccer as assessed by a questionnaire consisting of 13 questions about soccer rules and events. Students with low aptitude but high knowledge about soccer consistently outperformed high aptitude students with limited knowledge about soccer. The researchers concluded that domain-specific knowledge compensates effectively for low overall cognitive aptitude.

Supportive Study #3: "The Effects of Syntactic and Lexical Complexity on the Comprehension of Elementary Science Texts"¹⁶

This study involved 142 third-graders in four California public schools. Diana Arya, Elfrieda Hiebert, and P. David Pearson had students read 16 expository texts about four science-related topics (tree frogs, soil, jelly beans, and toothpaste). Contrary to what they expected, the researchers found that text complexity made little difference when the subject matter was familiar to the third-grade students. As with the other studies, background knowledge proved more important to reading comprehension than general reading ability.

Reason #2: Content Knowledge Makes Critical Thinking Possible

One of the most common objectives found in the mission statements of both public and private schools is the development of critical thinking skills and creativity in students. Often, these skills are presented as being more important than the acquisition of specific content knowledge. Peace River School Division in northern Alberta is a case in point. On its website, a page about critical thinking contains the following statement.

A focus on competencies is less about knowing something and more about knowing how and where to access the needed information, and then engaging ethically and entrepreneurially with what is known to create and innovate. This shifts “education away from a process of disseminating information to a process of inquiry and discovery” and to the application of knowledge.¹⁷

This statement implies that it is more important for Peace River teachers to help students become critical and creative thinkers than to ensure they learn specific content knowledge. In other words, critical and creative thinking are presented as transferable skills that operate in isolation from the actual knowledge that students have in their heads. As some progressive educators have put it, if students need to know specific information, they can simply look it up, usually with a quick Google search.¹⁸ Thus, instead of getting students to memorize isolated and increasingly outdated facts, to these theorists it makes more sense for teachers to help students develop their critical and creative thinking skills. At least that is what teachers are likely to hear at their professional development sessions organized by education department officials.

To evaluate this argument, it is important to consider what critical thinking actually means. The Cambridge Dictionary defines critical thinking as “the process of thinking carefully about a subject or idea, without allowing feelings or opinions to affect you.”¹⁹ This definition contains three key points. First, it includes thinking carefully. This means that critical thinking rarely occurs when someone makes a snap judgment about a subject without looking into it. Second, critical thinking focuses on a specific subject or idea. One cannot think critically in the absence of something to think critically about. Finally, it includes a measure of emotional objectivity. Critical thinking is unlikely to happen when someone is overcome by emotion. After reviewing this definition, the connection between content knowledge and critical thinking should be readily apparent. Critical thinking cannot happen in the absence of specific knowledge about the subject students are attempting to understand.

As a case in point, try to think critically about this statement. “George Brown’s call for representation by population in the Province of Canada was helpful, rather than harmful, to the cause of Confederation.”

Unless readers have significant background knowledge about Canadian Confederation of 1867, it is unlikely they will be able to provide much critical thought about this statement. Careful analysis necessitates a clear understanding that representation by population was a request for all seats in the legislature to be allocated solely on the basis of population. However, that is not enough. You also need to know that Canada West, an English-speaking colony of Great Britain, was deeply frustrated that it had the same number of seats in the legislature as Canada East, a French-speaking British colony, even though Canada West had more people. In addition, critical thinking requires knowledge about the key role that Canada West legislator George Brown played in advocating for representation by population and how that issue helped convince him to join forces with his political rivals, John A. Macdonald and George-Etienne Cartier, and push for a broader political union of all the British colonies in North America. It also helps to know something about John A. Macdonald and George-Etienne Cartier and the factors that led these two men to work together with George Brown for the greater purpose of Confederation.

Without substantial background knowledge, readers will not be able to think critically about George Brown’s call for representation by population. In addition, it takes more than a quick Google search to acquire the background knowledge that is required for critical thinking about this topic. For example, it will be impossible for readers to determine whether George Brown’s arguments and decisions were reasonable or not without considerable knowledge about this situation. While the internet has a lot of helpful information, it also contains inaccurate facts, discredited conspiracy theories, and hopelessly biased opinions. Googling a subject about which you know nothing is often an exercise in piling ignorance on ignorance.²⁰

Of course, having considerable knowledge about a subject does not guarantee critical thought about it. It is entirely possible to have extensive background knowledge and yet fail to think critically. Knowledgeable people can, for example, have too much emotional commitment to one side of an argument to be critical of their own perspective. However, it is also true that critical thinking cannot take place in the absence of knowledge. No matter how many critical thinking strategies students may learn, someone who knows nothing about Canadian history cannot think critically about the

impact that George Brown's call for representation by population had on Canadian Confederation. Knowledge makes critical thinking possible.

This is also true in other subject areas. For example, Daniel Willingham points out that teachers often try to get their students to think like scientists by teaching them how scientists think. When scientists conduct an experiment, they often look for anomalous, or unexpected, outcomes. That is because anomalous outcomes indicate incomplete information and can often point toward areas of fruitful inquiry. However, anomalous outcomes can only be identified if scientists know what they are looking for before conducting the experiment. In other words, significant background knowledge about the area of research is necessary for any successful science experiment and for critical thinking about any results.²¹

When it comes to mathematics, progressive educators often argue that it is more important to develop a deep understanding of mathematical principles than to memorize basic number facts, such as the multiplication tables, that can easily be looked up or obtained by using a calculator. However, John Hattie and Gregory Yates point out that this argument is false. The reality is that knowing math facts by memory reduces mental load and makes it possible for students to solve more complex algebraic equations.

There is no meaningful cleft between 'mere surface knowledge' and 'deep understanding'. [T]he notion of automaticity implies that when basic skills are automated, mental space becomes available for deeper levels of thinking and understanding through acquiring knowledge. Knowledge literally provides the mind with room to move, to develop, and to change. Repetition and consolidation are vehicles enabling knowledge to be stored within retrievable units, thereby accelerating mental growth through conceptual mastery and deeper understanding.²²

If teachers want students to think critically about mathematics and apply mathematical principles to real-life situations, they must make sure students know their math facts by memory. Otherwise students will continue to struggle with simple problems, and will be unprepared for solving advanced problems. This is backed up by cognitive load theory, which points out that humans have only a limited amount of working

memory. Once information is transferred to long-term memory using cognitive schema, it then helps organize working memory by dramatically reducing working memory load.²³ In short, memorization reduces cognitive load and makes critical and creative thinking possible.

A common objection is that the widespread availability of information on the internet makes specific factual knowledge less important than knowing how to access factual knowledge on a variety of topics. However, E. D. Hirsch points out that far from acting as a knowledge equalizer, the internet actually rewards people who already possess substantial knowledge in a particular subject area. That is because experts know exactly what to look for and can use their background knowledge to quickly weed out extraneous information.²⁴ They can be critical and creative because they know a lot about the subject they are thinking about. Once again, knowledge makes the difference.

Supportive Study #1: "Mental Contents in Transfer"²⁵

In this study, Sacha Helfenstein and Pertti Saariluoma conducted three experiments involving a total of approximately 100 university students. For each experiment, the researchers made sure participants were able to solve a problem in one subject domain and then assessed whether the participants could transfer those problem-solving principles to a completely different subject domain. However, in each case, they found that being able to solve a problem in one domain did not lead to being able to solve a problem in a different domain. Specific content knowledge was necessary for solving problems in that domain.

Supportive Study #2: "Learning Strategies: A Synthesis and Conceptual Model"²⁶

John Hattie and Gregory Donaghue synthesized the results of 228 meta-analyses about learning strategies. They found that learning strategies need to be embedded in specific content in order for them to be most effective. "These [21st Century] skills often are promoted as content free and are able to be developed as separate courses (e.g. critical thinking, resilience). Our model, however, suggests that such skills are likely to be best

developed relative to some content. There is no need to develop learning strategy courses, or teach the various strategies outside the context of the content.”²⁷

Supportive Study #3: “Expert and Novice Performance in Solving Physics Problems”²⁸

In this study, Jill Larkin, John McDermott, Dorothea P. Simon, and Herbert A. Simon compared how experts and novices solved physics problems. They found that “in every domain that has been explored, considerable knowledge has been found to be an essential prerequisite to expert skill.”²⁹ These researchers also observed that experts benefited more from looking things up than novices since they had a better idea of what to look for. In fact, they noted that making additional information readily available is less helpful to students than developing their subject-specific expertise.

Reason #3: Content Knowledge Empowers Students from Disadvantaged Backgrounds

Students do not come to school from equally advantageous circumstances. Far too many students come from low socioeconomic status (SES) homes where they have not had access to the content knowledge of their more affluent classmates. Often, parents barely have enough money to put food on the table, let alone spend time reading and discussing ideas with their children or helping them with their homework. Students from low SES homes rarely go on educational trips, such as to museums or libraries, with their parents. Rarely do these children receive the benefits of private tutoring services as many middle-class children receive. As a result, they enter school at a significant disadvantage compared to their peers from higher SES homes.

This has a significant impact on the students’ academic achievement. In an extensive review of the research, Erin Bumgarner and Jeanne Brooks-Gunn found “achievement scores to be particularly sensitive to poverty during the first few years of life.”³⁰ They note that while there are a variety of factors that may explain why students from low SES homes are academically disadvantaged, the reality is that the impact on academic achievement is both distinct and measurable.³¹

E. D. Hirsch notes that students from disadvantaged homes typically enter school with a significant linguistic and vocabulary gap of at least several hundred words.³² This gap can largely be explained by the fact that low SES parents have limited vocabularies themselves and often lack opportunities to expose their children to things that would expand their vocabulary. However, schools can compensate for this gap by ensuring that all students receive content-rich instruction from an early age. Domain immersion benefits all students, but it makes the biggest difference to students from disadvantaged backgrounds.³³

As noted earlier, content knowledge is necessary for reading comprehension. The more you know about the topic of a book or article, the better you can understand what you are reading. Thus, students who acquire significant content knowledge will inevitably become better readers than those who do not acquire this knowledge. Because students from low SES homes usually gain only a limited amount of content knowledge in their home environment, schools need to make up the difference by providing this knowledge. If schools fail to provide this knowledge in an intentional and structured way, students from low SES homes will fall further and further behind their peers. They will remain weak readers and have difficulty reading even the simplest material. Their educational success will, as a result, be limited.

In many schools, teachers are encouraged to use techniques such as inquiry, problem-based, or discovery learning strategies where students pursue topics of interest to them and teachers act as guides or facilitators rather than teaching basic content knowledge. However, according to John Hattie, this only works when students already have solid content knowledge about the topic they are exploring.³⁴ A Grade 1 student from a low SES home is unlikely to have the necessary background knowledge to explore many topics that teachers may consider assigning. Hattie also says that most teachers introduce inquiry learning far too early in school, in kindergarten and grade 1, for example, particularly since this technique is essentially useless when it comes to teaching students content knowledge.³⁵

At a practical level, this means that schools need to be much more intentional about ensuring all students, particularly those from low SES homes, receive content-rich instruction. In this respect, Mike Schmoker, author of *Focus: Elevating the Essentials to Radically Improve*

Student Learning, suggests that students should read more non-fiction books throughout their time in school because this reading will give them considerable background knowledge in which to fit the material they are learning in school.

English class is the primary place where we should ensure that students read and acquire an appetite for content-rich nonfiction books. Biographies and memoirs, the most prominent form of literary nonfiction, can be among the richest sources of knowledge.³⁶

The more content students learn, the deeper they will be able to go in their learning. Without content-rich instruction, students, particularly those from mid SES homes, will be educationally impoverished. Providing all students with content-rich instruction is the key to empowering students from disadvantaged backgrounds.

**Supportive Study #1:
“The Specificity of Environmental Influence: Socioeconomic Status Affects Early Vocabulary Development Via Maternal Speech”³⁷**

This study involved 63 two-year-old children, 33 from high SES homes and 30 from mid-SES homes. Speech patterns were compared at two times, 10 weeks apart. Researchers found that children from high SES homes showed greater vocabulary development than children from low SES homes. They concluded that “common belief and scientific evidence are in agreement that children from more advantaged homes have more advanced language skills than children from less advantaged homes.”³⁸ This confirms that there is a significant academic gap between the children from different SES backgrounds at the beginning of school.

**Supportive Study #2:
“Matthew Effects in Reading: Some Consequences of Individual Differences in the Acquisition of Literacy”³⁹**

In this review of the research, Keith E. Stanovich shows that students with poor vocabulary skills fall steadily behind other students unless they are given the

opportunity to catch up. This principle is dubbed the Matthew Effect from the Gospel of Matthew, which states “For to everyone who has, more will be given, and he will have an abundance, but from the one who has not, even what he has will be taken away.” (Matt. 25:29 ESV). In society and school, the rich get richer and the poor get poorer. As Stanovich explains, “Children with inadequate vocabularies — who read slowly and without enjoyment — read less, and as a result have slower development of vocabulary knowledge, which inhibits further growth in reading ability.”⁴⁰ Unless weaker students are provided with a content-rich curriculum early in their schooling, they have little hope of catching up academically with their upper SES peers.

**Supportive Study #3:
“An Analysis of Academic Progress of Children Participating in the Core Knowledge Preschool Program in Baltimore County Head Start Centers”⁴¹**

During the 2004-05 academic year, researchers assessed 110 preschool students at ten Baltimore County Head Start Centers that had implemented the Core Knowledge Preschool Sequence program, a content-rich curriculum developed by E. D. Hirsch’s Core Knowledge Foundation. These centers focus on educating students from low SES homes. The researchers found that students in the Core Knowledge program displayed significantly improved academic and social progress. “The results of this evaluation show that the Core Knowledge Preschool Sequence is successful in providing low income children with the skills and knowledge that children of their age across the country are expected to master.”⁴²

CONCLUSION: GIVE KNOWLEDGE ITS RIGHTFUL PLACE

The educational leaders promoting the 21st Century Learning movement may have noble intentions, but they are misinformed about the procedures required for achieving their objectives. They truly believe that focusing on general skills such as critical thinking and creativity makes more sense than what progressive education author Alfie Kohn derisively refers to as the “bunch o’ facts” approach to education.⁴³ After all, why make students memorize things that they can find through a quick Google search? These educators would rather help students sharpen their critical and creative thinking skills through well-designed inquiry projects in which they research and study topics of interest to them. However, what these educators fail to realize is that the best way to help students to become critical and creative thinkers is to provide them with content-rich instruction, especially in the early grades.

Meaningful reform begins with provincial education departments. Instead of reducing or downplaying the subject content in the curriculum, education officials, especially those who write curriculum guides, need to ensure that content in all curriculum documents and at all grade levels is substantial and logically sequential. When curriculum guides are largely devoid of specific content, it becomes tempting for teachers to simply ignore the lower objectives (knowing and comprehending) and focus on the higher objectives (critical and creative thinking) in their classrooms. This approach to instruction makes academic success less likely, especially for lower SES students. Whether the subject is math, science, English language arts, or social studies, there is no excuse for providing teachers with content-free curriculum guides.

At the school division level, superintendents and principals should set a tone of support for content-rich instruction. When educational leaders are interested in career advancement, it is tempting to use their schools or school divisions as laboratories for the latest progressive education fads. It looks impressive to equip schools with the latest technological gadgets or have students featured on television as they fundraise for a

worthwhile social justice cause. However, the real work of education is found in classrooms day after day where teachers painstakingly help students master challenging academic content. Content-rich instruction may not be as flashy as some alternatives, but it is a whole lot more effective.

As for teachers in public, private, and home schools, it is important to remember that content-rich instruction is meant to be engaging and empowering for students. Learning content is much more than just memorizing a bunch of isolated facts, but it still includes memorizing these facts. Progressive educators are right to complain when some traditional teachers reduce students to passive vessels and subject them to hours of boring instruction. But, progressive educators are wrong to say that students can learn to be critical and creative without knowing these facts. Knowledge is a powerful thing and good teachers know how to make their subjects come alive. Teachers should be experts in their subject areas and not afraid to challenge their students to deepen their thinking, by critically and creatively building on the facts they already know. Regular class discussions and debates should be hallmarks of learning everywhere. But, these debates cannot be simply the expression of divergent opinions that are not tied to specific facts.

Students deserve the best education that teachers can provide. By restoring knowledge to its rightful place, we can help ensure that all students receive a top-quality education.

ENDNOTES

1. Ontario Ministry of Education, *21st Century Learning: Foundation Document for Discussion*, (Winter 2016) http://www.edugains.ca/resources21CL/About21stCentury/21CL_21stCenturyCompetencies.pdf.
2. BC Ministry of Education, "BC's New Curriculum." <https://curriculum.gov.bc.ca/curriculum-info>. Accessed on July 5, 2017.
3. Alberta Education, "The Guiding Framework for the Design and Development of Kindergarten to Grade 12 Provincial Curriculum (Programs of Study), 2016. <https://education.alberta.ca/media/3575996/curriculum-development-guiding-framework.pdf>. Accessed on July 5, 2017.
4. David Staples, "New Social Studies Curriculum Pushes Social Change, Not History." *Edmonton Journal*, May 23, 2017. <http://edmontonjournal.com/news/politics/david-staples-new-social-studies-curriculum-pushes-social-change-not-history>. Accessed on July 5, 2017.
5. William Heard Kilpatrick, *Remaking the Curriculum*. (New York: Newson & Company, 1936), 55-56.
6. Diane Ravitch, *Left Back: A Century of Failed School Reforms*. (New York: Simon & Schuster, 2000), 284.
7. E. D. Hirsch, Jr., *Cultural Literacy: What Every American Needs to Know*. (Boston: Houghton Mifflin, 1987).
8. Eric Liu, "What Every American Should Know: Defining Cultural Literacy for an Increasingly Diverse Nation." *The Atlantic*, July 3, 2015. <https://www.theatlantic.com/politics/archive/2015/07/what-every-american-should-know/397334/>.
9. Core Knowledge Foundation. <https://www.coreknowledge.org/>. Accessed on July 5, 2017.
10. Ravitch, *op. cit.*, 355-56.
11. John Hattie, *Visible Learning: A Synthesis of Over 800 Meta-Analyses Relating to Achievement*. (New York: Routledge, 2009), 138.
12. Daniel T. Willingham, *Raising Kids Who Read: What Parents and Teachers Can Do*. (San Francisco: Jossey-Bass, 2015), 102-103.
13. Donna R. Recht and Lauren Leslie, "Effect of Prior Knowledge on Good and Poor Readers' Memory of Text." *Journal of Educational Psychology* 80, No. 1 (March 1988): 16 -20.
14. *Ibid.*, 19.
15. Wolfgang Schneider, Joachim Korkel, and Franz E. Weinert, "Domain-Specific Knowledge and Memory Performance: A Comparison of High- and Low-Aptitude Children," *Journal of Educational Psychology* 81, No. 3 (1989): 306-312.
16. Diana J. Arya, Elfrieda H. Hiebert, and P. David Pearson, "The Effects of Syntactic and Lexical Complexity on the Comprehension of Elementary Science Texts," *International Electronic Journal of Elementary Education* 4, No. 1 (2011): 107-125.
17. Peace River School Division, "Teaching and Learning – Critical Thinking." <http://www.prsd.ab.ca/Critical%20Thinking.php>. Accessed on July 3, 2017.
18. George Couros, "Knowledge vs. Access to Knowledge." June 17, 2017. <http://georgecouros.ca/blog/archives/7466>. Accessed on July 3, 2017.
19. Cambridge Dictionary, "Critical Thinking," <http://dictionary.cambridge.org/dictionary/english/critical-thinking>. Accessed on July 3, 2017.
20. Tom Nichols, *The Death of Expertise: The Campaign Against Established Knowledge and Why it Matters*. (New York: Oxford University Press, 2017), 105-133.
21. Daniel T. Willingham, *Why Don't Students Like School? A Cognitive Scientist Answers Questions About How the Mind Works and What It Means for the Classroom*. (San Francisco: Jossey-Bass, 2009), 41.
22. John Hattie and Gregory Yates, *Visible Learning and the Science of How We Learn*. (New York: Routledge, 2014), 58.
23. *Ibid.*, 146-147.
24. E. D. Hirsch, Jr., *Why Knowledge Matters: Rescuing Our Children From Failed Educational Theories*. (Cambridge: Harvard Educational Press, 2016), 83.

25. Sacha Helfennstein and Pertti Saariluoma, "Mental Contents in Transfer." *Psychological Research* 70, no. 4 (July 2006): 293-303.
26. John A. C. Hattie and Gregory M. Donaghue, "Learning Strategies: A Synthesis and Conceptual Model." *npj Science of Learning* (2016): 1-13. <https://www.nature.com/articles/npjscilearn201613>.
27. *Ibid.*, 9.
28. Jill Larkin *et al.*, "Expert and Novice Performance in Solving Physics Problems." *Science* 208 (1980): 1335-1342.
29. *Ibid.*, 1342.
30. Erin Bumgarner and Jeanne Brooks-Gunn, "Socioeconomic Status and Student Achievement." in *International Guide to Student Achievement*, ed. John Hattie and Eric M. Anderman. (New York: Routledge 2013), 92.
31. *Ibid.*, 92-93.
32. Hirsch, *op. cit.*, 98.
33. *Ibid.*
34. Hattie, *op. cit.*, 211.
35. John Hattie, "John Hattie on Inquiry-Based Learning." November 9, 2015. <https://www.youtube.com/watch?v=YUooOYbgSUG>. Accessed on July 5, 2017.
36. Mike Schmoker, *Focus: Elevating the Essentials to Radically Improve Student Learning*. (Alexandria: ASCD, 2009), 98.
37. Erika Hoff, "The Specificity of Environmental Influence: Socioeconomic Status Affects Early Vocabulary Development Via Maternal Speech," *Child Development* 74, No. 5 (September/October 2003): 1368-1378.
38. *Ibid.*, 1376.
39. Keith E. Stanovich, "Matthew Effects in Reading: Some Consequences of Individual Differences in the Acquisition of Literacy." *Reading Research Quarterly* (Fall 1986): 360-407.
40. *Ibid.*, 381.
41. Susan Sonnenschein, Linda Baker, and Adia Garrett, "An Analysis of Academic Progress of Children Participating in the Core Knowledge Preschool Program in Baltimore County Head Start Centers," Charlottesville: Core Knowledge Foundation, (August 2005): 1-49.
42. *Ibid.*, 3.
43. Alfie Kohn, *The Schools Our Children Deserve: Moving Beyond Traditional Classrooms and "Tougher Standards"* (New York: Houghton Mifflin, 1999), 62.

BIBLIOGRAPHY

- Alberta Education. "The Guiding Framework for the Design and Development of Kindergarten to Grade 12 Provincial Curriculum (Programs of Study)." 2016. <https://education.alberta.ca/media/3575996/curriculum-development-guiding-framework.pdf>. Accessed July 5, 2017.
- Arya, Diana J., Elfrieda H. Hiebert, and P. David Pearson. "The Effects of Syntactic and Lexical Complexity on the Comprehension of Elementary Science Texts." *International Electronic Journal of Elementary Education*, 2011: 107-25.
- BC Ministry of Education. BC's New Curriculum. n.d. <https://curriculum.gov.bc.ca/curriculum-info>. Accessed July 05, 2017.
- Bumgarner, Erin and Jeanne Brooks-Gunn. "Socioeconomic status and student achievement." In *International Guide to Student Achievement*, by John Hattie and Eric M. Anderman, 92-93. New York: Routledge, 2013.
- Core Knowledge Foundation. n.d. <https://www.coreknowledge.org/>. Accessed July 5, 2017.
- Couros, George. *Knowledge vs. Access to Knowledge*. June 24, 2017. <http://georgecouros.ca/blog/archives/7466>. Accessed July 3, 2017.
- Hattie, John A. C. and Gregory M. Donaghue. "Learning Strategies: A Synthesis and Conceptual Model." *npj Science of Learning*, 2016: 1-13.
- Hattie, John and Gregory Yates. *Visible Learning and the Science of How We Learn*. New York: Routledge, 2014.
- Hattie, John. *Visible Learning: A Synthesis of Over 800 Meta-Analyses Relating to Achievement*. New York: Routledge, 2009.
- Helffenstein, Sacha and Pertti Saariluoma. "Mental Contents in Transfer." *Psychological Research*, July 2006: 293-303.
- Hirsch, Jr., E. D. *Cultural Literacy: What Every American Needs to Know*. Boston: Houghton Mifflin, 1987.
- Hirsch, Jr., E. D. *Why Knowledge Matters: Rescuing Our Children From Failed Educational Theories*. Cambridge: Harvard Education Press, 2016.
- Hoff, Erika. "The Specificity of Environmental Influence: Socioeconomic Status Affects Early Vocabulary Development Via Maternal Speech." *Child Development*, September/October 2003: 1368-1378.
- Kilpatrick, William Heard. *Remaking the Curriculum*. New York: Newson & Company, 1936.
- Kohn, Alfie. *The Schools Our Children Deserve: Moving Beyond Traditional Classrooms and "Tougher Standards"*. New York: Houghton Mifflin, 1999.
- Larkin, Jill, et. al. "Expert and Novice Performance in Solving Physics Problems." *Science*, 1980: 1335-1342.
- Liu, Eric. "What Every American Should Know: Defining Common Cultural Literacy for an Increasingly Diverse Nation." *The Atlantic*, July 3, 2015: <https://www.theatlantic.com/politics/archive/2015/07/what-every-american-should-know/397334/>.
- Nichols, Tom. *The Death of Expertise: The Campaign Against Established Knowledge and Why it Matters*. New York: Oxford University Press, 2017.
- Ontario Ministry of Education. *21st Century Competencies: Foundation Document for Discussion*. Winter 2016. http://www.edugains.ca/resources21CL/About21stCentury/21CL_21stCenturyCompetencies.pdf.
- Peace River School Division. *Teaching and Learning - Critical Thinking*. n.d. <http://www.prsd.ab.ca/Critical%20Thinking.php>. Accessed July 3, 2017.
- Ravitch, Diane. *Left Back: A Century of Failed School Reforms*. New York: Simon & Schuster, 2000.
- Recht, Donna R. and Lauren Leslie. "Effect of Prior Knowledge on Good and Poor Readers' Memory of Text." *Journal of Educational Psychology*, March 1988: 16-20.
- Schmoker, Mike. *Focus: Elevating the Essentials to Radically Improve Student Learning*. Alexandria: ASCD, 2009.
- Schneider, Wolfgang, Joachim Korkel, and Franz E. Weinert. "Domain-Specific Knowledge and Memory Performance: A Comparison of High- and Low-Aptitude Children." *Journal of Educational Psychology*, 1989: 306-12.
- Sonnenchsein, Susan, Linda Baker, and Adia Garrett. *An Analysis of Academic Progress of Children Participating in the Core Knowledge Preschool Program in Baltimore County Head Start Centers*. Charlottesville: Core Knowledge Foundation, August 2005.

- Stanovich, Keith E. "Matthew Effects in Reading: Some Consequences of Individual Differences in the Acquisition of Literacy." *Reading Research Quarterly*, Fall 1986: 360-407.
- Staples, David. "New Social Studies Curriculum Pushes Social Change, Not History." *Edmonton Journal*, May 23, 2017: <http://edmontonjournal.com/news/politics/david-staples-new-social-studies-curriculum-pushes-social-change-not-history>.
- Willingham, Daniel T. *Raising Kids Who Read: What Parents and Teachers Can Do*. San Francisco: Jossey-Bass, 2015.
- Willingham, Daniel T. *Why Don't Students Like School? A Cognitive Scientist Answers Questions About How the Mind Works and What It Means for the Classroom*. San Francisco: Jossey-Bass, 2009.

