

Richer Critical Thinking Curricula in Lower Education

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Abstract

Critical thinking is a complicated metric to measure, and a tough skill to teach. Lower education does not focus on it in the depth it should. This is due to a particular cognitive dissonance surrounding test scores and teachability. Additionally, students rarely understand the importance of developing this skill. [5] Critical thinking in itself is largely intangible. It manifests when we are faced with conflicting opinions, arguments, and when we have discussions. Lower education focuses on a common curriculum based on math, reading, writing, natural science, and social science. Within this, educators aim for high test scores to improve school metrics.

Today, critical thinking and the development of students is left out. This leaves the students with a lesser critical thinking capability, which is detrimental to their future prospects. We would like to increase the common curriculum to include exercises, such as themed sections of courses where discussion and reason are not only talked about, but practiced too. Eventually, we would like to incorporate classes that foster growth in logic, reason, and discussion. These courses would aim to study the fundamentals of discourse, such as how to formulate an argument to discuss. They would also teach how to analyze arguments and their constituent parts.

This document aims to begin the conversation of developing and implementing critical thought exercises and classes into lower education curricula. This includes the integration of exercise and course material. Also covered are some methods of teaching critical thinking to help students discover this train of thought.

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1 Executive Summary

Improving the curricula of lower education is a step-by-step process. Revising current curricula to find areas of improvement, then deciding what to implement will be the largest tasks. However, each step is valuable and provides opportunity for us to glean information. A breakdown of the tasks is discussed below.

1. **Discovery:** *This portion of the overall revision process includes searching for and finding applicable lower education curricula that would benefit from revision to include critical thinking. Most public school curricula are available online.*
2. **Evaluation:** *Once a curriculum has been identified as being ideal for revision, the coursework will be broken down and referenced in light of a critical thinking course. This includes identifying courses that cover similar material and could easily incorporate new critical thinking coursework.*
3. **Recommendation:** *With the evaluation complete, an initial recommendation of improvement can be made. This will include coursework that can be enhanced by critical thinking coursework, courses that can be substituted for critical thinking courses, and teaching methods that incorporate these techniques.*
4. **Implementation:** *Once a recommendation has been made and the substitution plans have been constructed, we will begin to alter the available courses in the curriculum to contain more critical thinking exercises and material. The extent to which the recommendation is implemented is at the discretion of the directors.*
5. **Post-Evaluation:** *Following the implementation, we will keep track of how the revised curriculum is received. This may include surveys given to teachers and students. Additionally, test scores will be aggregated and evaluated to build metrics on the improvement on the quality of learning. We will also take into account students' choices once they leave the curriculum.*

2 Introduction

As it stands, common curricula in lower education aim to teach fundamental abilities in reading, writing, math, and science. Music and arts are also taught. One ability that is not directly addressed is critical thinking. This particular skill has high utility and therefore should be taught explicitly. Being able to rationalize and find logical connections in abstract ideas is a skill required in higher level core coursework.

Although it was previously understood that children's cognitive processes fell short when compared to that of grown adults, recent research has shown that children utilize some of the same cognitive processes adults do. [4] This means there is plenty of opportunity for a critical-thinking-forward curriculum. Without this recent understanding, critical thinking has fallen short. This is because students are supposed to gain this skill as a byproduct of their current coursework. [4]

The current situation leaves us with an opportunity to incorporate critical thinking into curricula in a few manners. (1) Incorporation of critical thinking material into existing courses. (2) Creating new courses altogether that have a focus on critical thinking development and that seek to familiarize students with critical thinking concepts.

We will discuss the current state of critical thinking in lower education curricula, where improvements can be made, and how these adjustments may be possible.

3 Case Studies

3.1 The Chicago Grassroots Curriculum Taskforce (CGCT)

The CGCT is a collective made up of students, parents, educators, and elders [6] that aims to bring a more centralized educational curricula to the inner-city schools of Chicago. This case study is relevant to this document since it focuses on non-traditional curricula as a means of empowering students. It achieves this by requiring them to research more about their communities and study how the history has had on their present. This helps the students develop critical thinking by analyzing the reasons behind their realities. It also teaches them important research skills. Two important topics are detailed below:

1. **Projects:** A subgroup within CGCT is Root Knowledge (RK). This is the youth group of CGCT. They research and critique the current school curricula to find topics that are no longer relevant to their reality. From this, RK writes articles on their findings on a multitude of topics (e.g. Environmental justice and culturally relevant history) [1]

2. **Voice In Curriculum:** CGCT aims to have the students learn what they feel they need to learn. For example, they have compiled many resources, such as student surveys and learning agreements, to better understand the situations of the students and their relationships with academia. [1]

3.2 The School of Environmental Studies (SES)

SES is a magnet school located in Apple Valley, Minnesota. [3] It aims to develop a lifelong passion for learning in its students by engaging them in real-world situations such as environmental projects, intensive themes, and field studies. Additionally, students are provided with opportunities to meet with experts in various fields to learn more about their work. This is a break from the normal curricula students may experience at their local high school. It provides them with a different, unfamiliar environment that stresses lifelong learning. Below are some key areas that foster critical thinking and growth:

1. **Field Studies:** SES provides students with the unique opportunity of traveling to different locations around the globe. “These are not “trips“, but rigorous academic classes that provide hands-on learning and physically challenging opportunities for students.” [3] This type of immersion subjects students to new locations and cultures where they will to adapt and thrive. Some students also have the opportunity to attend the United Nations Climate Change Conference.
2. **Intensive Themes:** These courses are week-long excursions into one field. They incorporate visits from experts to build real-world knowledge of specific topics. Topics range from marine biology and field ornithology to SCUBA certification and typography.

4 Furthering Current Curricula

Here, we will discuss the structure of curricula reform and how it may be done to better involve critical thinking material. Using the previous case studies as examples, we will analyze our plans with respect to these proven curricula variations. First we will examine strategies for teaching critical thinking:

4.1 Strategies

Present Status: Currently, there are numerous ways of incorporating critical thinking into lower education curricula. Some of these involve activities such as Aesop’s Activities, Socratic Teaching, and using the scientific method. [2]

Recommendation: *We recommend that the above activities and similar projects are implemented in courses throughout the general curricula. Additionally, courses could be constructed around these activities.*

Discussion: With the current lack of strict critical thinking teachings in present day lower education curricula, the modification and inclusion of the above strategies would ensure students are involved in the material and digest the lessons. By having homework and a grade attached to performance in critical thinking, students would have greater incentive to learn it well.

Risks and Requirements The risks present in adjusting education curricula is that it must be thoroughly vetted before being implemented and approved. Applying these techniques without proper licensing and prior approval would result in detrimental legal discussions. Therefore it will be required that the lessons and coursework we are recommending and implementing are pre-approved by a relevant governing body.

4.2 Non-traditional Projects

Present Status: The case studies illustrated above demonstrate the efficacy of projects that pressure students to examine more than their class materials. CGCT and SES both utilize an extended project curriculum, in the sense that students are required to examine their surrounding environment and construct a framework through which they can understand it.

Recommendation: *Critical thinking curricula can be greatly aided by the requirement of non-traditional projects. We recommend that select classes apply similar projects to their teachings where applicable. This could be especially useful in areas such as history, social studies, and reading.*

Discussion: By requiring larger-scale projects with a focus on real-world material, students could discover critical thinking in areas that may lack it. These projects place a larger amount of responsibility on the students because they are required to find factual, accurate information about their surroundings. Once this is accomplished, they will hopefully have a better understanding of their environment because they have exercised critical thinking.

Risks and Requirements The risks are that students will not take these projects seriously, or give them the time necessary to develop critical thinking skills. Another risk is that it requires them to examine the world around them with a critical eye, which could be outside of their current capabilities. The requirements necessary for these types of projects are a larger budget for courses where the projects are implemented, and teachers who deeply understand the project and results.

4.3 Relevancy to Students

Present Status: As demonstrated by CGCT, critical thinking and advanced projects can be very relevant to students' personal lives. With SES, due to the nature of the school itself, students focus more on environmental issues and

projects. This is a more lax way of finding relevancy in students since it relies on their personal environmental awareness.

Recommendation: *We recommend that students have a voice in their projects and coursework. CGCT has allowed for students to construct and fill out surveys that directly influence their curricula. [1] This is the approach we want to take, with guidance of supervisors and teachers of course.*

Discussion: By including the students' voices in the development of a new curricula, they will feel the coursework is much more relevant to their lives. With this increased relevancy, they could feel more inclined to dedicate the requisite amount of time and effort to their education. Additionally, critical thinking exercises can easily be built into the student-derived curricula.

Risks and Requirements The risks of this approach is that students may not know what is best for their education. This is where supervision by instructors becomes a requirement. Another risk is that students may not be prepared fully for the depth of their situations. This should also be mitigated by supervisors.

5 Summary and Conclusions

Critical thinking is an invaluable skill that is exercised in daily life. Currently, there is far too little direct critical thinking coursework in lower education. We wish to change this by incorporating structured in-depth projects and student voices into the development of curricula. By restructuring, we are presented with the opportunity to build the framework for critical thinking courses and their integration. With richer critical thinking curricula, our students will become better aware of the world around them, and be more prepared for when they leave lower education.

References

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