Chapter12: Building Students' Critical Thinking

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Abstract : In K-6 education, some educational conditions require improvements to teach the students how to connect ideas, how to approach problems in a systematic way, and how to reflect on the justification. Many students have been taught to be followers, not thinkers. Thinking for oneself is essential because students need to think about a lesson or problem in an objective and critical way. Students can then determine the importance and relevance of arguments and ideas. This research looks at building students' critical thinking skills through strategies that can be used in the classroom so all students will be great thinkers. The question I am exploring is, "How will using activities that build students' critical thinking skills in the classroom improve students' creativity, innovation, and cooperation?"

1 Introduction

In K-6 education, some educational conditions require improvements to teach the students how to connect ideas, how to approach problems in a systematic way, and how to reflect on the justification. Many students have been taught to be followers, not thinkers. Thinking for oneself is essential because students need to think about a lesson or problem in an objective and critical way. Students can then determine the importance and relevance of arguments and ideas. This research looks at building students' critical thinking skills through strategies that can be used in the classroom so all students will be great thinkers. The question I am exploring is, "How will using activities that build students' critical thinking skills in the classroom improve students' creativity, innovation, and cooperation?"

2 Literature Review

Building students' critical thinking skills in the 21st Century from an early age is significant. It helps students to implement many helpful skills that they will need in their lives. However, building these characteristics of critical thinkers needs a controlled environment, which is called school. "By developing reasoning skills in young students, we increase student access to all content. Critical thinking helps students to answer questions they may have, but more than this, it helps students ask them," according to Duesbery & Justice (2015, p. 2). As an elementary educator in the age of technology, we should be aware of how important it is to start to create a classroom that is full of activities based on critical thinking.

Critical thinking is the ability to let a student reflect with evidence and reasoning about what the student has been taught. Critical thinking is a very vital practice in the 21st century. "The trend of alternative views encouraged discussions among students and increased their level of confidence. It showed the ability of students who confronted a challenging situation and tried to look at reality in a new way," according to Rashid and Qaisar (2016, p. 14). Critical thinking promotes creativity and imagination which gives more capacity to students to see the world from different perspectives. The teaching-learning process plays a crucial role in creating an atmosphere that creates new ideas, and concepts.

Critical thinking skills are a significant part of elementary education, but applying critical

thinking activities can often be a challenge for elementary school educators because of the lack of materials. According to Bahatheg (2019),

There are different methods and strategies for teaching critical thinking and engaging it in educational curricula, as it is a process that requires the application and analysis to assess the information gathered through observation, discussing and evaluating the results, and rethinking causes. (p. 2)

Encouraging students to think deeper and respond to questions by using higher-levels of thinking can be difficult, but by incorporating these questions into everyday lessons will help the students to be more aware of their answers.

Creativeness and innovation can be obtained by building students' critical thinking skills. Everyday problem-based learning environments in the classroom can use a critical thinking approach. Birgili (2015) discusses that,

Creative thinking can be defined as the entire set of cognitive activities used by   individuals according to a specific object, problem, and condition, or a type of effort   toward a particular event and the problem based on the capacity of the individuals. (p. 2)

Therefore, critical thinking and problem solving will increase students' capacity to practice their knowledge, creativity and innovation. The ability of students to support their statements with a well-thought-out rationale may also improve significantly.

3 Discussions

Critical thinking skills involve a higher level of thinking that teachers support in enhancing from an early age in elementary school. Additionally, building students' critical thinking skills is a very crucial aspect of the class, because it will improve the students' creativity, innovation, and cooperativeness. Moreover, critical thinking is the ability to let students reflect with evidence and reasoning what students have been taught and experienced. As an elementary educator in the age of technology, we should be aware of how important it is to start to build students' critical thinking skills with classroom-based activities.

Critical thinking promotes creativity and imagination, which gives more capacity to students to see the world from different perspectives. The teaching and learning process plays a critical role in creating an atmosphere that allows for new ideas and concepts. In addition, letting students think deeper and respond to any question by using a higher-level of thinking can be difficult. Incorporating it into everyday lessons will help students to become more aware of their answers. It is significant to teach students how to use their curiosity as that leads them to acquire critical thinking skills and helps them to realize the consequences of their actions, understand a science experiment or help them solve problems.

During my school immersion, I have observed and experienced many ideas and experiments that are related to my action research question. At Chandler Traditional Academy (CTA) Freedom School, it is common to have hands-on activities in most K-6 classrooms so that students learn by doing. In addition to this, science experiments build students' critical thinking skills because students can be creative, innovative, cooperative, and independent. Teachers are encouraged to ask their students certain questions that allow them to come up with new ideas or thoughts during their science experiment experience, which opens their horizons to new ideas. Hands-on activities assist students in carrying out physical activities that will help students to have a better understanding of what they have been taught.

4 Conclusions

Based on the information presented in this paper, I will implement critical thinking activities that can be developed through a variety of strategies. Science experimentation is a process of steps to validate or reject a hypothesis by letting students decide their answer in their essay after they have conducted the experiment. Another strategy I will use is called learning by doing. This strategy lets students interact with their environment in order to try to understand the problem. Additionally, reflection is a fundamental part of the teaching-learning process in American schools, which I would like to implement in my class. Teaching students to reflect on their work by purposefully addressing their learning results by validating or refuting their hypothesis becomes a vital part of the students' learning.

Plan of Action

What steps or actions need to be done?	Who will do this step or action?	Timeline When will you do this step? How long will it take to complete this step?	Resources: What do I need for this step or action? Other teachers, Staff, supplies, and materials, Time, PLC time	Date completed ✓ and write the date when completed
Share my Action Research project with my principal for approval and request resources that are needed	Myself	The first month of school	Written Action Research and presentation, Google Site, an appointment with my supervisor	❏
Share my Action Research project with my supervisor so that he/she knows why I am teaching differently	Myself	The day before my observation, 30 minutes	Google Site, presentation, appointments with my supervisor	❏
Share with the other teachers on my PLC team what I learned about Critical Thinking	Myself	At the first or second PLC meeting. It may take from 30 to 40 minutes.	Google Site, presentation, some of the websites that I used. I can use some of the recommendations from my Faculty Mentor and School Mentor	❏
Involve parents in my Action		At the first PTM, it may be after two	I need supplies, materials, time, and	❏

Research by sharing posters and papers with them in the Parents Teachers Meeting (PTM) to show them how we can build their students' critical thinking	Myself	months from the beginning year	PTM time	
Share my Action Research project with the eastern district office in Dammam city, which I belong to	Myself	Summer workshops	Google site, presentation, supplies, materials, and time	❏
Student Interviews or Partner interviews with Observation	Myself	2 weeks to 3 weeks in 2020	I will need help from my principal and colleagues, materials, and PLC time.	❏
Create a (Pre) Attitude Survey to give to all students	Myself	1 week to 2 weeks in 2020	I will need help from my principal and colleagues Time	❏
Create a Pre-survey to help determine parents' understanding of their child's attitudes towards learning language and science	Myself	At the beginning of the year	Parents will respond through Phone Apps for example (Whatsapp, and telegram)	❏
Create a Pre-test to assess student problem-solving skills in Language and science	Myself	At the beginning of the year	Paper copies in Arabic	❏
Start collecting websites, podcasts, and resources about Critical Thinking with links	Myself	Aug and Sep 2020	Google Site, make pages, which have information about critical thinking. I may involve another teacher	❏

Collect forms and images of ideas that can be used in my classroom to help me to know more about how to build a critical thinking culture	Myself	Aug and Sep 2020	Make some folders in Google Drive, Contact with District Mentor, and Faculty Mentor	❏
Select the units for the action research for the 1st semester. Select learning objectives for unit tests	Myself	Before classes start	Language or science textbook. I can have a conversation with my supervisor or with a mentor about how to determine which strategy to begin with	❏
Create data sheets for unit or chapter tests to record student scores	Myself	Week 1 and 2 of semester	Sample of datasheets from all supplies that assist to share with my colleagues	❏
Select two of my classes to implement critical thinking instruction (treatment groups) and two that will not use critical thinking (control group)	Myself	Week 3 of semester	Datasheets for each class, labeled as treatment or control to see what the differences	❏
Create 2-3 Critical Thinking levels for lessons to address students' learning, and comprehension	Myself	Week 3 and 4 the semester	Bloom's taxonomy, Critical Thinking strategies, resources, lesson objectives	❏
Unit 2: -Two treatment groups: Implement critical thinking strategies in the lessons -Two control groups: Implement lessons	Myself	2nd month of the semester (3 weeks)	Unit 2 textbook, materials, and resources. Unit 2 test. Datasheets	❏

without critical thinking strategies				
Unit 3: -Two treatment groups: Implement critical thinking strategies in the lessons -Two control groups: Implement lessons without critical thinking strategies	Myself	2nd and 3rd month of the semester (3 weeks)	Unit 3 textbook, materials, and resources. Unit 3 test Datasheets	❏
Unit 4: -Two treatment groups: Implement critical thinking strategies in the lessons -Two control groups: Implement lessons without critical thinking strategies	Myself	After the 3rd unit is complete and the data sheets have been completed. (4th month of semester-3 weeks)	Unit 4 textbook, materials, and resources. Unit 4 test Datasheets	❏
Assess student attitudes towards learning language and science Give post-attitude survey	Myself	After teaching Unit 4	Attitude Survey	❏
Give the post-test to assess student problem-solving skills in Language and science	Myself	At the end of the year	Paper copies in Arabic	❏
Give the Post-survey to help determine parents' understanding of their child's	Myself	At the end of the year	Parents will respond through Phone Apps for example (WhatsApp, and telegram)	❏

attitudes towards learning language and science				
Analyze data between pre and post Did the critical thinking strategies that I used for the 2 classes work?	Myself	After each unit so I will assess what I need to change in my lessons	Pre and post attitude survey data Datasheets with pre and post-test scores	❏
Analyze the data between the pre and post-survey for parents to assess that there was a change	Myself	At the end of the semester	Pre and post attitude survey data Datasheets with pre and post-test scores	

The Results and Interpretation and Conclusion are to be completed in Saudi Arabia

Results and Interpretation

Make sense of the data to answer the question "so what?"

Organize using webs, graphs, charts, numbers, etc.

Make observations about the data. Non-judgmental statements of facts.

- Search for themes and patterns
- Ask questions
- Look for gaps
- Display the data

Interpret, summarize, and describe the findings. Share the results.

Conclusion

Now that you have analyzed your data...

- What have you learned?
- How do you feel about what you have learned?
- How do your conclusions differ from what you thought you would learn?
- Do the conclusions seem believable?
- What actions might you take based on your conclusions?

- What new questions emerge for you from the data?
- Who else might be interested in these conclusions?
- What are strategies to share your conclusions with others?

References

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Appendix A

Student Attitude Survey (Pre)

Circle one face to show how you feel about the statement.

I will like learning language and science in school this year.	🙂 Yes!	😐 It's okay.	🙁 I am not sure.	😠 I don't like it!
I am good at learning language and science at school.	🙂 Yes!	😐 Maybe.	🙁 I am not sure.	😠 It is too hard!
I think I will learn language and science better this year.	🙂 Yes!	😐 Maybe.	🙁 I am not sure.	😠 It is too hard!

Appendix B

Student Attitude Survey (Post)

Circle one face to show how you feel about the statement.

I liked learning language and science in school this year.	Yes!	It was okay.	I am not sure.	I didn't like it!
I am always good at learning language and science at school.	Yes!	Maybe.	I am not sure.	It is always too hard!
I think I learned language and science better this year.	Yes!	Maybe.	I am not sure.	It was too hard!

Appendix C

Parent Survey (Pre)

Circle one face to show how you feel about the statement.

My child likes learning language and science at school this year.	Yes!	It's okay.	I am not sure.	My child doesn't like learning English.
My child has always learned language and science well at school.	Yes!	Maybe.	I am not sure.	It is too hard!
My child will learn language and science better this year.	Yes!		I am not	It is too hard!

		Maybe.	sure.	

Appendix D

Parent Survey (Post)

Circle one face to show how you feel about the statement.

My child liked learning language and science at school this year.	☺ Yes!	😐 It's okay.	🙁 I am not sure.	😠 My child doesn't like learning English.
My child has always learned language and science well at school.	☺ Yes!	😐 Maybe.	🙁 I am not sure.	😠 It was too hard!
My child learned language and science better this year.	☺ Yes!	😐 Maybe.	🙁 I am not sure.	😠 It was too hard!