

KidEx Do-It-Yourself National Challenge 2020

Activity description and self-learning manual

Activity: Record a video doing a guess-estimate exercise | Cognitive skills | 12-17 years

Skill development milestone

By the end of teenage, they attain cognitive maturity — the ability to make decisions based on knowledge of options and their consequences. Overall, they develop more complex cognitive skills. They can generate and test hypotheses systematically. They continue to be influenced by peers. Teen has a truer moral compass, or at least a more solid idea of what he/she feels is right or wrong. They build skills to become self-sufficient.

Teenagers can classify & order objects, reverse processes. They can think logically about concrete objects. They can consider more than one perspective at a time. Teen keenly tunes in to others' verbal and body language and reads facial expressions. They benefit from direct experiences than from abstract ideas/principles. Teen tells and writes involved, colorful stories. They are better able to explain, describe, sum up, and argue.

They can think hypothetically: calculate consequences of thoughts and actions without experiencing them. This makes their decision making refined. They consider several possibilities and plan behavior accordingly. They think logically: identify and reject hypotheses or possible outcomes based on logic. Systematic problem solving is exhibited by teens as they can attack a problem, consider multiple solutions, plan a course of action.

Cognitive development is uneven and impacted by emotionality. This is due to the drastic changes that follow puberty. This is a good time to talk about mental health. Your child is also becoming a deeper thinker, able to understand concepts, not just concrete things. He/she can think more long-term, and to set goals for him/herself. They speak in longer, more complex sentences. They are eager to enter heated arguments and discussions with you. They seem to communicate less at times and Are developing strong likes and dislikes. They do understand the effects of their behavior.

Teens use sarcasm and humor. Children at this age are like sponges, ready to absorb huge amounts of information. They are becoming interested in politics, philosophy and social issues. They often show a high interest in extracurricular activities. You should urge your child to express himself/herself with sports, theater, art, or music.

Child will get better at organizing himself/herself as they juggle school, activities, and work. But there is more responsibility and more stress related to classes, assignments, and juggling after-school activities, all while dealing with friends, increased expectations, and lots of distractions. Sometimes attention issues or learning problems show up now because of the more difficult demands of schoolwork in higher grades. They start to set goals for the future. Their goals will be a little more realistic, and they will have a better idea of what they want to be.

They do respond to media messages but develop increasing ability to analyze those messages. Teenagers should be mindful about internet safety. Your child should control his personal information and deny access by people he does not know or can't place.

Activity description

The child is required to estimate the number of engineers that graduate in a year in India.

The intent of the exercise is to give the child an opportunity to demonstrate 2 things in parallel:

1. Create a guiding structure to think/estimate
2. Make actual estimates

There is no correct or incorrect answer. The overall motive is to check the dimensions in which the child's mind can think and, to be able to articulate the thinking process.

KidEx Do-It-Yourself National Challenge 2020

The child should try this exercise multiple times & once the child is doing well, record the child's video doing this activity. During the video, the child should think out aloud how is the child thinking about the estimates & keep assigning the values for each of the elements of the guess-estimate exercise. Finally, the child should be able to arrive at a number as an answer. The child is required to use two distinct approaches to estimate the same problem size.

The video should be submitted as an entry as per submission guidelines.

You may share the video with family (1st circle), relatives & close friends (2nd circle) or acquaintances (3rd circle) as desired by you. Or post the videos on social media (public), if you wish, with the hash tag #KidExDIYChallenge or #KidExDIYNationalChallenge.

Submission guidelines

1. You can record one common video of the child for this activity
2. Keep the total video size less than 20 MB
 - a. Higher resolution camera creates large size video files
 - b. Android users can install & use Camera MX player to record smaller size video files
 - i. Camera MX player can be downloaded from [here](#)
 - c. Iphone users should change resolution setting by going to Settings -> Camera & selecting lowest resolution from "Record Video" option
3. You can upload the video file at <https://www.kid-ex.com/diy-nc>
4. Kindly ensure you have registered for the event for us to assess the submission. If not registered, please visit <https://www.kid-ex.com/diy-reg> to register. New registrations allowed till 30th May.

Self-learning manual

Common mistake and things to keep in mind in this activity are:

1. The child is worrying about getting to the right answer – answer is not important, the thinking process & it's communication is
2. The child is uncomfortable thinking in subjective / abstract manner without any thinking guardrails
3. The child's mental mathematics skills are not strong enough
4. Child is not in the right mindset while playing

Key coaching tip to excel in this exercise is that you must help the child appreciate that there is no right or wrong answer.

Do a few role play exercise for the child yourself to introduce to various approaches.

Use reference

Example - How many flowers does it take to make a metre-long garland?

Assume the size of the flower based on the flowers you have at home or objects similar in size. Take this size to be the flower size for all other flowers. Estimate the number of flowers it will take to cover the length of a standard 15 cm scale at home. You can then calculate the number of flowers for 1 metre or 100 cm.

Estimate length

Example - How many ants will it take to cover a distance of 2 metres?

Estimate the distance of 2 metres in terms of arm length or foot length. Estimate the length of an ant and how many ants it might take to cover an inch of your finger. Convert the number of ants per inch to ants per metre or centimetre. Calculate the same by unitary method to get to the answer.

KidEx Do-It-Yourself National Challenge 2020

Estimate volume

Example- How many golf balls/footballs would fit in a Boeing 747 Plane?

Estimate the number of seats in a Boeing 747 Plane. Estimate the area that is taken for a single seat. Assume some numbers for the height of the plane as well. Take the area of cockpit, storage and everything else into consideration. After that divide this area by the area of a single golf ball and you will arrive at the number of golf balls. Also, remove 10 % wastage as there will be some space between four balls.

Important thing is to help the child to define an overall structure & then break that structure into smaller components for which data collection / estimation is easy. And then, use this information to arrive at an answer. The child should be able to talk through the thinking process.

A simple answer could be:

1. Estimate the number of students appearing for X / XII examination every year (can use population as a starting point or can make an estimate for the same)
2. Estimate the number of students clearing the examination
3. Estimate the % of students going for higher studies vs. dropping out
4. Estimate the % of students selecting science, arts & commerce
5. Estimate the % of students selecting engineering amongst science
6. Estimate the number of students clearing the course & graduating out of these
7. Arrive at the final answer

Alternate approach could be:

1. Estimate the number of engineering colleges in India
2. Estimate the number of students in any engineer college
3. Estimate the % of students successfully completing the course
4. Arrive at the final answer

Key benefits of this exercise are:

1. Improves logical thinking and reasoning abilities
2. Helps make reasonable guesses to seemingly difficult to solve problems
3. Opens mind to deal with complexity, probability, and possibility
4. Promotes mathematical skills and strategic thinking

Entry evaluation guidelines

The maximum point for this activity is 30. Every entry would be rated as either:

1. Master (M): 100% score
 - a. The child can do guess-estimate using two approaches, answer using both approaches are comparable & both approaches include the below:
 - i. Think-out-aloud the guess estimate
 - ii. Use at least 3 distinct components in estimation structure
 - iii. Make reasonable estimates for each of the components
 - iv. Arrive at a final answer using the structure & estimates for each of the components
2. Intermediate (I): 80% score
 - a. The child can do guess-estimate using one approach only, & the approach includes the below:
 - i. Think-out-aloud the guess estimate

KidEx Do-It-Yourself National Challenge 2020

- ii. Use at least 3 distinct components in estimation structure
 - iii. Make reasonable estimates for each of the components
 - iv. Arrive at a final answer using the structure & estimates for each of the components
3. Beginner (B): 50% score
 - a. The child can do guess-estimate using one approach only, & the approach includes the below:
 - i. Think-out-aloud the guess estimate
 - ii. Use at least 3 distinct components in estimation structure
 - iii. Make reasonable estimates for >50% of the components
 - iv. Arrive at a final answer using the structure & estimates for each of the components
4. Not applicable (NA): 0% score
 - a. All other submission cases
 - b. No submission.

For any queries, you may Whatsapp us at +91-7303755886 or email us at info@kid-ex.com.

About KidEx

KidEx is a company founded by Kapish Saraf & Amritanshu Kumar (IIT Kharagpur & IIM Calcutta alumnus). KidEx aims to create a platform to enable holistic & comprehensive development of every child by partnering with their parents in a logistically convenient manner for the parents. KidEx offers multiple extra-curricular activity classes for kids in physical & digital form (basis screen time guidelines) to enable child's holistic development. Live classes include: Chess, Arts, Mandarin, Spanish, French, German, Guitar, Movie-Making. Upcoming classes include: Academics, Robotics, Coding, Dramatics, multiple Dance & Music, Social Etiquette etc. KidEx will offer all learning solutions to parents under one umbrella. KidEx would soon launch a suite of digital products aimed at making child-raising easier & more fun for parents.

About KidEx Do-It-Yourself National Challenge

The event is an effort to spread awareness regarding need for all rounded development of the child. This is also, designed keeping in mind the current external scenarios where lockdown/no lockdown, social distancing practices would continue & schools/colleges might be shut for a few months which would require parents to find non-screen time learning opportunities for the child while demanding lesser time for parents allowing them some breathing space for themselves.

The event is open to all Indian citizens in India or abroad across age groups of 3 to 17 years. Basis the submitted entries, for every age, a leader board would be created & declared.

Prizes & certificates

We will conduct two versions of the event for all interested parents. Parents can decide whether they want their child to participate in the paid version or the free version of the event. Entry charge for paid version of the event is INR 500 for every child.

Paid version participants would be eligible for:

1. Prizes for winners across all age category
 - a. Number of winners linked to number of paid version participants
 - b. 50% of registration fees to be distributed as prize to winners
2. Winner & participation certificates
3. Assessment score for every submitted entry & leader board position summary

Free version participants would be eligible for:

1. Assessment score for every submitted entry

KidEx Do-It-Yourself National Challenge 2020

Even participants interested in paid version would be required to pay the amount after 7th May allowing them opportunity to participate first & then, decide.