

EdTech Tulna Review & Ratings	HeyMath! Response
<p>(P12) Opportunities for collaboration is rated Potential to improve</p>	<p>HeyMath! was primarily designed as a teaching tool and aid to support teachers in face to face and digital classrooms. Students also have online accounts on the HeyMath! platform to be able to learn independently from home. Teachers orchestrate the use of the program and bring in their own ideas, insights and experience of how best to use the content and technical features with students.</p> <p>Here are some examples of how teachers use HeyMath! lessons, activities and tools to foster student collaboration:</p> <ol style="list-style-type: none"> 1) Teachers combine hands-on activities with a worksheet and assign the same to students in pairs. Eg: 'Representing Fractions' which is a paper folding activity to learn about fractions. 2) Activities within our lessons can also be done by students collaboratively. For example, teachers introduce the concept of fractions using our interactive lessons which have visual representations of simple fractions. After the introduction, teachers use the 'Fraction Machine' (within the lesson) and get students to work together to identify the fraction of a whole. 3) Math tools are very effective for collaboration as they are accompanied by several worksheets that cater to multiple abilities in a classroom (we call them low threshold, high ceiling tasks). <p>For example, teachers use our robust and dynamic <i>100 square tool</i> in creative ways to develop mental arithmetic skills. Students are asked to work in groups to identify missing numbers, recognise patterns and solve addition/subtraction problems using different strategies.</p> <p>Another example is how the <i>Algebra tool</i> is used for collaboration. Teachers form groups and provide students with a guided worksheet (containing problems in algebraic operations & factorisation of expressions). Students work together and check their solutions using the tool.</p> <p>We continuously innovate on our content and its usability based on feedback from teachers.</p>
<p>(C3) Language comprehensibility is rated Valuable</p>	<p>We believe that students need to be exposed to all types of accents (Indian and foreign) as they grow up in a highly interconnected globalised world. We have adopted this approach for all the geographies where HeyMath! has a</p>

	<p>presence as well as in India. The interesting feedback from some teachers is that often students pay more attention to a lesson because they find the accent new and different!</p> <p>We appreciate that the above may not work in non-urban and rural parts of India. Therefore, when we have done projects with State Governments (eg: Rajasthan) - we have added voice overs in Rajasthani Hindi. We have solid processes in place for localising and contextualising HeyMath! lessons.</p> <p>One other point to highlight is that we see stories, games and lessons in HeyMath! as a great opportunity to improve a students' vocabulary and comprehension skills in English. In countries where English is not the mother tongue, adopting HeyMath! has helped students improve their English skills (eg: Colombia).</p>
<p>(C6) Inclusivity in the representation of learners is rated Valuable</p> <p>An attempt has been made to represent various sections of the society across gender and socio-economic class. There is no specific focus or inclusion of minority groups particular to India, or geographies or activities common to Indian households.</p> <p>There were many units with examples from foreign contexts. For example, some topics used names like Thabo, Angelina, Gates, Christina, Big Daddy, and Snapper and animals like a hamster, which might not be completely relatable to the Indian learner.</p> <p>Some of the examples might be unfamiliar to Indian students such as the one below. "Little Teti the builder has to find the height of the Great Statue of Pharoah Rameses". All learners might not be familiar with those monuments.</p>	<p>We can certainly add more examples involving minority groups, contexts from India's hinterland & scenarios from households and appreciate your feedback.</p> <p>We have incorporated examples of animals (eg: hamsters), monuments from Egypt (eg: statue of Rameses) to broaden students' general knowledge. Similarly, foreign names are included to increase awareness about the world.</p> <p>We strongly believe that students should develop interdisciplinary thinking and appreciate the power of Mathematics to solve problems in the world around us. Teachers can make a Math class interesting by infusing contexts from Biology, Culture, Geography, History (eg: our trigonometry lesson on the Great statue of Rameses, our circumference lesson on Gandhi's Charkha, solar system to explain standard form).</p>
<p>(P4) Learner Scaffolding is rated Valuable</p>	<p>Scaffolding of HeyMath! lessons and student support is done by the teacher. Our primary mission is to 'support and empower teachers', while enabling every student to taste success in Mathematics. Teachers bring in their own ingenuity, experience and unique style to make the best use of a HeyMath! lesson (at every stage of concept learning - readiness, engagement and mastery) in a digital classroom with students. Teachers provide the scaffolding during formative learning, combining lessons with quizzes and tailor-making hints and tips to support learners. However, we appreciate your inputs and agree that</p>

	<p>incorporating hints and tips in our lessons will help students with self-learning</p> <p>We also would like to highlight that we have a separate student centric product called 'Personalised Learning Program - PLP' (distinct from the teacher led digital classroom product) that enables a student to maximise their potential in Math. PLP administers diagnostic tests for every micro concept in the syllabus; and based on student performance provides automated lesson recommendations and customised practice to help the student go further in their learning journey. This has been particularly valuable post pandemic, to bridge learning gaps and address academic regression. Feedback from CBSE schools on PLP has been very positive.</p>
<p>(P11) Feedback Quality is rated Valuable</p> <p>Detailed explanations are present for assessment questions, but there is a lack of opportunities to revisit the related content.</p>	<p>Assessment and lessons have been designed with different purposes in mind.</p> <p>HeyMath! lessons are primarily an aid/tool for the teacher to teach concepts in a digital classroom. When teachers create lesson plans, they mash-up relevant related content eg: before introducing HCF and LCM, they would do a refresher using the lessons on Factors & Multiples. In fact, when teachers issue these lessons as reading assignments for home access, they provide detailed references which help students for self-study of the lesson.</p> <p>Assessments were designed for practice, and as another opportunity for students to learn after having been taught the concept by the teacher. That is why we provide a fully worked out detailed explanation. This also applies to our student centric PLP product, where detailed solutions are shown to students. Students can also rate the solutions, which serves as a feedback loop to us.</p>
<p>(P14A) Teacher Support for in-class orchestration is rated Valuable</p> <p>The reviewer did not observe any features to support teachers in lesson planning or using the learning material built in the product. Teacher training and sample lesson plans are provided to the partner schools.</p>	<p>Teacher support is core to our service offering. We cover a whole range of themes in our teacher training and professional development sessions, such as</p> <ol style="list-style-type: none"> 1) how to create engaging lesson plans that are comprehensive (for concept understanding, formative and summative assessment as well as evaluation) 2) how best to integrate HeyMath! lessons & assessments for synchronous and asynchronous learning 3) how to use HeyMath! for remedial support & intervention at a whole class/individual student level 4) how to design tasks that are inclusive with low

	<p>thresholds but high ceilings so to cater to all types of learners</p> <p>5) how to develop higher order thinking and problem-solving skills in students</p> <p>6) how to integrate HeyMath! PLP for after school revision and to improve learning outcomes</p> <p>We invite you to watch teacher feedback</p>
<p>(T4) Universal Design of Information Technology is rated Valuable</p> <p>Many important features of universal design according to the WCAG design principles were found to be missing. Some of these include operability from the keyboard and captions for the video content.</p> <p>The hands-on activities also lacked audio for the instructions, while only text with background music was present</p>	<p>Voice overs are available in most of our lessons as text on screen. This helps students (including hearing-impaired) understand the concepts and activities in a lesson. We have piloted HeyMath! at a school for speech and hearing-impaired students and received positive feedback from teachers and students. However, we acknowledge the need for closer adherence to WCAG guidelines, especially detailed captions and keyboard operability. We will work towards this in the next version of our product and appreciate your feedback on this.</p> <p>Hands-on activities have been digitised to save teachers time in a Math lab class. Prior to this, teachers would have to provide step by step instruction to guide students, and would not have enough time to interact with each student individually. With HeyMath! Math lab activities, teachers project the instructions and have the ability to walk around providing real time support to parents. As teachers facilitate the activities with students, there wasn't a need for voice overs in Math Lab activities.</p>

Additional responses

Review & Ratings	HeyMath! Response
<p>(P4) Learner Scaffolding is rated Valuable (Grades 1 & 2) In abacus activity (Grade 2) prompts such as “Try again”, “Correct” are present in almost all the activities but hints to come out of the stuck situation are missing in many activities.</p>	<p>When teachers teach representation of three-digit numbers, they project the activity in our Abacus lesson on the screen and follow this with a quiz using our real time quiz app. When there are incorrect responses, teachers revisit the introductory part of the lesson to recap the concept and supplement that with their own hints to reinforce student understanding. Our automated question generator brings up a variety of questions which helps students achieve mastery in place value.</p>
<p>(P11) Feedback Quality is rated Valuable (Grades 1 & 2) In the concept of counting up to 1000, where a learner needs to count the number of objects shown, the explanation just contains the answer but does not show how and why the answer given is correct or wrong. Ideally, the objects could have been highlighted or the counting process could be shown as a simple animation.</p>	<p>Comparing Numbers (up to 1000) has been designed to help students compare two objects. The visual models segregated as 100s (slab), 10s (rods) and 1s (cubes) are meant to aid in the counting process. In a digital classroom setting, teachers prompt students to count the number of slabs, rods and cubes to reinforce the concept and verify their answers if they are stuck.</p> <p>An earlier lesson on Addition by Counting On (up to 100) provides a bit more hand-holding by highlighting the objects to help students count. We could consider highlighting the objects even in the counting up to 1000 lesson and thank you for your feedback.</p>
<p>(P11) Feedback Quality is rated Valuable: (Grades 9&10) Some practice problem activities on the topic of “Probability”. The feedback for those activities was binary, while complete solutions in the form of worked examples were shown to learners. Here no reasoning is provided for wrong answers or no guidance for revisiting the content.</p>	<p>Worked examples in the Probability lesson are meant to demonstrate application of the fundamental concepts or probability. The animated step-by-step approach hand-holds students in interpreting a problem and applying the right reasoning to arrive at the answer. There is a one-one correspondence between the worked-out examples and the practice questions that follow. If students are stuck on a practice problem, they can always refer back to the worked examples. Furthermore, in the quizzes (assessments part of HeyMath), we always provide fully worked out solutions which is another opportunity for students to reinforce their understanding.</p>