Contents

1. What Does This Report Contain? ........................................... 3
2. Overview of the Product ............................................................ 3
3. Executive Summary ................................................................. 4
4. Detailed Review ........................................................................... 8
   4.1 Content Quality .................................................................... 9
   4.2 Pedagogical Alignment .......................................................... 11
   4.3 Technology and Design .......................................................... 18
Appendix .......................................................................................... 22
1. What Does This Report Contain?

The section, 'Overview of the Product', provides a brief description of the product and its key features to give the context for the evaluation. The two sections following that present the findings from the evaluation. The Executive Summary provides the overall rating and offers implications in terms of benefits and limitations for teachers and learners. The Detailed Review section provides an in-depth evaluation of the product, categorized under three dimensions (or constructs) – Content Quality, Pedagogical Alignment, and Technology & Design. For each dimension, the product is reviewed on the criteria along with explanations for the rating, and grouped into clusters. Specific examples have been provided in this report to support and elaborate on the evaluation ratings.

The terms, ‘Exemplary’, ‘Valuable’, and ‘Potential to Improve’, used in the report refer to the rating scale for evaluating the product.

- **‘Exemplary’** indicates that the product has been designed as per recommended learning theories and research-based evidence.
- **‘Valuable’** indicates limited adherence of the product’s design to the recommended learning theories and research-based evidence.
- **‘Potential to Improve’** indicates unsatisfactory or lack of adherence of the product’s design to the learning theories and research-based evidence.

2. Overview of the Product

This report evaluated the product ConveGenius, Mathematics (Grades 3-5). ConveGenius is an adaptive learning platform with content based on the National Curriculum Framework. The product contains learning modules in the form of videos, guided practice questions and activities. A unique learning path is created for each learner based on their grade, learning level and performance. Teachers can view the interaction and performance data of the learners.
3. Executive Summary

ConveGenius | Mathematics | Grades 3-5

<table>
<thead>
<tr>
<th>Content Quality</th>
<th>Pedagogical Alignment</th>
<th>Technology and Design</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exemplary</td>
<td>Valuable</td>
<td>Valuable</td>
</tr>
</tbody>
</table>

Potential benefits of this product

- Learners and teachers can be assured about the correctness of the content.
- Learners will likely be engaged as the content videos have an interesting story for all topics and are narrated in a conversational style.
- Learners in Indian schools will be able to relate to the content. The videos embed the real world context very well for each topic. There is good representation of gender, appearance, religion and socio-economic settings.
- Learners will be able to construct their own understanding of the topic and learn concepts independently.
- Adaptivity in the knowledge check section enhances the learner experience, and the hints allow them to figure out how to solve the questions on their own.
- The product has a high potential to be used by teachers effectively to identify learning needs of different students and support them appropriately.

Potential limitations of this product

- The design of the interface is not very intuitive for new learners. Glitches in the interface makes it difficult for learners to navigate through the content.
- Learners might find it difficult to stay motivated through their learning experience. Content videos have some elements of motivation, but the practice section lacks effort to motivate learners.
- The binary nature of feedback (correct / wrong) in the practice section does not allow learners to correct their understanding of the concept as they solve questions.
- While the product light lead to a good fluency in procedural mathematical skills, it is less effective in helping learners construct meaning and make deeper connections. Opportunities for experimentation, interactive activities and mathematical tools for problem solving are lacking.
**ConveGenius (Grades 3-5): Summary of Review Ratings by Criteria**

**Content Quality: Exemplary**

<table>
<thead>
<tr>
<th>C1. Content accuracy</th>
<th>The video content is accurate and there is no ambiguity.</th>
</tr>
</thead>
<tbody>
<tr>
<td>C2. Correctness and clarity in assessment</td>
<td>The assessment questions are clear and the solutions are correct.</td>
</tr>
<tr>
<td>C3. Language comprehensibility</td>
<td>Easy vocabulary, short and simple sentences are used in most of the learning units, making the language easily comprehensible.</td>
</tr>
<tr>
<td>C4. Mathematics skill coverage</td>
<td>Most skills recommended by NEP for grades 3-5 are covered</td>
</tr>
<tr>
<td>C5. Curriculum alignment</td>
<td>The content is aligned to national curricula and is logically sequenced.</td>
</tr>
<tr>
<td>C6. Inclusivity in the representation of learners</td>
<td>The content represents people from various sections of society in terms of religion, gender, skin colour, socio-economic groups.</td>
</tr>
</tbody>
</table>

**Pedagogical Alignment: Valuable**

<table>
<thead>
<tr>
<th>P1. Constructivist approach</th>
<th>The content goes beyond mere transmission of information and enables meaning making. However, there are no opportunities for experimentation for the learner.</th>
</tr>
</thead>
<tbody>
<tr>
<td>P2. Addressing learning gaps/alternate conceptions</td>
<td>Learner gaps and possible confusions which a learner might have are identified and addressed wherever required.</td>
</tr>
<tr>
<td>P3. Content in context</td>
<td>Real world examples and scenarios are used throughout the product.</td>
</tr>
<tr>
<td>P4. Learner scaffolding</td>
<td>The overall content and videos are well scaffolded but the assessments lack sufficient support or hints.</td>
</tr>
<tr>
<td>P5. Cognitive engagement</td>
<td>There is a lot of variation in the highlighting of important elements or use of an engaging conversational tone across various chapters.</td>
</tr>
</tbody>
</table>
### Executive Summary

**Summary of Review Ratings by Criteria**

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>P6. Motivational features</td>
<td>😊</td>
</tr>
<tr>
<td>P8. Learning objective- assessment alignment</td>
<td>😊</td>
</tr>
<tr>
<td>P9. Pedagogy - assessment method alignment</td>
<td>😌</td>
</tr>
<tr>
<td>P10. Cognitive levels covered</td>
<td>😋</td>
</tr>
<tr>
<td>P11. Feedback quality</td>
<td>😞</td>
</tr>
<tr>
<td>P13. Adaptivity</td>
<td>😊</td>
</tr>
<tr>
<td>P14. Teacher support for</td>
<td>😊</td>
</tr>
<tr>
<td>T1. Interface design: Enable intuitive use</td>
<td>😊</td>
</tr>
<tr>
<td>T2. Interface design: Assess consequences of an action</td>
<td>😞</td>
</tr>
<tr>
<td>T3. Learner navigation &amp; pace</td>
<td>😞</td>
</tr>
</tbody>
</table>

### Technology and Design: Valuable 😊

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>T1. Interface design: Enable intuitive use</td>
<td>The overall interface is quite intuitive to use, but visibility of some elements in the assessment is difficult.</td>
</tr>
<tr>
<td>T2. Interface design: Assess consequences of an action</td>
<td>No prompts for feedback or error reversal on user actions are present.</td>
</tr>
<tr>
<td>T3. Learner navigation &amp; pace</td>
<td>The learner has very little control on the navigation and pace, and needs to follow a predetermined structure.</td>
</tr>
<tr>
<td>T4. Universal Design</td>
<td>Important features of Web Content Accessibility like closed caption, operability through keyboard and compatibility with a screen reader are lacking.</td>
</tr>
<tr>
<td>---------------------</td>
<td>-----------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>T5. Analytics for learners’ progress</td>
<td>There are actionable analytics for the learners but very limited information on the teacher dashboard.</td>
</tr>
<tr>
<td>T6. Tools to support problem-solving</td>
<td>No Mathematical tools to support problem solving are observed.</td>
</tr>
<tr>
<td>T7. Meaningful interactivity</td>
<td>There is only basic interactivity like radio buttons and text inputs present which enables the learner to enter their responses.</td>
</tr>
<tr>
<td>T8. Content type - Technology alignment</td>
<td>Appropriate and excellent visualizations are used in most topics based on the content type.</td>
</tr>
</tbody>
</table>
4. Detailed Review

4.1 Content Quality

Content Accuracy and Clarity .................................................. 9
Alignment to National Standards ........................................... 10
Inclusivity in Content Representation ....................................... 10

4.2 Pedagogical Alignment

Learner-Centred Approach ....................................................... 11
Enhancing Learner Experience ................................................. 12
Assessment of Learning .......................................................... 16
Adaptivity ............................................................................. 16
Teacher Support ...................................................................... 17

4.3 Technology & Design

User Interface Design .............................................................. 18
Affordances that facilitate learning ......................................... 20
4.1 Content Quality

Content Quality measures the accuracy and content/skill coverage for the grade targeted and the specific domain. This dimension focuses on content accuracy and clarity, alignment to national standards, and inclusivity in content representations.

4.1.1 Content Accuracy and Clarity

<table>
<thead>
<tr>
<th>Content Accuracy (C1)</th>
<th>Correctness and clarity in assessment (C2)</th>
<th>Language comprehensibility (C3)</th>
</tr>
</thead>
</table>

Content accuracy (C1) is rated Exemplary. The content is presented as videos for each topic followed by assessment questions. The video content is accurate and contains correct facts and explanations, diagrams at all places. Minor ambiguity or inaccuracies were observed but they do not have a major pedagogical impact.

Correctness and clarity in assessment (C2) is rated Exemplary. Assessment questions and their solutions are factually correct, complete and unambiguous in all the sampled learning units. The assessment questions clearly convey what is expected from the learner. However in a few, very rare instances the assessment questions are ambiguous:

Language comprehensibility (C3) is rated Exemplary. The language used is easily understandable by the intended learners. The vocabulary and the accent used is familiar to the learners. Also, the sentences spoken or those appearing on-screen are short and simple to follow. Learners do not need to spend extra time comprehending the language used. Most terminologies used are easy to comprehend however in the learning unit of 3D shapes (Grade 4). Unfamiliar terminologies such as ‘Rhomboid’ were occasionally used.
4.1.2. Alignment to National Standards

<table>
<thead>
<tr>
<th>Mathematics Skill coverage (C4)</th>
<th>Curriculum alignment (C5)</th>
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</thead>
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</table>

Mathematics skill coverage (C4) is rated **Valuable**. Most of the Math skills recommended for grade 3-5 by NEP and NCF are covered, such as Estimation, Data Handling, Arithmetic and Measurement skills, etc have been covered. However some of the important skills such as ‘Pattern observations’ are missing across the grade range.

Curriculum alignment (C5) is rated **Exemplary**. The topics are chunked into smaller objectives which are logically sequenced and aligned to the content present in NCERT textbooks for Grade 3-5. The sub-topics are scaffolded in order of their difficulty levels and prerequisite knowledge required within each topic.

4.1.3. Inclusivity in Content Representation

Inclusivity in the representation of learners (C6) is rated **Exemplary**. A systematic effort has been made to include representation of diverse types of learners.

Illustrative examples:

Friends playing on a seesaw have boys and girls, fair and dark skinned and children of different appearances. Many videos are cartoon based, which have a good representation of male and female characters. Although some video content has cartoon foreign character names (like Amber, Uncle Brown, Lousy, Sandy), they will not cause any significant hindrance in the learning. Especially in the assessment questions,

Indian names have been used keeping in mind the common names across different religions. The setting used in most chapters will most likely be relatable to rural as well as urban Indian context.
4.2 Pedagogical Alignment

Pedagogical Alignment focuses on adaptivity, learner-centred pedagogy, enhancing learner experience, assessment of learning, and teacher support. It measures the extent of alignment of the pedagogical strategies with national educational policies, Learning Sciences theories and design principles to create a meaningful learning experience.

4.2.1. Learner-centered Approach

| Constructivist approach (P1) | Addressing learning gaps / alternate conceptions (P2) |

Constructivist approach in pedagogy design (P1) is rated Valuable. The learning content allows learners to construct their own understanding of the topic. In most learning units, the learning content which includes the videos and the questions enable construction of knowledge to a good extent, and is much more than a mere transmission of information. The content follows a problem solving approach in many topics. The videos begin with a broad real life problem which needs to be solved, and the concept is taught and discussed while solving the problem. However some important features such as eliciting reasoning and reflection are missing in the design of activities.

The format of the product includes content videos and assessment questions and opportunities for experimentation are missing. Some videos do incorporate the element of inquiry-based learning where the student character observes, asks questions and explores. The pedagogical design could be improved if the learner is explicitly encouraged to perform the reflective activities done by the student characters in the video.

It was observed that at some places, the content was not built on learners existing knowledge.

Illustrative example: Topic - Fractions, Grade 4

In this learning unit the video directly starts with - Let us now learn about "Equivalent Fractions" - some introduction about fractions to connect to what learners already know would have helped learners construct their own understanding about fractions.
Addressing learning gaps/ alternate conceptions (P2) is rated Exemplary. The product has paid careful attention to addressing learning gaps and the content provides opportunities to the learner to identify their alternate conception and it effectively addresses them.

Illustrative examples:

- Grad 3, Basics of multiplication: “4 times 5 vs 5 times 4”, is clearly depicted, and how they are different, although the answer is the same.
- Grade 4, Perimeter: - Problem with ancient units of cubit, feet is discussed in detail to address the alternate conception.
- Grade 4, Maps and Directions: "Sides change with the change in our position with respect to the map".
- Grade 4, Area: “Different shapes can have same area”

4.2.2. Enhancing Learner Experience

Content in context (P3) is rated Exemplary. The context provided in most of the topics is relevant and sufficient. Most learning units help the learner to care about the topic and understand the relevance of why it is important to study that topic. The content videos provided real-life situations and scenarios to motivate the topic and the assessment questions use real-world objects in context of the topic. Overall, the product has done a brilliant job at placing appropriate scenarios and setting in the animated stories which helps the learned to appreciate the content. A lot of real world context is provided in problems such as a milkman selling milk, water used in the household, making drinks, diesel used while traveling, buying from the market, booking tickets, Buying food, clothes, stationery etc.

Illustrative examples:

- Grade 3, Top, front and side view & Concept of Symmetry: Real-life examples such as Leaf, Rangoli, Trees and Kite are used to introduce the concept of different views through student character’s inquiry.
- Grade 3, Measuring Length: Tailor shop context has been provided - This helps the learners to understand the application of measuring length and relate it to their real life.
- Grade 4, Understanding Fractions: Real-life scenarios such as sharing pizza have been used to help learners understand why we need Fractional numbers? Other relatable examples have also been used in context of
  - Music (whole note, 1/2 note and a quarter note)
  - Cooking (Use of fractional number in the cooking recipe)
- Grade 5, Multiples and common multiples: Common multiples are motivated using an example of scheduling football and swimming class where football is scheduled every 3rd day and swimming every 5th day. The common days are all common multiples of 3 and 5, and have a clash of football and swimming.
Learner scaffolding (P4) is rated Valuable. The product provides learners with various scaffolds to support and help the learner form the correct mental model of the concept being taught. The content videos have strong scaffolding embedded in the pedagogy enacted. Most videos are set in a context of a learning scenario and a learning interaction between a student character and a teacher character. The Teacher character scaffolds the understanding of the topic from introducing, solving it for them and then also problematizing the student. The student character asks relevant questions and the teacher character helps them solve it by prompting some reflection questions. Video content has solved examples and the teacher prompts the learners to solve it for example in the learning unit of Grade 3, 4 digit numbers and names - after solving an example the teacher character prompts "We will try one more example, How will we read the number with 1006? Most of the content videos end with a ‘Let’s Revise’ section which very well summarises the topics covered in the video and acts as a good reflective scaffold taught to the learners to concretise their learnings. Few more illustrative example of scaffolds in the content videos:

Illustrative example: Topic - Top View, Front View, Side View: Grade 3

In order to introduce the concept of ‘Top view’ - the video embeds a scaffold to help learners understand the concept by taking the students on a hot air balloon - this really helps the learners to build a good mental model.
**Illustrative example:** Topic - Concept of Place Value. Grade 3

Concept of finding the place value if broken down into simpler steps. The supporting animation in the solved example is helpful in visually understanding the steps involved and building a correct mental model.

Assessment questions (Knowledge check section) provides the learners with Hints but it is not implemented consistently. In some questions Hints help the learners come out of a stuck situation and enable them to solve the problem. Often Hints are mostly prompts and just present the partial solution. This might help learners to start the question but not act as a scaffold. There isn’t proper support for a learner who might be stuck at a particular set of problems and is unable to figure out the right direction to think about the problem.

**Cognitive engagement (P5) is rated Valuable.** The quality of cognitive engagement varies across different chapters as well the content videos within a particular chapter. Among the highly engaging ones, the videos have a conversational style of delivery where multiple cartoon characters (a teacher character generally in the form of a parent or a relative, and learner characters in the form of children) are used. Also, a good signalling in the videos of most topics is observed which brings the attention of the child to the core idea of the concept.

**Illustrative examples**

- In most units of Basics of Division (Grade 3), the cognitive engagement is excellent with a conversational story like tone in the videos, which is highly engaging. The images are also meaningful with proper signalling with bold words and bordering around the images wherever required.
- In Angles (Grade 5), visual cues and signalling are very effective. Angles, sides, vertices of the shape are highlighted and blinked to bring the learners attention.
On the other hand, some videos are low on cognitive engagement. Either the delivery tone is very robotic or the content seems very hurried. In some videos, the vendor branding takes some time (upto 30s) which is irrelevant to the learning or the learner’s interest in any way.

**Illustrative examples:**
- Some videos are too long and require chunking to cater to the learners attention span.
- In some learning units such as Operations on money (Grade 3), Operations on Weight (Grade 5) the conversational voice is robotic.

**Motivational features (P6) is rated Valuable.** The product has some motivational features which encourage the learner to engage further with the content. Some of these features include a proficiency level which is assigned to the child after the initial diagnostic test, a beginner or an expert. At the expert level, a lot of flexibility is offered to go through the content. There are some smileys and motivational comments like ‘You are doing great, champion’, ‘Good going genius’, when a child does well in the pre-test. On the other hand, for a beginner level, the motivational support is almost absent. Also, for a particular chapter, it is not possible for a ‘Beginner’ level profile to become an ‘Expert’ level profile even after doing well consistently for a set of assessment problems, or by having an opportunity to take the pre-test again.

Generally, video content with story based scenarios have an element of affective motivation where the teacher character motivates the student characters to learn, for example If you find it difficult to remember the numbers, I can teach you an easy way - Motivating the learner to try out the subject, Let us do an example together etc.

While a student is solving a set of 10-15 questions, a useful feature that can be included is to provide prompts, rewards, stars, or nudges to continue going. For students performing well, it would be useful to include challenge questions, tournaments or other opportunities for the learner to test themselves, or aspire to solve more difficult questions. Finally, the emojis that are used after every stage are sometimes not aligned with the emotion being conveyed. For example, positive encouragement has been used with emojis that don’t necessarily communicate that emotion.
4.2.3. Assessment of learning

<table>
<thead>
<tr>
<th>Learning objective – assessment alignment (P8)</th>
<th>Pedagogy-assessment method alignment (P9)</th>
<th>Coverage of cognitive levels (P10)</th>
<th>Feedback Quality (P11)</th>
</tr>
</thead>
</table>

Learning objective-assessment alignment (P8) is rated **Exemplary**. All the assessment questions are very well aligned to the learning objective. There is a good resonance between the concepts explained in the video and the level of questions. The objectives are very clearly defined for each set of problems, which are aligned to the content taught as well as NCERT.

Pedagogy-assessment method alignment (P9) is rated **Valuable**. The NEP guidelines recommend an activity and scenario based teaching and assessment for grades 3-5. The product contains scenario-based examples in the content videos, but any kind of activity based assessments are lacking. Most of them are directly question and answer based.

Cognitive levels covered (P10) is rated **Exemplary**. There are sufficient Higher Order Thinking questions where learners have the opportunity to apply the learnt concept in different settings.

Feedback quality (P11) is rated **Potential to improve**. The feedback is just binary and there is a complete absence of any solutions or explanations for the questions. Also, no remedial content is present if the learner responds incorrectly. The learner only gets to know the correct response for the questions. Although for questions with multiple answer inputs, like Match the following, the system does give pointed feedback about which one is correct and which one is wrong. But again, no explanation is provided for either the correct or the incorrect responses.

4.2.4. Adaptivity

| Adaptivity (P13) |
Adaptivity (P13) is rated Exemplary. The system adapts based on the user profile as well as the performance. Profile-based adaptivity is implemented with the help of a pre-test for each chapter based on which the learner’s journey is decided. For example, the child may be an EXPERT based on the pretest. Then, the learner gets more flexibility like fast-forwarding videos or directly moving to the practice questions. In the case a learner gets assigned a ‘beginner’ profile, he/she doesn’t get the same flexibility and has to go through the entire content.

There is adaptivity based on the learner’s performance as well. This has been implemented in the following different ways:

- If an EXPERT profile learner answers multiple questions incorrectly, the profile changes to BEGINNER and the learner is forced to go through the videos, which could earlier be skipped.
- As the learner attempts a set of questions, the system identifies the learning objectives where the learner is weak. The set of questions can be attempted again with only questions from the particular learning objectives appearing in the second attempt.
- The number of similar questions presented within a unit also depends on the learner’s performance. For example, if two similar questions are answered correctly, the next questions are based on a different idea. On the other hand, if one out of two answers are wrong, another similar question is presented.

4.2.5. Teacher support

Teacher support (P14) is rated Valuable. The product contains a teacher dashboard which gives information on each student’s progress. For each chapter, different student groups are shown based on their performance. The product suggests some possible actions and interventions that could be made by the teacher. However, the teacher cannot customize the content or create any worksheets or learning material from the dashboard itself. The grouping is helpful only to a limited extent as the suggestions are very generic and most of the hard thinking work is left to the teacher. An example of a suggestion is: “These children will like a more challenging curriculum. Please give challenging classwork and homework to these students”.

EdTech Tulna: ConveGenius Evaluation Report, Mathematics Grades 3-5, March 2021
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4.3 Technology and Design

Technology & Design measures how well the technological affordances integrate with the pedagogy and content to promote a meaningful learning experience for all learners. This dimension focuses on user interface design and affordances that facilitate learning.

4.3.1. User Interface Design

<table>
<thead>
<tr>
<th>Interface design (T1 and T2)</th>
<th>Learner Navigation and pace (T3)</th>
<th>Universal design (T4)</th>
</tr>
</thead>
</table>

**Interface design: Enable intuitive use (T1)** is rated **Valuable**. The interface is intuitive at the product level. For example, the buttons to select a chapter, playing/pausing the video, checking the answers and moving to the next questions are clear with simple and intuitive text. The assessment questions are organized well within the web template, the hints and explanation icons are available on the top left corner and most visual elements contain clear cues informing users of what they are and how to use them. Correct and wrong answers are highlighted on submit. User has to select and submit answer options and thus allows for confirmation before final submission.

However, there are specific problems, especially in visibility of the question sets.

**Illustrative examples:**

- Difficult to locate the text input field.
- Visibility of Images: The interface’s placeholder for an image in the questions is too small. The images need to be double clicked and even zoomed in certain cases rather than being directly readable. This problem is consistently observed in many chapters.
- The images sometimes contain too much text, hence reducing the visibility.
- In Match the following question type- there is no prompt to help the learner understand how to match the options from each column - this is making the interface difficult to use. Only after trial and error, one can find that the options on the column on the right can be rearranged.
Interface design: Assess consequences of an action (T2) is rated Potential to Improve. The consequences of an action are not conveyed anywhere in the product. There are no prompt messages as feedback to the various user actions like starting a new chapter or progressing to the next learning stage with a chapter. The error handling is also completely missing or not aligned to the action.

Illustrative examples:

- In fill in the blank question type - if the learner clicks on submit without answering - the prompt is “Option not selected” - this might confuse the learner as the action required and consequence prompted is not aligned.
- For an ‘Beginner’ level profile, fast forwarding the videos prevents the learner from moving to further activities. In case the learner tries to fast forward the video, there needs to be a prompt to warn the user and inform them about the consequence.
- While attempting the questions, clicking the continue button multiple times by mistake leads to skipping a few questions, which seems like a bug in the system. In any case, the learner should be prompted to press the button only once.

Learner navigation and pace (T3) is rated Potential to Improve. The learner has limited control over their learning path, has to follow a predetermined structure and go linearly as decided by the system. The assessment question structure is such that there is no scope to go back and forth between questions. The learners also cannot fast forward the videos, which locks the later content if they try to do so.

Universal design of information technology (T4) is rated as Potential to Improve. The product does not provide sufficiently low entry barriers for diverse learner groups. The content videos do not have closed captions, assessment questions sometimes rely on a pure audio mode and thus do not provide sufficient alternatives to multimedia as suggested by the Web Content Accessibility Guidelines (WCAG) principles. It was observed that in one of the diagnostic tests in the learning unit of Numbers (from 0 to 9) that a question asked is to listen to the number and select the number but there is no voice output.

The interface does not allow all functionality to be accessed via a keyboard without the use of the mouse. No evidence of compatibility with an adaptive technology like a screen reader. Labels or instructions are absent to guide user input for example the match following questions in a diagnostic test.
4.3.2. Affordances that facilitate learning

<table>
<thead>
<tr>
<th>Analytics for learners’ progress (T5)</th>
<th>Tool to support problem-solving (T6)</th>
<th>Meaningful interactivity (T7)</th>
<th>Content type - Technology alignment (T8)</th>
</tr>
</thead>
</table>

Analytics for learners’ progress (T5) is rated **Valuable**.

- **Student**: After the pre-test, the learner can clearly see his/her level on various objectives. Also, after every set of questions (called Knowledge Check), the child can see their strengths and weaknesses. For the weakness section, the child can try that part again by clicking on the button next to it. So, the dashboard provides meaningful information and is actionable to some extent.

Illustrative example:

For the teacher, the dashboard provides a grouping of students based on their performance on different learning objectives. However, the teacher cannot take an action or assign appropriate activities to different groups of learners from the dashboard.
Tools to support problem solving (T6) are rated Potential to Improve. No mathematical tools have been observed.

Meaningful interactivity (T7) is rated Valuable. There is basic interactivity like radio buttons and text inputs present which enables the learner to enter the correct response for the questions. There is nothing specific observed which will aid in understanding of the concept. For example, drag and rotate in 3D shapes would be meaningful. However, there is no superfluous interactivity in the product.

Content type - Technology alignment (T8) is rated Exemplary. In most topics, Appropriate and excellent visualizations are used in most topics based on the content type. Properly signalled images and appropriate animations are present. However, sometimes, few aspects of a chapter lack enough visualizations and simulations are completely missing which could be useful for concept understanding building.
Appendix

How does the EdTech Tulna evaluation work?

FRAMEWORKS

EdTech Tulna frameworks define a set of standards for quality design of EdTech products. A rigorous and research backed process is established and applied for the creation of various nuanced frameworks. These frameworks are use-case specific to enable transparent and precise, high stakes decision making. The process includes considering existing research literature, feedback from the ground on multiple stakeholder needs and an appreciation for the quality of solutions currently supplied in the ecosystem.

The frameworks are categorized along the three dimensions of Content Quality, Pedagogical Alignment, and Technology & Design to capture a holistic view of the quality of the product design. The frameworks are also made available at varying levels of depth for varying stakeholder needs and range from supporting governments and institutions in making high stakes, rank based, adoption decisions, to providing a brief overview of the key criteria to be considered while designing a product.

TOOLS

Each Tulna framework is accompanied by a toolkit that is specifically designed to guide experts to evaluate EdTech products. These toolkits are customized to the type of EdTech solution, grades, subjects, to drive meaningful and nuanced evaluations. The tools are informed by research as well as iterative empirical study and tested for inter-rater reliability and validity. A typical toolkit consists of rubrics and reviewer guidelines to enable evaluators to interpret the framework and conduct unbiased evaluations. Each criterion within the framework is rated along a three-point rating scale - ‘Exemplary’, ‘Valuable’, and ‘Potential to Improve’ - indicating the level of alignment with expectations laid out in the framework. Toolkits include supporting materials - videos, templates, and example illustrations - to guide experts while conducting evaluations.

PROCESS

Each product goes through a rigorous review process that takes approximately 160 hours for four grade ranges K-2, 3-5, 6-8, and 9-10. Each review team is designed to be independent and neutral. A typical expert review team consists of 3-4 members who are subject matter experts, instructional designers, user-interaction experts, user-experience design experts, and professionals with experience in teaching and implementing EdTech in field settings. Each review team has an anchor of at least one experienced evaluator.

Each member of the expert review team undertakes a two-week long intensive training on understanding the frameworks and the subsequent application of its toolkits to conduct evaluations. For each product, the review team applies a systematic sampling strategy and decides the representative learning units that will be reviewed. The team collectively reviews a subset of the learning units to check for convergence and establish inter-rater reliability. Team members then individually review the remaining learning units. The team finally meets to synthesize key points and takeaways of each review and elaborates their reviews into an in-depth report, which is overseen by the experienced evaluator.

The role of the product company is limited to an initial demo which supports the review team to deepen their appreciation of the intended use of the product, and its scope. The product company is then provided the final reviews and their unedited responses are published alongside the expert evaluations on the Tulna evaluation center.