

***iHub**

**Digital
Learning
Interactivity
Playbook**



The 'Why' of Our Educational Arsenal

At the heart of our mission at iHub, lies a passionate commitment to elevating the educational landscape through technology. By crafting this resource, we endeavor to bridge the knowledge gaps that edtech startups might face, ensuring that they are well-equipped to navigate the dynamic terrain of educational technology.

Our overarching goal? To bolster the effectiveness of edtech solutions across the continent, thereby enhancing learning outcomes for all. We recognize that the path to innovation can be riddled with challenges, which is why we're here to assist. If you ever find yourself needing guidance or simply wish to discuss your solutions, don't hesitate to reach out to us at edtech@ihub.co.ke.

Let's shape the future of learning together.



Introduction

Imagine a world where online learning isn't just a passive experience, but one where students are immersed, active, and deeply engaged. The recent pandemic brought to light the stark difference between mere online instruction and truly interactive e-learning. The power of interactivity can transform the learning experience, making topics come alive and ensuring they stick in the mind long after the lesson ends. But what exactly do we mean when we talk about "interactivity"? It's that dynamic dance of stimulus and response that breathes life into online modules. From simple course navigation to intricate simulations, the levels of interactivity vary. Yet, it's essential to understand that not every interactive tool offers the same depth of knowledge absorption.

Let's delve deeper.



Levels of Interactivity

Interactivity levels on online educational courses might differ, which can have a significant impact on the overall learning experience. A typical breakdown is as follows:

Level 1: Passive Interaction - The Digital Page-Turners

Picture this: you're scrolling through a digital course, clicking 'next' after each section, absorbing information in a straightforward, linear fashion. That's passive interaction for you. While it may sound basic, this method serves a critical role in eLearning, especially when introducing fundamental concepts. Here's what it involves:

Learner's Role:

Primarily, the student becomes a receiver, absorbing the laid-out content without much autonomy in navigation.

Available Tools:

- Visually engaging simple animations, images, and graphics.
- Assessment through Multiple Select/ Single Select and True/False questions.

Design Considerations:

In regions grappling with internet connectivity challenges, the digital content must be lean and efficient. It means creating resources that are lightweight, work smoothly on mobile devices, and have the option to access offline. A good example is a platform where students can rent digitized textbooks on a pay-as-you-go model. While the central activity remains reading, modern digital books might sprinkle in some multimedia elements to enhance understanding.

Level 2: Limited Interaction - The Interactive Sprinkle

Imagine moving from a simple eBook to an enhanced digital magazine, where not only can you read but also click on interactive elements, watch related videos, or listen to embedded audios. Welcome to the realm of limited interaction.

Nature of the Content:

The experience remains predominantly linear, yet, it allows learners to take mini-detours. These detours could be in the form of a glossary lookup, an external link, or a short interactive exercise.

Learner's Role:

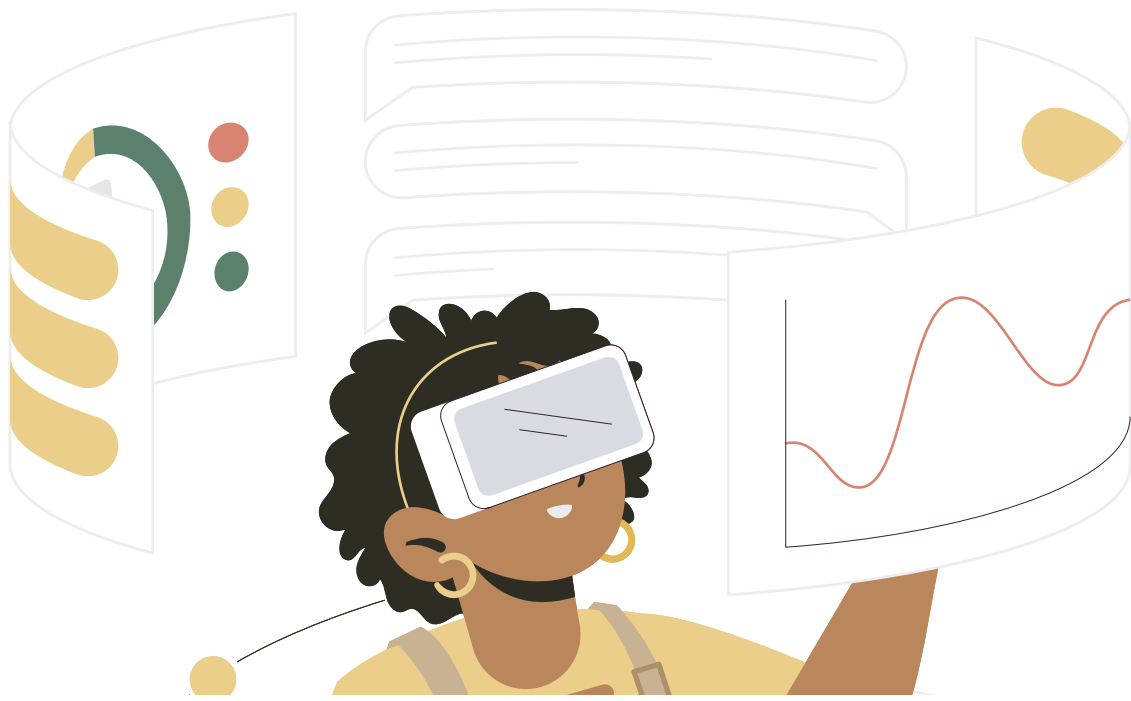
Students venture beyond just receiving; they engage, even if minimally. Their inputs can tweak their learning path, allowing for a more personalized experience.

Available Tools:

- **Multimedia enhancements:** Interactive animated graphics, video, and audio snippets.
- **Navigational aids:** A handy menu, glossary sections, and links to enriching external resources.
- **Engaging tasks:** Simple drag-and-drop activities, matching games, and reflective short-answer questions.

Design Considerations:

As always, in regions with connectivity challenges, it's crucial to design such tools keeping in mind factors like low bandwidth, mobile compatibility, and users with varying tech-savviness.



Level 3: Moderate Interaction -Crafting an Immersive Learning Experience

Picture yourself not just skimming through digital content, but truly immersing in it – diving deep, exploring concepts, and actively participating in the virtual classroom. This is where moderate interaction comes into play. Here, learning isn't just a passive intake but an active adventure. It's akin to entering a rich digital universe where every interaction promises growth.

Nature of the Content:

No longer merely linear, courses at this level become multi-dimensional, adapting to the unique needs and responses of the student. The student isn't just a participant but an active stakeholder in their education.

Learner's Role:

The learner evolves from being a mere consumer to an explorer, a decision-maker, and a critical thinker.

Available Tools:

- **Animated Videos:** Harnessing the power of storytelling, wit, and visuals to unpack complex ideas, ensuring they resonate and stick.
- **Individualized Audio Recording:** Think of these as a personal tutor's notes, tailored to address and guide each student's unique learning path.
- **Complex Simulations:** Dive deep into realistic scenarios, putting knowledge to test and sharpening practical skills.
- **Cases Based on Scenarios:** Real-world challenges beckon, urging students to flex their theoretical muscles in pragmatic situations.
- **Custom Flash Animations:** Envision a playground of concepts, allowing students to explore, probe, and internalize through interactive touchpoints.

Design Considerations:

Cultural & Linguistic Relevance: When sculpting these rich interactive tools, it's paramount to remember Africa's heart – its cultural richness and linguistic diversity. Tailoring content to resonate with local values, aligning with native curricula, and offering it in local languages ensures a wider, deeper impact.

Level 4: Simulation and Game-Based Learning - Where Learning Meets Play

Envision a realm of education where the boundaries between learning and play blur, where students dive deep into interactive worlds, tackling challenges, and embarking on educational quests. Welcome to the peak of interactivity.

Nature of the Content: It's dynamic, adaptive, and deeply immersive. Traditional learning merges with the zest of gaming, making education an exciting journey.

Learner's Role:

No longer just students, learners become players, explorers, and decision-makers.

Available Tools:

- **Gaming Technology:** Turn challenges into quests, lessons into missions. Engage learners deeply through interactive narratives, encouraging them to solve, decide, and think critically.
- **3D Simulations:** Offering a leap from 2D, these simulations transport learners into realistic environments. Think medical students performing virtual surgeries or exploring human anatomy like never before.
- **Rich Multimedia:** Tailored videos, interactive 3D objects, and multimedia elements make learning vivid, memorable, and enjoyable.
- **Digital Avatars:** Step into a personalized virtual world with your own digital avatar, making the experience even more immersive and social.

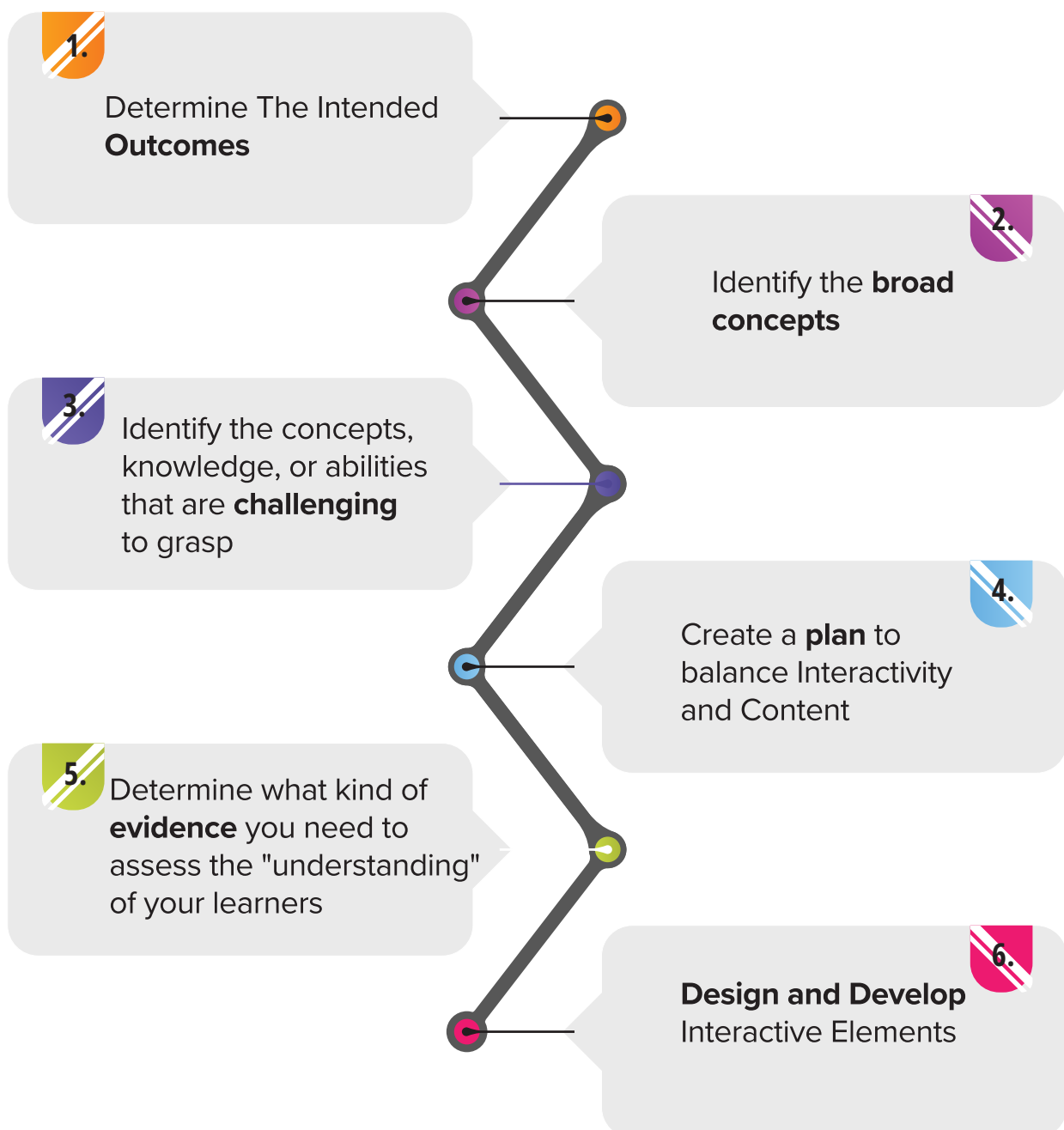
Design Considerations:

With its rich texture, this level demands acute awareness of technical challenges. Be it internet speed, device compatibility, or local relevance, every element must be meticulously crafted to ensure smooth, efficient, and culturally sensitive learning.



A Roadmap to Interactive Learning

ALWAYS start with the learner.



1. Determine The Intended Outcomes:

Your course, ideally, should aid in the development of certain abilities or equip the learner to carry out certain activities. These are the course's main goals, often known as the learning outcomes. When students know the intended outcomes, they can take responsibility for their learning. They can use the interactive elements more purposefully to meet these outcomes

Example

The intended outcomes for a Grade 2 lesson on place value could include the following :

Recognition and Identification: Students should be able to recognize and identify the value of digits in two-digit numbers. They should understand that each digit holds a specific value based on its position in the number (ones and tens).

When students understand that the goal is to understand place value, they can see the relevance of the interactive activities to this goal. This relevance can motivate students to engage more deeply with the activities. For instance, when using base-10 blocks to learn about place value, students know they're not just playing with blocks, but they're learning how to assemble and deconstruct two-digit numbers.

Please be aware, however, that the language you choose to convey the goal of each activity will vary depending on the cognitive ability of the audience and will be quite different from the language you use internally with your design team.



3. Identify the concepts, knowledge, or abilities that are challenging to grasp.

Strategically allocate interactivity to concepts that pose greater difficulty for learners to grasp. By incorporating interactive activities, simulations, or hands-on exercises when introducing complex or abstract ideas, learners are provided with opportunities to actively engage with the material, explore different perspectives, and receive immediate feedback. This approach allows learners to tackle difficult concepts in an interactive and supportive environment, fostering comprehension and mastery.

Example

Among the concepts related to place value, some ideas, concepts, or skills may be more challenging for students to master than others. The level of difficulty can vary depending on the individual student and their prior knowledge. For instance, in understanding place value, concepts like "Understanding the Value of Digits" and "Expanded Form" might be challenging for some students.

- **Understanding the Value of Digits:** Grasping the idea that the value of a digit changes depending on its position in a number can be initially challenging for some students. For example, understanding that the digit "5" represents five tens in the number 352, but represents 5 hundreds in the number 521.
- **Expanded Form:** Representing numbers in expanded form requires students to break down a number into its place value components. This concept can be difficult for students who struggle with decomposing numbers and identifying the value of each digit.

Here, interactivity can come to the rescue. You could design an interactive activity where students need to rearrange digits in different positions to form different numbers, or a game where students have to decompose a number into its place value components. These activities not only make learning fun, but they also allow students to engage with the material actively, fostering understanding and mastery.

2. Identify the broad concepts:

In education, broad concepts are key concepts or themes that underpin an entire subject or discipline. They represent the essential ideas or principles that students should grasp to develop a deeper understanding of the subject matter. Broad concepts help students connect various topics and make meaningful connections between different areas of knowledge.

Example

In understanding place value, there are several critical concepts that students should grasp including

- **Digits:** Understanding that numbers are made up of digits (0-9). Each digit has a specific value depending on its position in a number.
- **Place Value Positions:** Recognizing and understanding the different place value positions, including ones, tens, hundreds, thousands, and beyond. Each position represents a different power of 10.
- **Expanded Form:** Being able to represent a number in expanded form, which shows the value of each digit in a number. For example, the number 725 can be expressed as $700 + 20 + 5$.

In this example, understanding that numbers are made up of digits (0-9) is fundamental to then understanding that each digit has a specific value depending on its position in a number. Having identified broad concepts, you can design assessments that test understanding of these key ideas, rather than merely factual recall.

4. Create a plan to balance Interactivity and Content:

Strike a balance between interactivity and the amount of content to be covered. Avoid overwhelming learners with excessive interactivity or sacrificing important content for the sake of interactivity. Focus on creating meaningful and purposeful interactive elements that align with the learning objectives.

Decide whether interactive activities, multimedia elements, simulations, virtual labs, quizzes, or videos would enhance the learning experience and promote understanding. Use multimedia strategically to support understanding and provide additional context or examples. Creating meaningful interactive elements that align with the learning objectives ensures that the activities contribute directly to the achievement of those objectives. This avoids the pitfall of "activity for activity's sake" where an interactive element may be fun but doesn't enhance the understanding of the course material.

Example

For instance, in teaching place value, a balance might be struck by using a digital whiteboard (multimedia) to explain the concept and then a hands-on activity (interactivity) with virtual manipulatives to allow students to practice grouping and regrouping ones and tens. The interactive activity is directly related to the learning objective, and the multimedia component helps to visualize the concept, thereby promoting understanding.



5. Determine what kind of evidence you need to assess the "understanding" of your learners.

This involves considering the various ways in which learners can demonstrate their understanding and selecting appropriate assessment methods accordingly. Assessing understanding goes beyond simply measuring factual knowledge or memorization. It aims to evaluate learners' ability to apply knowledge, make connections, analyze information, and solve problems within the given context. The evidence sought should provide insights into learners' depth of comprehension, critical thinking skills, and their capacity to transfer knowledge to real-world situations.

The choice of evidence will depend on the learning objectives, the nature of the subject or topic being assessed, and the desired outcomes. Some common forms of evidence to assess understanding include:

- **Performance Tasks:** Assigning tasks or projects that require learners to apply their understanding in practical ways. This can include problem-solving activities, simulations, case studies, or experiments.
- **Constructed Responses:** Providing open-ended questions or prompts that require learners to articulate their understanding through written or verbal explanations. This can involve essays, reflections, or oral presentations.
- **Application in Real-World Contexts:** Assessing learners' ability to transfer their understanding to real-world situations, demonstrating how they can apply their knowledge in authentic scenarios.
- **Demonstrations or Performances:** Evaluating learners' ability to perform specific skills or tasks that showcase their understanding. This can include presentations, demonstrations, debates, or artistic creations.
- **Concept Mapping or Diagramming:** Requesting learners to create visual representations that illustrate their understanding of the relationships between different concepts or components.
- **Peer and Self-Assessment:** Encouraging learners to assess their own understanding and that of their peers through self-reflection, peer feedback, or collaborative evaluations.

Make sure to sprinkle assessment tasks throughout the lesson.

In the context of a Grade 2 lesson on place value, for instance, you might ask students to perform a task (like creating a two-digit number from a given number of ones and tens), answer open-ended questions about place value, apply their understanding in a real-world context (like using place value to count items or money), and create a concept map of what they've learned about place value. These different forms of evidence would provide a comprehensive picture of each student's understanding and allow you to tailor your instruction accordingly.



6. Design and Develop Interactive Elements:

Be realistic about what is achievable given your circumstances. The process of creating interactive elements can be time-consuming and may require certain resources or technical skills. If you have limited time or resources, prioritize interactivity for the most critical or complex topics. Simple interactive elements can still enhance learning. For example, instead of creating a complex game, you could create a simple interactive flashcard set with pictures and labels of different plants. Provide clear instructions and guidance for each interactive element.

- **Clearly communicate the goals, expectations, and instructions** to ensure that learners understand how to interact with the element and what is expected of them. Incorporate tooltips, prompts, or tutorials where necessary to support learners in navigating the interactive elements.
- **Incorporate immediate and constructive feedback within the interactive elements.** Provide feedback that reinforces correct responses or offers guidance for incorrect answers. Implement progress tracking mechanisms that allow learners to monitor their progress and achievements within the interactive activities.

In the context of a lesson on place value, for instance, an interactive element might be a simple drag-and-drop game where students place digits in the correct positions to form a number. Clear instructions would guide learners on how to use the game, immediate feedback would correct or reinforce their answers, and progress tracking would show how many questions they've answered correctly.

References

Carter , R., Lange, M.(2005). Successful eLearning Strategies Interactive eLearning for an Interactive Age

Ehrlich, D. B. (2002). Establishing connections: Interactivity factors for a distance education course. *Educational Technology & Society*,5(1), 48-54. Retrieved 20-10-2013

Gagné, R. M., Wager, W. W., Golas, K. C., & Keller, J. M. (2005). *Principles of instructional design* (5th ed.). Belmont, CA:

Roblyer, M. D., Ekhaml, L.(2004), How Interactive are YOUR Distance Courses? A Rubric for Assessing Interaction in Distance Learning,

Online Journal of Distance Learning Administration, Volume III, Number II.

Seels, B., & Glasgow, Z. (1998). *Making Instructional design decisions* (2nd ed.). Upper Saddle River, NJ: Prentice Hall.