Research Foundation: IgnitePanel by Hatch™

IgnitePanel by Hatch™:

IgnitePanel by Hatch™ is a game-changing interactive panel that revolutionizes early childhood classroom instruction thanks to its inclusion of standards-aligned early learning lessons and activities. Educators can effortlessly plan and implement research-based activities tailored to individual learners. IgnitePanel connects with Insights™, Hatch's powerful educator dashboard, for easy access to critical usage and activity data. IgnitePanel features a new and expanded eBooks library and more robust offline activity suggestions. You will also find updated correlated standards for Teaching Strategies GOLD and DRDP, and embedded professional development for teachers covering standards and learning objectives. The all-new IgnitePanel brings even more capability to classroom planning. IgnitePanel empowers teachers to save student work samples from a library of activities, allowing a panoramic understanding of pre- and post-instruction impacts. Streamline lesson planning and monitoring student growth with IgnitePanel, unlocking a new level of efficiency and engagement in early childhood classrooms.

Understanding the critical role of educators in the development of young children's capacity for learning, we designed IgnitePanel with both the developing child and early educators in mind. To inform the development of this product, we built a foundational framework backed by research.

About Hatch:

Hatch Early Learning is the trusted leader in early education, providing administrators and teachers with actionable data on student readiness in multiple domains. Our research-based solutions offer valuable insights into student progress, enabling informed decision-making and targeted interventions. Streamline paperwork, save teacher time, collaborate more effectively with families, and foster a supportive educational environment with our intuitive platforms. Join Hatch Early Learning to empower educators, enhance student outcomes, and unlock the full potential of your early learners.

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This document walks through the intentionality of and the "why" behind the development of IgnitePanel, starting, of course, with the child.

The Child

Motivation

Motivation refers to the internal processes that energize, direct, and sustain goal-oriented behavior (Deci & Ryan, 1985). It encompasses the drive and desire individuals experience to initiate and persist in activities, influenced by both intrinsic and extrinsic factors. Motivation plays a critical role in various domains of human behavior, including learning, achievement, and social interactions. Research suggests that fostering intrinsic motivation promotes higher levels of engagement, persistence, and performance compared to extrinsic motivators alone (Deci & Ryan, 1985). Understanding the complexities of motivation is essential for educators, as it informs instructional practices and interventions aimed at enhancing children's intrinsic motivation and promoting optimal learning outcomes.

Two theories of motivation help to explain how IgnitePanel was designed to spark and maintain children's motivation.

Expectancy-Value Theory

Expectancy-value theory (EVT) is a theory of motivation that suggests that individuals are motivated to engage in activities when they believe they can succeed (expectancy) and perceive the outcomes of the activity as desirable or important (value; McEldoon, 2023).

Expectancy refers to individuals' beliefs about their capability to perform a task successfully. It involves the perception of the likelihood of success or failure in achieving a particular outcome. According to EVT, individuals are more likely to be motivated to engage in activities when they believe they can succeed. This aspect of EVT is influenced by Bandura's concept of self-efficacy, which emphasizes individuals' beliefs in their ability to execute specific actions to achieve desired outcomes (Bandura, 1977).

Because IgnitePanel is a teacher-directed tool, teachers can provide immediate feedback, which helps children understand their progress and achievements, reinforcing their belief in their ability to learn and succeed. With the ability to save activities and create portfolios, teachers can use IgnitePanel to track children's progress over time. This allows educators to show children how far they've come and what they have accomplished. Seeing tangible evidence of their improvement can boost children's confidence in their own abilities. Additionally, teachers can tailor

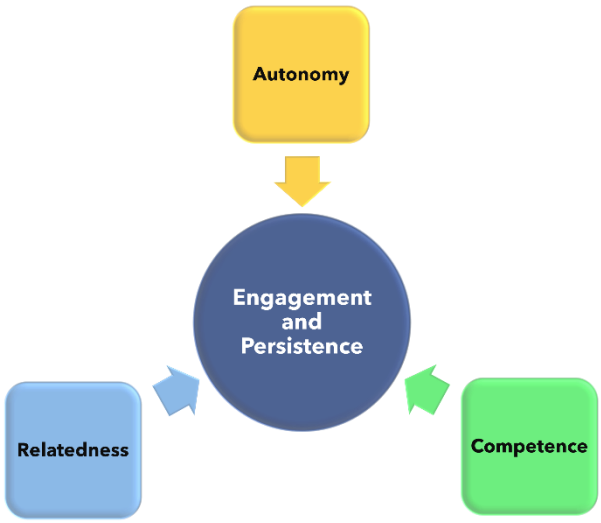
activities to each child's individual learning needs and preferences. When children can engage with content that matches their skill level and interests, they are more likely to feel competent.

IgnitePanel was designed to scaffold learning, with activities being shown to children in gradually increasing difficulty as children demonstrate mastery of concepts. As children successfully navigate through increasingly challenging tasks, they build confidence in their ability to tackle new and unfamiliar problems.

Value pertains to the importance or desirability of the outcomes associated with an activity. EVT suggests that individuals are motivated to engage in activities when they perceive the outcomes as personally relevant, enjoyable, or beneficial. Values can vary from intrinsic (internal satisfaction) to extrinsic (external rewards or consequences; Eccles & Wigfield, 2002). The perceived value of outcomes is influenced by individuals' interests, goals, and beliefs about the significance of the activity. IgnitePanel helps children explore and discover new concepts, ideas, and perspectives. By fostering a sense of curiosity and wonder, IgnitePanel activities can help children develop an intrinsic motivation to learn for the sake of learning itself. IgnitePanel also facilitates collaborative learning experiences where children can work together to solve problems or achieve common goals. Collaboration can foster a sense of belonging and social connection, which can enhance children's intrinsic motivation to participate in learning activities.

Self-Determination Theory

Self-determination theory (SDT) posits that humans have three basic psychological needs—autonomy, competence, and relatedness—and that fulfilling these needs is crucial for intrinsic motivation and well-being. SDT suggests that when these three basic psychological needs are fulfilled, individuals are more likely to experience intrinsic motivation, which drives engagement and persistence in activities.



Autonomy refers to the sense of volition and choice in one's actions. According to SDT, individuals are motivated when they feel a sense of autonomy, meaning that they have control over their behavior and decisions. Supporting autonomy can lead to

higher levels of intrinsic motivation and well-being (Deci & Ryan, 1985). During IgnitePanel activities, children actively engage with the content. By physically interacting with the content on the board—whether solving puzzles, dragging and dropping elements, or drawing—they have a sense of control over their learning process. IgnitePanel also allows children to progress at their own pace. Children can spend more time on concepts they find challenging and move quickly through material they understand well, promoting autonomy in their learning journey. These activities also help to facilitate exploration and discovery-based learning, where children can explore different aspects of the content in their own way, fostering a sense of curiosity and autonomy.

Competence pertains to the feeling of effectiveness and mastery in one's actions. SDT suggests that individuals are motivated when they perceive themselves as competent in their activities. Deci and Ryan (2000) proposed that supporting individuals' competence by providing optimal challenges and opportunities for skill development fosters intrinsic motivation. IgnitePanel activities are intentionally scaffolded. Teachers can select the activity that is right for each child so that they are exposed to the appropriate amount of challenge that leads to intrinsic motivation. Additionally, for most skills, IgnitePanel includes multiple levels of difficulty, which allows children to engage with learning activities that progressively increase in challenge, which can lead to children experiencing feelings of competency and mastery as they progress.

The final psychological need, relatedness, refers to the need to feel connected to others and to experience a sense of belongingness. SDT asserts that social relationships and connections are essential for motivation and well-being. Deci and Ryan (2000) highlighted the importance of supportive relationships in satisfying the need for relatedness and promoting intrinsic motivation. IgnitePanel activities allow for instruction in pairs or small- or large-group settings. Children have the opportunity to work, play, and learn with other children, which can help them form and deepen social connections and relationships. Because IgnitePanel is a teacher-directed tool, it also allows children to work on forming and strengthening feelings of connectedness and relatedness with their teacher or instructor.

Playful Learning

Playful learning refers to an educational approach that incorporates elements of play into the learning process. IgnitePanel was built on the principle of playful learning and provides children with engaging and interactive experiences that foster autonomy, enjoyment, and curiosity in the learning process. Playful learning involves creating engaging and interactive learning experiences that are enjoyable, exploratory, and intrinsically motivating for learners (Zosh et al., 2022). Playful learning is unique in that experiences build on children’s curiosity, exploration, problem-solving, and

experimentation, which allows teachers to increase learning for children as they play (Zosh et al., 2022). According to Mardell et al. (2016), there are a multitude of benefits when children learn through play, including the following:

- **Intellectual development:** When children play, they are building skills related to multiple domains of development (science, math, literacy, etc.; Cheng, 2011, as cited in Mardell et al., 2016). They are also building content knowledge and their creative thinking skills (Bateson & Martin, 2013, as cited in Mardell et al., 2016).
- **Social development:** During play, children have the opportunity to start making sense of relationships (Shonkoff & Phillips, 2000, as cited in Mardell et al., 2016). They practice skills like reading cues, listening, and taking another's perspective. They build friendships; learn to share ideas, express themselves, and compromise; and start to practice collaboration (Mraz et al., 2016, as cited in Mardell et al., 2016).
- **Executive function development:** Children learn and practice skills for self-regulation during play, like delaying gratification, controlling impulses, and managing their attention (Elias & Berk, 2002, as cited in Mardell et al. 2016). Self-regulation is related to peer acceptance and positive self-worth (Frost, et al., 2012, as cited in Mardell et al., 2016).
- **Physical development:** Play provides opportunities for children to develop muscle control, coordination, reflexes, strength, and an understanding of their body's abilities and limits (Frost, 2015, as cited in Mardell et al., 2016).

Indicators of Playful Learning

While our understanding of playful learning is still evolving, Mardell et al. (2016) have identified three overlapping indicators of playful learning. These indicators represent the psychological states of children during play as well as observable behaviors. The three indicators of playful learning are choice (autonomy, power, and ownership), delight (excitement and joy), and wonder (curiosity and challenge). When all three of these indicators are present, a child is most likely engaged in playful learning. IgnitePanel's pedagogical design includes numerous opportunities for choice, delight, and wonder and the intersection of all three indicators.

Mardell et al. (2016) describe what choice, delight, and wonder feel and look like.

Choice feels like empowerment, autonomy, ownership, or intrinsic motivation. This can look like children making and changing rules, having and sharing ideas, choosing collaborators and roles, setting goals, negotiating, choosing how long to play, being spontaneous, or moving around (Mardell et al., 2016). IgnitePanel activities give children ample opportunity for autonomy and choice in several ways. First, through intentional interaction with the board's content, children experience empowerment in shaping their learning experiences. IgnitePanel also allows children to learn and progress at a pace that suits them best. In addition, IgnitePanel can be used with pairs, small groups, or large groups of children, which gives children opportunities to practice collaborating, negotiating, and making or changing rules for play.

Delight feels like enjoyment, excitement, satisfaction, inspiration, or belonging. This can look like children smiling and laughing, joking or being silly, singing, succeeding, celebrating, anticipating, being altruistic, competing, or focusing their attention (Mardell et al., 2016). IgnitePanel games are designed with young learners in mind, and they are purposefully crafted to bring fun, enjoyment, and engagement to young children. IgnitePanel games involve elements that are interesting to young children, and they are built to follow children's interests and capture their attention. Additionally, because IgnitePanel can be used in pairs or small or large groups, children have the ability to engage in social interactions during play that allow them to experience belonging.

Wonder feels like curiosity, novelty, surprise, engagement, fascination, or challenge. This looks like children improvising, learning from mistakes, imagining, taking risks, trying, pretending, inventing, expressing excitement, creating, or exploring (Mardell et al., 2016). Because IgnitePanel is designed to be integrated into classroom learning routines, children have ample opportunities to learn from their experiences, try new things, explore, and try again using a wide range of IgnitePanel learning activities.

Social and Collaborative Learning

Social learning, as described by McEldoon (2023), emphasizes the importance of learning within a social context, where children can observe and learn from one another. Through IgnitePanel's activities, students can engage in peer-to-peer interactions, imitating behaviors and expanding their understanding based on their observations of their peers.

Collaborative learning refers to learning experiences that take place in groups of two to six learners who are intentionally working to "negotiate, decide, and/or construct knowledge together to reach a complex common goal" (McEldoon, 2023, p. 42). With IgnitePanel, teachers can plan for collaborative learning activities that involve interactive exercises where students collaborate to solve problems and complete tasks. These collaborative tasks require students to communicate, negotiate, and share ideas.

By leveraging social and collaborative learning principles, IgnitePanel can help educators create dynamic and engaging learning experiences that promote cooperation, critical thinking, and teamwork among students and enhance their overall learning. IgnitePanel can serve not only as a platform for collaboration or social learning but also as a tool to showcase children's accomplishments and celebrate their successes. Teachers can display student work, presentations, or achievements, providing opportunities for recognition and praise. This public acknowledgment of accomplishments reinforces children's sense of pride and motivation to continue learning and achieving.

Learning by Observing

Observational learning is a potential outcome of social or collaborative learning. Children, like adults, can learn from models or examples, such as a live demonstration, instructions, or even symbolic modeling. According to McEldoon (2023), learning through observation has three phases:

1. **Watching:** First, learners watch or observe the model and pay attention to their actions and outcomes.
2. **Trying:** Next, learners try to imitate or emulate the model's actions and compare themselves to their peers.
3. **Learning:** Finally, learners reflect on their performance, thinking about their behavior or actions, assessing their performance, and changing their thinking or behavior based on their perceived performance.

Because IgnitePanel has a flexible model for implementation, teachers have the opportunity to help children engage in all three stages of learning by observation. Students can observe other children participating in IgnitePanel activities during small- or large-group time. Then, students can try by imitating or modeling what they observed when they are playing with IgnitePanel, either individually, in pairs, or in a small- or large-group setting. Finally, students are able to reflect on their learning experiences and use their thoughts to adapt their thinking or behavior, which can be applied to future IgnitePanel activities or any other learning that children engage in.

Social and Collaborative Play

Throughout the early years of childhood, children undergo a crucial phase of learning positive and successful interaction with their peers (Bovey & Strain, 2003). These positive peer relationships not only hold significance during childhood but also extend their impact throughout later stages of life (Ladd, 1999). Social or collaborative play denotes the cooperative interactions among peers within a play setting, providing children with invaluable opportunities to hone essential social skills (van der Aalsvoort, 2010). When they engage in collaborative play, children exhibit behaviors such as sharing resources, assigning roles, exchanging ideas, and collectively establishing social norms and play rules, all of which are pivotal for the cultivation of diverse social and emotional competencies. Numerous research

studies have evidenced that preschoolers engaging in cooperative games demonstrate heightened levels of prosocial behavior and cooperative conduct (Bay-Hinitz et al., 1994; Finlinson et al., 2000).

IgnitePanel provides opportunities for children to practice various skills for social or collaborative play. As children co-engage, collaborate, and work together, they have opportunities to practice getting a peer's attention, sharing ideas, disagreeing, coordinating actions, and offering support or encouragement. Children are presented with many opportunities to collaborate by communicating their needs, celebrating together, asking for help, or helping others.

Language is "the heart of life's experience, particularly for children who are developing language critical to cognitive development and learning"
- PBS, n.d., para. 4.

Language Development Through Collaborative Learning and Play

The American Speech-Language-Hearing Association notes that language is "the heart of life's experience, particularly for children who are developing language critical to cognitive development and learning" (PBS, n.d., para. 4). But the skills and understanding of language are also "fundamental for academic and professional success" (Colorado Department of Education, 2020, para. 1). Research studies show that preschool children demonstrate increasing levels of spoken communication and cooperation when using interactive technology, and technology has been found to be more effective than many toys in stimulating vocalization in preschoolers (McCarrick & Li, 2007).

When children engage with IgnitePanel activities in pairs or groups, they have various opportunities to practice critical language skills, including the following:

- **Joint attention:** Joint attention occurs when two or more individuals focus on the same object or event. During IgnitePanel learning, children engage in joint attention activities as they play and interact together. Because IgnitePanel is often used for pairs or small- or large-group activities, children have opportunities to engage in activities that require cooperation and shared attention, such as interactive storytelling or completing puzzles. These joint attention activities can facilitate language development as children label objects, describe actions, and share experiences.
- **Conversation:** Engaging in conversations with peers or adults provides children with opportunities to practice language skills. IgnitePanel activities offer many opportunities for back-and-forth exchanges. When children play with one another in small or large groups, they need to communicate what they see and what actions they should take. Children also need to practice skills for negotiating, problem-solving, and coordination. These exchanges

during IgnitePanel play help children learn about turn-taking, listening, and responding appropriately.

- **Imitation:** Children often learn language by imitating the speech patterns and vocabulary of those around them. During IgnitePanel play and social interactions, children can observe how others use language and attempt to replicate it.
- **Problem-solving:** Collaborative problem-solving activities encourage children to communicate with each other to achieve a common goal. While collaborating or working through IgnitePanel activities together to solve problems or complete tasks, children can practice discussion, negotiation, and sharing ideas while developing their language skills.

When designing and creating IgnitePanel, Hatch Early Learning recognized the importance of foundational language skills. A certified speech-language pathologist was used as the voice actor who guides children through all IgnitePanel activities to ensure appropriate and effective instruction when teaching letter sounds, phonemes, and other phonological concepts.

The Educator

Joyful Rigor: A Comprehensive Learning Framework

Learning standards are crafted to ready children for success and resilience in the 21st-century landscape. The early stages of education, encompassing preschool and early elementary years, serve as pivotal periods for children's holistic development and their preparation for global citizenship in the digital age. All educators have comprehensive objectives, standards, and skills they are required to meet, which encompass these key foundational skills. Additionally, during this time, children refine critical-thinking abilities and actively engage with diverse subjects, such as science, technology, social studies, literacy, language, and mathematics. They also acquire the essential knowledge, skills, and capacities required to navigate an increasingly complex world safely and productively (Slade & Griffith, 2013). IgnitePanel covers four foundational domains of learning and development, with a special focus on literacy and mathematics.

Literacy

The emphasis on children's literacy development, contextualized within the challenges of the 21st-century landscape, has influenced both national (Common Core State Standards for English Language Arts & Literacy) and state-level standards and has become a cornerstone of high-quality educational programs and products. Research shows that early conventional reading and writing skills—including alphabet and letter–sound knowledge, phonological awareness, print knowledge, concepts of

print, reading readiness, oral language, and writing—are predictive of later literacy success (National Early Literacy Panel, 2008).

IgnitePanel addresses literacy through a well-rounded collection of literacy focus areas, including alphabet knowledge, craft and structure, language, phonics and word recognition, phonological awareness, comprehension, and writing. Within these focus areas is a wide range of activities focused on mastery of specific foundational literacy skills.

Mathematics

In early childhood and the primary grades, it's crucial for children to acquire mathematical skills and knowledge while honing their aptitude for thinking and problem-solving in mathematical contexts (National Research Council, 2001). Mastery of foundational mathematics skills, such as numeracy, is related to positive long-term outcomes, including grade retention, college attendance, and later math achievement (Claessens & Engel, 2013; Davis-Kean et al., 2021).

IgnitePanel's approach to mathematics covers a comprehensive range of mathematical focus areas spanning counting and cardinality, geometry, measurement and data, operations and algebraic thinking, and number operations. These areas feature a wide array of activities designed to achieve proficiency in essential mathematics skills.

Science

In the early years, children's scientific knowledge and understanding focus on developing their scientific thinking through "action" and "doing" (National Science Teaching Association, 2013). Early scientific exploration helps lay the foundation for later achievement in science and promotes inquiry skills and a lifelong interest in learning (Klahr, 2000; Sackes et al., 2010)

IgnitePanel's curricular content includes several science activities that help children practice skills for inquiry and exploration. Children have the opportunity to develop appropriate science vocabulary and explore science topics, such as weather, animals, life cycles, and an introduction to the scientific method.

Literacy skills, like vocabulary development, reading comprehension, and verbal communication, are foundational skills required for science learning and exploration. According to the National Research Council (2000), literacy skills support scientific inquiry by enabling children to gather information, evaluate evidence, and communicate their findings effectively. Due to the importance of foundational literacy skills in scientific exploration, IgnitePanel's science activities are scaffolded within its literacy activities. IgnitePanel's educational content is more heavily weighted toward

mathematics and literacy. The literacy activities are designed to help children begin to master skills that support more advanced practice of science and inquiry skills.

Social Studies

The significance of 21st-century skills extends beyond children's science instruction. In fact, these essential skills—such as inquiry, analysis, critical thinking, and active participation—begin with children's engagement in social studies. This includes their understanding of self, awareness of their surroundings, knowledge of diverse communities, and responsible citizenship both locally and globally (National Council for the Social Studies, 2017).

Within IgnitePanel's activity library, there are numerous social studies activities designed to assist children in cultivating skills that foster an understanding of themselves, others, and the surrounding world. These activities provide children with the chance to expand their vocabulary and delve into subjects like community helpers, habitats, societal dynamics, individuals, and geographic representations.

Literacy skills are also essential to social studies education. Research indicates that strong literacy skills enable children to acquire and understand this specialized vocabulary and build skills for comprehending texts and understanding historical events (Bredekamp, 2016; Moss et al., 2015). Hatch recognizes that literacy skills are foundational to social studies learning. Therefore, like IgnitePanel's science activities, social studies curricular activities are scaffolded within IgnitePanel's literacy activities to establish fundamental skills that support more advanced social studies instruction.

Instructional Practices

Adaptability and Flexible Implementation

Flexible implementation is a beneficial instructional practice for teachers due to its ability to cater to the diverse needs and learning styles of students, thereby promoting engagement and understanding. According to Hattie (2011), flexible implementation allows teachers to adapt their teaching methods, materials, and approaches based on the specific requirements of individual learners or groups of learners. This adaptability enables teachers to differentiate instruction effectively, providing personalized learning experiences that are more likely to resonate with students. Moreover, flexible implementation fosters a dynamic and responsive learning environment in which educators can capitalize on teachable moments and adjust their strategies in real time to address students' immediate needs (Tomlinson & Allan, 2000). By being flexible in their instructional practices, teachers can accommodate unexpected challenges or opportunities for deeper exploration, enhancing the overall effectiveness of instruction.

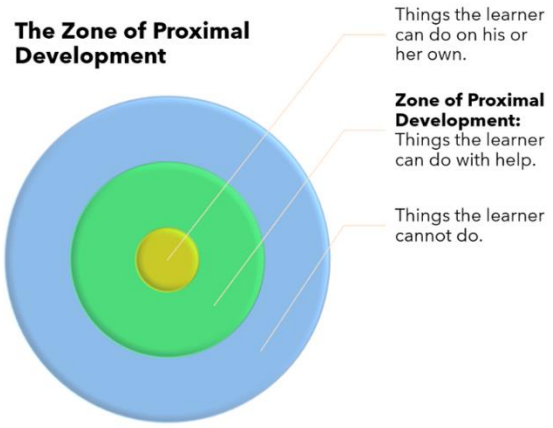
IgnitePanel was specifically designed for flexible implementation by teachers. IgnitePanel activities can be used at any time of a teacher's instructional day. Teachers can include IgnitePanel in their daily or weekly instructional routines or utilize it to adapt to an emerging need or situation. Additionally, IgnitePanel can be used with different groups or audiences. Teachers can use IgnitePanel activities one-on-one with individual children or with pairs, small groups, or large groups. The Daily Activities Plan feature of IgnitePanel allows teachers to create different lesson plans for different groups of children and quickly and easily locate and launch them. Another element of IgnitePanel's flexible implementation is templates for customizing activities. When customizing an activity, teachers can utilize different media elements, such as number or letter cards and various pictures, to create tailored content for their students. This feature allows teachers to modify existing IgnitePanel activities to make them more meaningful for their specific class in terms of content, structure, delivery method, or even culture or language. This feature also allows teachers to extend specific learning activities further to cover the topics in more depth.

Scaffolding

Scaffolding in education refers to a teaching approach in which educators provide temporary support, guidance, and structure to help students acquire new knowledge, skills, or understanding beyond their current abilities (Wood et al., 1976). This support is gradually withdrawn as students become more proficient and independent in their learning (van de Pol et al., 2010).

IgnitePanel provides teachers with an easy-to-implement library of activities designed with educational scaffolding in mind. IgnitePanel's curriculum was crafted with a focus on scaffolding, ensuring that educational activities are structured to support children's learning progression. Emphasizing mathematics and literacy, the curriculum acknowledges the role of these domains in fostering foundational skills that are transferable to other areas of learning. Thus, IgnitePanel content prioritizes math and literacy instruction as a starting point, facilitating children's development of skills and competencies across various domains. Many IgnitePanel activities offer multiple levels of the same core skill, where each increased level represents additional difficulty. This intentional design creates a ladder, where children, with the support of teachers, can progress from easier to more challenging skills at their own pace.

The Zone of Proximal Development



Appropriately scaffolded learning activities are designed to support each child in their zone of proximal development (ZPD), a concept introduced by Lev Vygotsky (1978). According to Vygotsky, the ZPD refers to the range of tasks that children can perform with the support of a more knowledgeable other, such as a teacher or peer, but cannot yet accomplish independently (Vygotsky, 1978). Scaffolded learning activities involve providing structured support to help children progress through their ZPD and achieve higher levels of understanding and competence. This support is tailored to each child's individual needs and abilities, ensuring that they are challenged but not overwhelmed by the task at hand. Scaffolding allows children to build on their existing knowledge and abilities while stretching their capabilities, which fosters growth and development. Teacher support can take various forms, including modeling, prompting, questioning, providing feedback, and offering cues or hints.

IgnitePanel activities are purposefully scaffolded. Teachers can engage in IgnitePanel activities with children to determine their understanding or competency. Then, educators can choose the activity level that matches a child's current understanding and provides an appropriate amount of challenge. During IgnitePanel activities, teachers can effectively guide children through the ZPD, enabling them to master new skills and concepts with assistance and eventually develop the ability to perform these tasks independently. Most IgnitePanel activities do not self-check or autocorrect when a child selects an incorrect answer. This gives teachers the opportunity to provide scaffolded and appropriate feedback and just-in-time guidance to help children advance through their ZPD.

The Gradual Release of Responsibility Model

The gradual release of responsibility (GRR) model is an instructional framework that outlines a progression of support from the teacher to the student, with the ultimate goal of promoting independent learning. Developed by Pearson and Gallagher (1983), the GRR model emphasizes the gradual transfer of responsibility for learning from the teacher to the student through the progression of four phases: teacher modeling, guided instruction, collaborative learning, and independent practice. Teachers can utilize the GRR model through IgnitePanel:

- **Phase 1: Teacher modeling:** In this initial phase, the teacher demonstrates or models the skills, strategies, or processes that students are expected to learn. This modeling may involve thinking aloud, explicitly showing how to perform a task, or providing examples of successful problem-solving. Teachers can complete any IgnitePanel activity while engaging in intentional modeling to individual children, pairs, or small or large groups. Each activity includes lesson plans that give the teacher guidance on implementation.
- **Phase 2: Guided instruction:** During this phase, the teacher provides structured support and guidance as students engage in practice activities. This support may include scaffolding, prompting, and providing feedback to help students apply the skills or strategies they observed during the modeling phase. Teachers can guide children through completing IgnitePanel activities, offering as much or as little support and guidance as needed.
- **Phase 3: Collaborative learning:** In this phase, students work together in small groups or pairs to apply the skills or strategies they have learned. The teacher continues to monitor and provide support, as needed, but students take on more responsibility for their own learning. In pairs or small groups, children work together to complete IgnitePanel activities, while teachers monitor and support them as needed.
- **Phase 4: Independent practice:** In the final phase, students work independently to demonstrate their mastery of the skills or strategies. The teacher acts as a facilitator, providing feedback, monitoring progress, and offering additional support, as needed, but students are primarily responsible for their own learning. Children can work independently to complete IgnitePanel activities, while teachers provide feedback and support only as needed.

Differentiated Instruction

Differentiated instruction is an instructional approach that acknowledges and accommodates the diverse learning needs, interests, and readiness levels of students in the classroom. Differentiated instruction involves tailoring instruction to meet the individual needs of students by adjusting content, process, and product based on students' readiness, interests, and learning profiles (Tomlinson, 2017). This approach recognizes that students vary in their learning styles, preferences, and abilities and aims to provide all students with equitable access to learning opportunities (Hall et al., 2003).

Differentiated instruction includes several key components, all of which can be achieved through IgnitePanel activities:

- **Flexible grouping:** One key component of differentiated instruction is flexible grouping, where students are grouped and regrouped based on their specific learning needs and interests (Tomlinson, 2017). This allows educators to provide targeted instruction and support to small groups or individuals, ensuring that each student receives instruction that is responsive to their unique learning profile (Tomlinson et al., 2008). IgnitePanel can be implemented with individual children, pairs, and small and large groups, which allows teachers to create flexible groups and target their instruction.
- **Varied assessments:** Differentiated instruction also involves using varied assessments to measure student learning and progress. Instead of relying solely on traditional assessments, such as tests and quizzes, educators may use performance tasks, projects, portfolios, and other authentic assessments that allow students to demonstrate their understanding in multiple ways (Stiggins, 2002). IgnitePanel activities can serve as one form of ongoing formative assessments for teachers. In addition, IgnitePanel offers assessment tools for several math and literacy competencies. Teachers can even collect samples of children's work in IgnitePanel that can be used to inform or complete assessments.
- **Individualized learning paths:** Another aspect of differentiated instruction is providing students with individualized learning paths. This may involve offering choice and autonomy in learning activities, allowing students to pursue topics of interest, and providing opportunities for self-directed learning (Wormeli, 2006). Because IgnitePanel is a teacher-directed tool, educators can utilize IgnitePanel activities to create individualized learning paths for their students and even allow children to select their own activities based on their interests.
- **Continuous assessment and feedback:** Differentiated instruction requires ongoing assessment and feedback to monitor student progress and adjust instruction accordingly. Educators use formative assessment strategies to gather data on student learning and provide timely feedback that helps students understand their strengths and areas for growth (Black & Wiliam, 1998). IgnitePanel activities, and specific math and literacy assessments, can provide opportunities for teachers to collect information about student achievement, provide feedback to children, and use that data to inform their instruction.

Assessment and Progress Monitoring

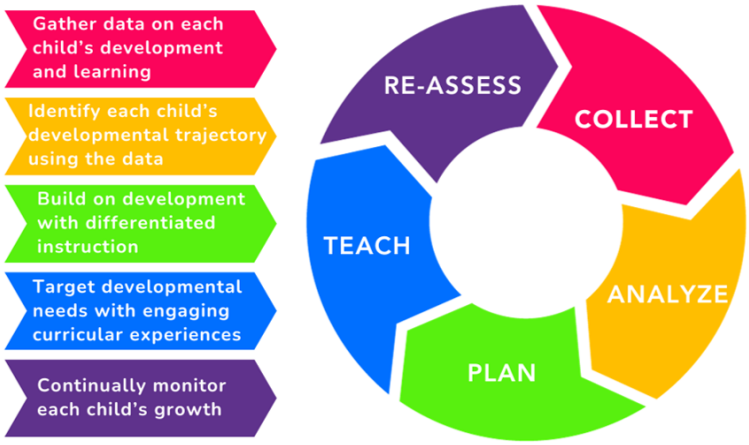
Assessment in education holds significant value because it serves multiple important purposes in supporting student learning, guiding instruction, and evaluating educational effectiveness. Progress monitoring, a method of assessment, involves tracking and regularly checking a child's progress to offer feedback to educators.

Studies indicate that this practice is beneficial in evaluating proficiency across various academic domains and aiding educators in enhancing their students' academic achievements (Fuchs & Fuchs, 2001).

As children engage with IgnitePanel activities, teachers can collect data about their progress and concept mastery and utilize IgnitePanel to aid in their instructional planning and delivery. Teachers can use IgnitePanel assessments to collect data about children's knowledge and understanding as well as the effectiveness of their own instructional methods. Teachers can then use that data to inform their instruction as part of their instruction cycle. In addition, IgnitePanel offers assessment activities for several essential math and literacy skills that help teachers assess and collect data on specific student mastery. IgnitePanel also includes a feature that allows teachers to collect work samples or portfolios for each child in their class. These work samples can be used to complete or enhance their classroom assessment and progress monitoring initiatives.

The Data-Driven Instruction Cycle

Data-driven instruction is an educational approach reliant on a continual feedback loop of information for nimble and responsive teaching that provides the support students need in real time. According to research, data-driven instruction can support improved student performance (Wohlstetter et al., 2008).



The five-step data-driven instruction cycle involves a structured process of collecting data, analyzing data, planning instruction, teaching, and reassessing instructional practices based on student data. When teachers use data to inform their instruction, they can personalize and individualize learning and target interventions for students (Boudett et al., 2010; Datnow et al., 2007). Additionally, data-driven decision-making encourages continuous improvement and accountability for teachers and schools (Boudett et al., 2010; Datnow et al., 2007).

The data-driven instruction cycle is a crucial approach in early childhood education. IgnitePanel helps teachers conduct ongoing formative assessments to systematically gather and analyze data about their students' progress and learning experiences so

that they can make more informed decisions about instructional strategies and tailor their teaching methods to meet the individual needs of each child.

IgnitePanel was intentionally designed to support the data-driven instructional cycle, including the entire five-step process.

Step 1: Collect Data

In this initial step, educators gather various types of data to assess student performance and progress. This data can include formative assessments, standardized test scores, observations, and student work samples (Datnow et al., 2007). Collecting comprehensive data provides educators with a clear picture of student learning and informs subsequent instructional decisions. Each IgnitePanel activity provides an opportunity for teachers to collect data about their students' understanding and performance. In addition to IgnitePanel activities, more formal assessments for mathematics and literacy assessments are available for teachers to assess specific skills, such as letter or shape recognition.

One way to capture work samples in IgnitePanel is for teachers to do a screen recording. Before beginning an activity, children put on a headset with a microphone. Then, the teacher can start a recording that captures the child's voice and what's happening on the screen (objects, movements, drawing, etc.). This feature allows teachers to capture children's thought processes. Screen recordings can also be captured via a webcam. After children complete an IgnitePanel activity, the teacher can also save the work screen as an image or a PDF that they can access later.

Step 2: Analyze Data

Once data is collected, educators analyze it to identify patterns, trends, and areas of strength and weakness among students. Data analysis involves examining individual student performance and group-level data to understand learning gaps and instructional needs (Boudett et al., 2010). Analyzing data helps educators pinpoint specific areas for targeted instruction. After IgnitePanel play, teachers can compile and analyze data about students' performance on an individual and a class level.

Step 3: Plan Instruction

Based on the analysis of student data, educators develop tailored instructional plans to address the identified learning needs of students. Instructional planning involves selecting appropriate teaching strategies, resources, and materials to support student learning objectives (Boudett et al., 2010). Effective planning ensures that instruction is aligned with student needs and learning goals. With IgnitePanel, teachers can select from existing activities or create custom activities to meet children's instructional needs. The Daily Activities Plan feature allows teachers to preplan what lessons they are going to use throughout the day, week, month, or year. They can then launch the

lessons easily when they are ready, saving instructional planning time. For areas or skills with which students are struggling, IgnitePanel provides instructional recommendations, called Beyond the Technology, that can be used to support individual children and small groups. Teachers can save instructional time when writing lesson plans by pulling these curricular recommendations from IgnitePanel to plan their differentiated or scaffolded instruction.

Step 4: Teach

With instructional plans in place, educators implement targeted instruction designed to address the learning needs identified through data analysis. Teaching strategies may include differentiated instruction, small-group instruction, or individualized interventions to support diverse student needs (Hattie, 2009). Engaging in effective teaching practices is essential for promoting student learning and academic achievement. Because IgnitePanel activities are intentionally scaffolded, they make it easy for teachers to plan instruction. Teachers can select activities that target a specific skill or are based on a child's ZPD, provide guided practice through the GRR model, and differentiate their instruction.

Step 5: Reassess

Following instruction, educators reassess student learning to evaluate the effectiveness of instructional interventions and monitor progress toward learning goals. Reassessment may involve administering formative assessments, analyzing student work, or conducting classroom observations to measure student growth (Datnow et al., 2007). Reassessment allows educators to adjust instructional strategies, as needed, and ensure ongoing improvement in student learning outcomes. At this stage of the data-driven instruction cycle, teachers can again utilize IgnitePanel activities to gather additional data on child performance and understanding and help them continue to make informed decisions about their instruction.

High-Quality Professional Development

Beyond the product itself, a critical component of IgnitePanel is implementation and professional development. Professional development is strongly tied to school improvement efforts, and recently, there has been an increasingly urgent need for more professional development opportunities to ensure that programs are high quality and effective. It is understood from research and best practices that effective professional development is "structured professional learning that results in changes in teacher practices and improvements in student learning outcomes" (Darling-Hammond et al., 2017, para. 1). Educators need professional development not only in the form of training and resources but also in the utilization of real-time data to effectively support their teaching practices. With the direct professional development opportunities provided by Hatch, educators can be fully supported in all areas of data-driven instruction.

Professional Development Framework

Hatch's IgnitePanel professional development opportunities support educators in understanding how to best implement IgnitePanel in their learning environments and in deepening their educational knowledge overall. IgnitePanel's professional development is aligned with theories of adult learning that posit that adult learners want to actively participate in education, take responsibility for their own learning, and explore concepts related to practical and applicable experiences (Grant & Thorton, 2007). The professional learning model of professional development at Hatch includes

offerings that can be focused for either educators or administrators, which allows programs to tailor the learning to the appropriate audience. Participants also have the benefit of working within a community of their peers and being guided by a trainer to explore deeper into IgnitePanel.

Across the three session offerings, attendees will learn everything they need to know to implement and effectively utilize IgnitePanel in their program:

- **Getting Started with IgnitePanel by Hatch™:** This 45-minute session provides guidance and resources to initiate implementation of IgnitePanel effectively. Participants will receive step-by-step instructions and hands-on assistance to configure and optimize their environment, ensuring a smooth setup and implementation within the classroom and introducing solutions to stakeholders.
- **IgnitePanel by Hatch™ Essentials:** This 90-minute session is designed to introduce participants to the fundamental features and functionalities of Hatch Insights™ for IgnitePanel. Participants will gain a comprehensive understanding of the educational tools, ensuring a strong foundation for educational practices and incorporating IgnitePanel into classroom environments.
- **Using IgnitePanel by Hatch™ Data:** This 90-minute session equips educators with the knowledge and skills to integrate the data generated by Hatch classroom solutions effectively. Participants will learn to interpret and apply the collected data to tailor their teaching practices, which fosters personalized and data-driven instruction for young learners, and effectively communicate data with stakeholders.

Direct Real-World Application

The reality of the early education field is that "teachers in every discipline are responsible for maintaining a standard of excellence and completing professional development requirements" (Marrero et al., 2010, p. 92). IgnitePanel's professional development supports educators in implementing IgnitePanel to its fullest fidelity, meaning that teachers not only have educational support but also understand the real-time data that IgnitePanel provides to improve their teaching practices.

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