

LEARNING BPMN 2.0

**A Practical Guide for
Today's Adult Learners**

**Dr. Joshua Fuehrer &
Joseph Butchko**



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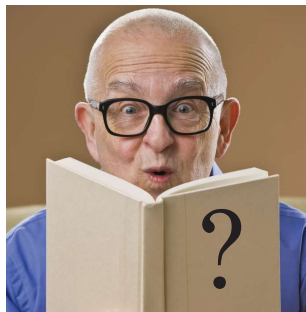
1. Introduction

Welcome!

1.1 Learning Business Process Modeling and Notation

Do you ever think of how you learn—reading, watching, doing? Maybe you use all three. Many of us go through life unaware of how we learn or acquire a skill set; we just learn it. We all have the capability to learn. It is from that perspective and with a passion for business process modeling with Business Process Modeling and Notation (BPMN) that we set out to write a book that will provide an understanding of BPMN while engaging in the adult learning process for acquiring knowledge.

This book is intended to bridge the gap between theory and practice and make it interesting while we are doing it. While we focus on learning BPMN, we also teach foundational concepts, a balance between academia and real-world examples as it relates to creating knowledge, moving up the spiral of knowledge. With each spiral, more insight is gained, and better understanding is attained.



Wait, what? The creation of knowledge? I thought this book was about BPMN.

Understanding foundational concepts and linking them to real-world examples is the key to our approach. We will provide engaging experiences that create BPMN knowledge. Reading provides one way to obtain knowledge. Practical application, reflective experiences, and collaboration are others sources. We attempt to balance various approaches to enhance your learning experience with BPMN.

A secondary objective of this book is to combine previous research findings in learning with the practical application of BPMN. Specifically, we will provide real-world, practical application of various business process models using BPMN, tips for modeling complex business processes, and strategies that will enable you to capture the knowledge of your organization through business process modeling.

1.1.1 The Concept of This Book

First and foremost, this book is designed to be an experience. It is a collection of tacit and explicit knowledge and a combination of acquired strategies from experts in the field who have years of experience modeling with BPMN. It is based on previous research, anecdotal evidence, and a collection of various resources and videos. The experiences this book provides will help you grasp ideas and transform information in innovative ways, and we hope you will be able to share that knowledge with others in your organization and the broader BPMN community of practitioners.

Secondly, this book explains how you can apply BPMN to your work situation. Specifically, we will demonstrate the most commonly used notations and help you develop better business process models that can have an impact on your organization. This book will cover those notations through an experiential learning approach. We will provide a real-world business process modeling learning experience through an action-and-reflection approach.

1.1.2 What Is (and What Is Not) Covered in This Book

Before we go much further, it is important to cover what and what is not covered in this book. The BPMN specification breaks out three types of models: orchestration, choreography, and conversation.¹

We will cover the fundamentals required to create well-formed BPMN orchestration models for your organization. Simply stated, we will teach you how to create business process models, from the executive perspective all the way down to the engineering implementation level if you desire. We will take the mystery out of notation, provide clear real-world examples, and put the notation in its proper context.

A conversation diagram is a high-level depiction of how communication (or *conversation*) occurs at a higher level between participants and the processes that connect to each other. Choreography, on the other hand, focuses on the exchange of messages between participants.

We decided to leave conversation and choreography models out of this book, mainly because we see more benefit to the application of the orchestration of business process models with BPMN for our first book. We hope to someday write a second book covering these specific topics. Until then, you can join our discussion on conversation and choreography models on our website. Many of the concepts taught in this book regarding the meaning behind the notations for the orchestration of business process models will have applicability to choreography and conversations.

1.1.3 Introduction from the Authors

We are writing this book from a practitioner's perspective. We started using BPMN as an alternative to the IDEF0 model of process planning and process flow charts when developing enterprise architectures for a large federal government organization. BPMN seemed to cover all the essential ideas—processes, performers, activities, and information flows—all

¹ "Business Process Model & Notation (BPMN)." *About the Common Object Request Broker Architecture Specification Version 3.3*. <http://www.omg.org/spec>

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in the same model. We were already capturing the information, and we just needed a better modeling notation to capture it.

Over time, what we came to realize is how easily BPMN can capture robust and complex organizational concepts. We spent a lot of time trying to understand the specification and reading the textbooks already in print. We also came to realize that no matter how much we understood about BPMN, someone else in our community had a different interpretation of the specification. After reviewing the research from the academic community, it became obvious that syntactical errors in BPMN models were rampant in the community of users. Specifically, models analyzed by the research community contained a high percentage of syntactical errors.^{2,3,4}

So, we set off to study this problem. Josh completed doctoral research on the learning process for BPMN. His research examined the effectiveness of learning theories and the creation of BPMN knowledge from theory to practice. Josh has taken his research findings and developed training material to create meaningful learning experiences to incorporate in organizations—in essence, transferring his knowledge of BPMN to a wide range of stakeholders, modelers, and reviewers to improve business process management initiatives using BPMN.

Joe, acting as a validation and verification agent for the federal government, continued to identify and document misuses and errors in models submitted to the government as contract “deliverables.” These models were returned to the vendors for correction and rework, adding cost to the project and causing project timelines to slip. Basic concepts were misunderstood, such as the meaning of a *pool*. He also observed the misuse of the *boundary events*, which resulted in process deadlocks. Feedback to the vendors became learning experiences for vendors to improve upon the application of BPMN.

1.1.4 The Four Knowledge Creation Activities

What we discovered from Josh’s research was profound and enlightening. The first thing he discovered was that there was a pattern of activities that look like deeply ingrained assumptions about how experiences are grasped and transformed to create BPMN knowledge.

The following table identifies each of these categories and provides a high-level description (Table 1).

² Henrick Leopold, Jan Mendling, and Oliver Gunther, “What We Can Learn from Quality Issues of BPMN Models from Industry,” IEEE Software, March 2015.

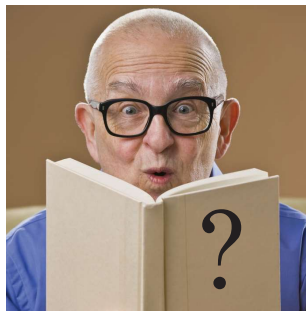
³ Jan Recker, “Opportunities and Constraints: The Current Struggle with BPMN,” *Business Process Management Journal* 16, no. 1 (2010): 181-201.

⁴ Suman, R. A., Sajeev, B S., & Ranjan, A. (2014). “An empirical study of error patterns in industrial business process models”. *IEEE Transactions on Services Computing*, 7, 140-153. doi:10.1109/TSC.2013.10

CATEGORIES	DESCRIPTION
Applying Concepts	How the creation of knowledge occurred from the practical application of learning experiences.
Exploring Alternate Understanding	How the creation of knowledge occurred from discovering different modeling approaches of learning experiences.
Reflecting on Experiences	How the creation of knowledge occurred from the inductive reasoning of learning experiences.
Analyzing Previous Knowledge Constructs	How the creation of knowledge occurred from comparing existing knowledge with new constructs and deciding what modeling constructs hold true of learning experiences.

Table 1: Experiential Learning Mental Model Categories for BPMN

The four knowledge creation activities depicted in the Experiential Learning Mental Model describe how experiences were transformed into knowledge (Table 1). Specifically, as individuals experienced a new event, they internalized that experience through *apprehension* or *comprehension* and transformed the experience through *extension* (action) or *intention* (reflection).



Oh, more
academic terms

The term *apprehension* is used to explain how one grasps knowledge through feelings, senses, and connections. Grasping knowledge through apprehension is *subjective*; we do not know how others feel, think, unless they share their *comprehension* with us.

The term *comprehension* is used to explain how individuals make logical connections between experiences and communicate their understanding of knowledge. In BPMN, it is similar to a colleague explaining his or her interpretation of notations from the specification.

The concepts of *apply concepts*, *explore alternate understanding*, *reflect experience*, and *analyze previous knowledge* enable us to provide you with experiences which, when grasped and transformed, create BPMN knowledge. Basically, you will learn BPMN through a series of experiences that will lead to an understanding of BPMN. The better job we do at creating meaningful learning experiences, the greater chance we will have of moving up the spiral of knowledge to form a higher level of understanding of BPMN and reduce the number of syntactical discrepancies in your process models.

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Below is a conceptual model depicting how learners' experiences were understood and transformed to create knowledge.

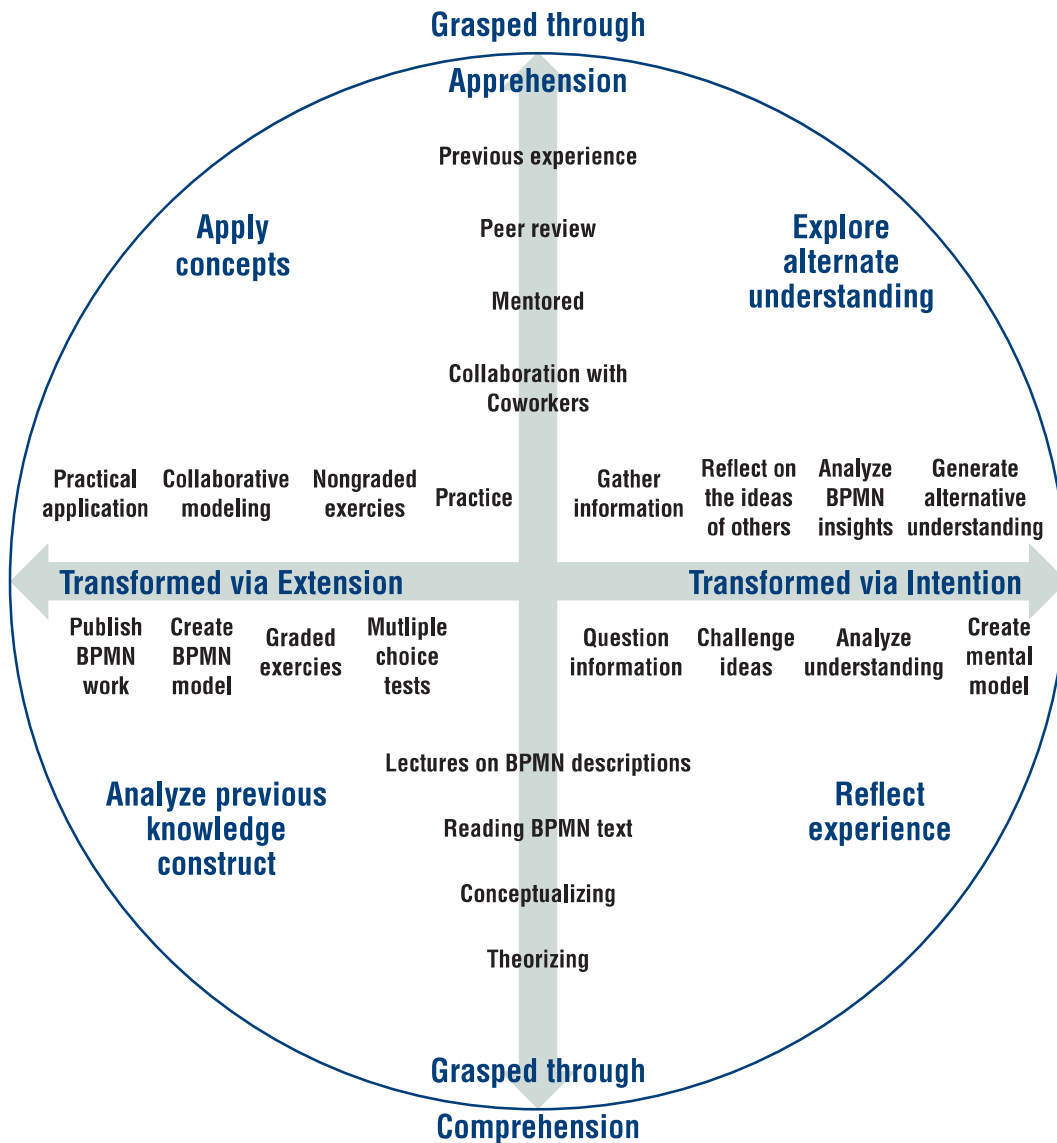


Figure 1: Experiential Learning Mental Model for BPMN

The experiential learning mental model for BPMN describes how experiences are used to create BPMN knowledge. The descriptions in the mental model are not all-encompassing; it is not meant to be a generalized list of all the BPMN modelers of the world.

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Rather, it is a framework for applying various grasped experiences to create BPMN knowledge. It enables us to expand on what we know and dive deeper into the learning process and create new ways to learn BPMN. It also enables us to develop meaningful experiential learning experiences.

If we shared only what we know about BPMN, we would fail you, the reader. Our objective is to expand everyone's understanding of BPMN. We intend to create a meaningful connection with you. In this book, we outline how to create a meaningful experiential learning experience. Specifically, we will create a connection through apprehension, because the more you value the source of the experience, the more likely you will be to embrace it. By embracing an apprehended experience, a deeper, more meaningful experience can flow. We also provide you with the framework to create similar experiences throughout your organization.

We hope that through comprehension of all of the provided apprehended experiences, you will form a higher understanding of BPMN, but also, more importantly, how to use BPMN in your organization.

Lastly, we want to teach more than just the BPMN syntax. We are striving for a deeper level of learning. We attempted to design a deeper level of learning through the course of this book through the exercises, personal experiences, videos, and reflection experiences and hope that you become a BPMN practitioner. Our sincere expectation is that through this book, you can develop the capability for modeling with BPMN from a deeper level of learning.

The key takeaway with these conceptual models and framework is that they will become the starting point for you to use as you learn and create meaningful learning experiences in your organization and transfer your BPMN knowledge to others.

As we stated earlier, the experiential learning mental model is not all-encompassing. For experienced BPMN practitioners, we invite you to share insights that could advance this framework and these conceptual models further. To be a part of this exciting research, join our discovery page forum discussion at:

<https://www.bpmnpractitioners.com/bpmn-forums-and-resources>

1.1.5 The BPMN Practitioner's Learning Process

The second thing we found from Josh's research was that each individual has his or her own self-directed learning mental model when learning BPMN. We have individual styles or methods of learning, whether we realize it or not.

The self-directed learner's mental model indicates we work our way through a series of activities during the learning process. This means the individual activities we go through during the learning process influence our understanding of BPMN. The self-directed learner's mental model is made up of five categories (Table 2).

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CATEGORIES	DESCRIPTION
Establish Goals	An activity in which personal and professional goals are created that successfully contribute to obtaining BPMN knowledge.
Assess Learning Preference	A self-evaluation of learning style and preferred method of learning when selecting appropriate training and during an engagement in learning.
Identify Resources	A process of finding training material and programs that leads to the type and selection of training materials.
Complete Learning Tasks	A process for carrying out planned learning strategies to acquire BPMN knowledge.
Evaluate Outcomes	The process of validating BPMN understanding from learning experiences.

Table 2: Self-Directed Learner's Mental Model

We can think of these categories as a series of processes, or more importantly, steps in a process. Without knowing how people learned BPMN, we could be missing out on certain critical information.

This became evident during interviews that resulted in the formation of these categories. Specifically, individuals shared how they had struggled to find useful resources that enabled them to learn BPMN. The lack of good resources leads to misinterpretation of the specification, which resulted in poor modeling habits.

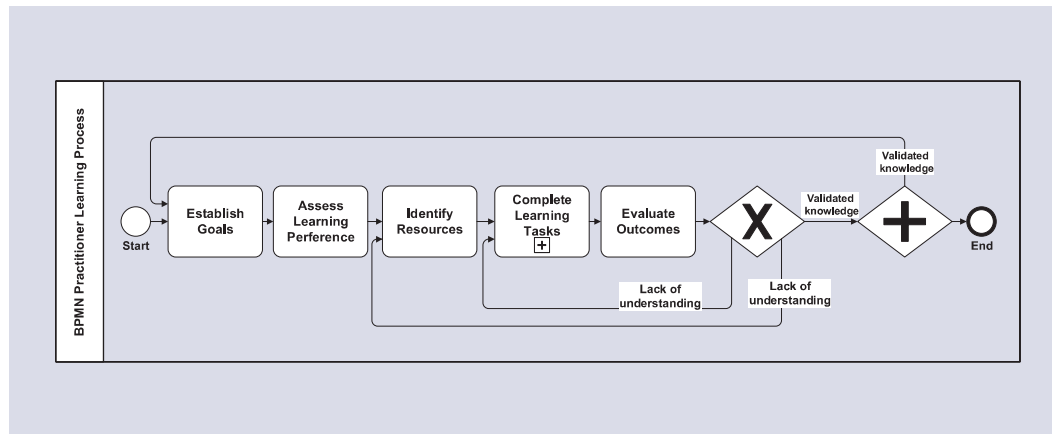


Figure 2: BPMN Practitioner Learning Process

Think of the self-directed learner's mental model as a kind of double loop, or revisiting the material from a different perspective based on feedback, either from validated knowledge or a lack of understanding. While the research did not find an instance of single-loop learning, we posit that there are instances where individuals take a course or read a book and never

validate that knowledge against a standard. They merely assume that their models are syntactically correct. Our experience is that individuals become better modelers when they face peer reviews and respond to the feedback—in essence, challenging their assumptions about what they think they know. Learning BPMN favors an iterative learning process.

Through the iterative learning process, we learn and master a concept over time. It also gives us an opportunity to explore the most effective ways to learn BPMN. We hope that you are able to leverage the information, learning exercises, and shared experiences in this book to further advance your understanding of BPMN.

1.1.6 Meet Our BPMN Learners

You have already met one of our BPMN learners. Let's take a moment to explain.



Meditating Mike is always in a deep state of reflection. He is always reflecting on experiences and searching for the reasoning behind everything. When Meditating Mike appears, he provides you an opportunity to pause, breathe, and search within, usually by asking some self-reflection questions, improving your self-reflection skills. As the book progresses, Meditating Mike starts diving into deeper reflection techniques for you to put to use.



General Practitioner is all about action. He is always applying concepts learned throughout life. General Practitioner is always busy, using his energy to apply learned concepts through the action of building a model. When General Practitioner appears, he is reminding you to take action, because without action, what is there for you to reflect on?



Streamer Seth is riding the current wave of technology by offering his own streaming service. He is all about teaching BPMN concepts through his streaming channel. When Streamer Seth appears, he is indicating that there is a corresponding video related to the current topic in which concepts are discussed in additional detail.



BPMN Goal Setters are all about setting learning goals. BPMN Goal Setters have come to the realization that, without establishing and evaluating learning goals, their BPMN skills never truly develop. When BPMN Goal Setters appear, they are reminding you to set a learning goal. Since establishing goals can be challenging to someone new to the field, they do provide sample goals for you to establish and evaluate.

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Forum Felicia loves reading the insights of others through blog posts or forum discussions. Forum Felicia is always looking for different perspectives about BPMN. When Forum Felicia appears, she is indicating that there is a great forum post about a specific notation.



Studying Sara loves working out and challenging herself through exercise. She is all about taking her understanding to the next level by assessing what she *thinks* she knows. She has come up with a list of exercises that she thinks will help expand your BPMN understanding. When Studying Sara appears, she is indicating that there are additional exercises in the training folder on our website.



Surfer Dave loves two things: riding waves and providing BPMN pro tips. “Aloha. When I am not catching waves at my favorite spot, I am building sweet business process models. I can teach you how to shred waves or build complex business process models.” Since this book is about BPMN, when Surfer Dave appears, he is indicating that he has a pro tip to share. These pro tips are usually for those advanced modelers looking to expand their understanding.



The Inquisitor is always searching for the truth. The Inquisitor may never acquire the knowledge to answer every question, but he pursues the unknown with a passion, always learning new and exciting things, opening his mind to possibilities never before imaginable. When the Inquisitor appears, he is questioning what we, the authors, say, indicating patterns and connections or sharing helpful learning techniques that he has discovered during his adult learning journey.
