Class Notes Jan vom Brocke, Stefan Seidel, Sanja Tumbas

The BPM Curriculum Revisited

Abstract. This note builds on and updates the article *"Class Notes: BPM Research and Education – How was School Today?"* published on BPTrends in 2012 ([Recker, 2012a](#)) and we aim to characterize the field of consecutive BPM education. We describe what we think are three major archetypes of BPM education as well as some specific examples of BPM teaching practices. We highlight that we need to teach BPM as a problem solving discipline that drives innovation in a digital world and provide an outlook on the road ahead.

BPM Education Today

The number of institutions offering BPM education is growing. To date, the following universities are listed on BPTrends[1] as providers of consecutive education in the field: Bentley University, University of Chile, Eindhoven University of Technology, University of Georgia, Georgia State University, University of Liechtenstein, Queensland University of Technology, Stevens Institute of Technology, and Widener University.

Table 1 provides a brief overview of the different curricula in terms of academic degrees (BA = Bachelor, MA = Master, and PhD = doctorate) and the nature of the programs (dedicated BPM programs versus specific BPM courses as part of a program).

Table 1. Overview of Basic BPM Program Features at the Universities listed on BPTrends.com

Characteristics	Bentley University	University of Chile	Eindhoven University of Technology	University of Georgia	Georgia State University	University of Liechtenstein	Queensland University of Technology	Stevens Institute of Technology	Widener University
Location	USA	South America	Europe	USA	USA	Europe	Australia	USA	USA

---

[1] http://www.bptrends.com/resources/bpm-academic-programs/

Academic degree	BA, MA	MA	MA, PhD	BA	BA	MA, PhD	MA, PhD	BA, MA	MA
Type	Specific Courses	Specific Courses	Entire Program	Specific Courses	Specific Courses	Entire Program	Entire Program	Specific Courses	Entire Program

Based on a closer examination of the curricula offering BPM education and on findings regarding general trends in information systems education (Fichman, Dos Santos, and Zheng, 2014), we identify distinctive features of BPM programs and highlight three major orientations – or archetypes – of BPM education: *(1) the integrative BPM curriculum, (2) the business-integrated BPM curriculum,* and *(3) the IT-integrated BPM curriculum.* Table 2 provides an overview.

Table 2. BPM Curricula Archetypes

	The integrative BPM curriculum	The business-integrated BPM curriculum	The IT-integrated BPM curriculum
Description	BPM topics are at the core of the curriculum, and the focus is on both technological and managerial aspects	The curriculum focuses on managerial aspects and incorporates elements of BPM	The curriculum focuses on technology issues and incorporates elements of BPM
BPM Focus	Holistic perspective on the core elements of BPM	Management perspective on BPM	Technical perspective on BPM
Example courses	Business process innovation, analysis, implementation, governance	Management information systems, strategy, analytics	BPM systems, workflow patterns, simulation tools, databases
Example universities	Queensland University of Technology, University of Liechtenstein	University of Georgia, Georgia State University, Bentley University	Technical University of Eindhoven, University of Chile

The Integrative BPM Curriculum highlights the holistic nature of BPM, thereby incorporating various aspects such as strategy, information technology, culture, governance, or people. These programs are dedicated to approach BPM in an integrated manner, and aim to provide participants with comprehensive theoretical and methodological BPM skills. BPM is understood as a holistic management approach focusing on continuously improving and innovating operations using information and communication technologies.

The Business-Integrated BPM Curriculum positions BPM within a broader context of management education. Students typically attain theoretical knowledge and methodological competencies related to management, and BPM courses extend these skills. Students thus learn how business process management approaches can support other management approaches, for instance, various types of change management.

The IT-Integrated BPM Curriculum highlights theoretical knowledge and methodological competencies related to the design, implementation, and use of information technology. It thus typically provides technical BPM-related competencies, focusing on topics such as workflow management systems, database systems, business process modeling, business process implementation, or formal compliance of processes.

Regardless of whether BPM is seen as a holistic management approach or a part of broader fields such as information systems or management (Recker, 2012a), it is important to highlight that BPM is multifaceted in nature and is a *problem solving discipline* concerned with real world problems. BPM teaching evolves at the intersection of research and practice. Engagement with real business problems enables students to develop critical thinking, interpersonal skills, appropriate time management, and focus on outcome. Depending on the nature of the problem, different knowledge and methodological skills are required. Examples of high practical relevance include process modeling, process analysis, and process simulation to improve on efficiency, collaboration, compliance, or risk management, to name just a few. Also, the past years have shown that innovation must also become a key focus of BPM research, practice, and indeed education.

The Practice of BPM Education

While there are general features shared by the different programs, there are also important differences in the practice of teaching. Universities might emphasize on industry collaborations, build their curricula around specific frameworks, or broaden audiences by providing course material online. Of course, some universities combine different strategies. In what follows, for illustrative purposes, we present a few examples of BPM teaching practices: BPM MOOCS, the use of BPM textbooks and frameworks, and the idea of BPM competence centers as well as round tables to bring together research, education, and practice.

Reaching a broad audience: MOOCs. Massive online open courses (MOOC) are suitable to address a broad and location independent audience. The Technical University of Eindhoven, for instance, initiated a MOOC in 2014, aiming to provide knowledge related to three types of process mining: discovery, conformance, and enhancement. The focus is on evidence-based business process management. The course builds on the expertise of the research group in using and improving techniques for making use of the abundance of data such as trace data.

Teaching materials: BPM textbooks and frameworks. There is relatively little consensus on the key teaching materials to be used in a core BPM course. Still, institutions offering BPM education increasingly rely on the knowledge base and general frameworks presented in books, for instance, the *International Handbook of Business Process Management* (vom Brocke and Rosemann, 2015) which is structured along the lines of the six core elements of BPM including strategic alignment, governance, technology, methods, culture, and people (Rosemann, 2010) or in *Fundamentals of Business Process Management* (Dumas, La Rosa, Mendling, and Reijers, 2013) that covers the main stages of the BPM lifecycle. Textbooks are a backbone for teaching and provide course material in a language addressing students.

Maintaining industry relationships: Competence centers and BPM round tables. Some universities maintain institutionalized collaborations with industry partners, by such techniques as *competence centers* or *round tables.* Practitioners have been identified as a key source of knowledge and should be intensively involved in BPM education (Bandara et al., 2010). Competence centers intend to intensify knowledge exchange between academia and practice, and aim to get students in touch with real organizations and solve real world problems. Round tables bring together researches, practitioners, and students to discuss important contemporary BPM topics. At The European BPM Roundtable (http://bpm-roundtable2014.eu), for

example, multiple regional BPM round tables come together to provide a platform for practitioners, researchers, and students. Close industry relationships also help align BPM education with industry demands – an important challenge, considering that BPM is a discipline of high practical relevance and is characterized by dynamic change.

The Road Ahead

The academic BPM community is well positioned to both (a) keep up with new trends and developments and (b) constantly reconsider its intellectual core (Recker, 2014; vom Brocke et al., 2014). It is our contention that it is important to continuously reflect on both our research *and* teaching practice. Teaching the history of the various orientations in BPM (e.g., Harmon, 2010) is essential. At the same time, the consideration and adoption of new developments is necessary to sustain in a highly competitive environment. In what follows, we describe BPM as an important contributor to digital innovation and, in line with other authors, argue that in our teaching we should thus consider both the exploitation and exploration potentials of BPM.

BPM and Digital Innovation

Individuals, organizations, and society are required to innovate in order to sustain their welfare, and the pervasive digitization offers ample opportunity to do so. The internet of things, for instance, allows for capturing data of real-world objects (such as cars, houses, or wearables), analyzing the data in real-time, and thus offering significant opportunity for process and service innovation (vom Brocke and Schmiedel, 2015). Decades of BPM research have taught us that technology alone hardly delivers business value – it is indeed the use of technology in business processes that yields such value.

While BPM has traditionally focused on increasing efficiency and effectiveness of organizational processes through automation and standardization, BPM can also play an important role in capitalizing on the digitization of services and products (vom Brocke and Schmiedel, 2015). Digital products and components become a trigger for the design and implementation of new processes (Nambisan, 2013; Recker, 2012b). Infrastructures, digital technologies, and their relationships proffer opportunities for innovation (Henfridsson and Bygstad, 2013).

In this line of thinking, it is timely to question to what extent the tools we have developed are still appropriate to address contemporary organizational and societal problems. A new, emergent paradigm might emphasize innovations to disruptively change the rules of the game – instead of avoiding or mitigating failure in existing, potentially dysfunctional processes and business models. Using the twin goals of exploitation and exploration, the idea of *ambidextrous BPM* has come about (Rosemann, 2014), and we provide a brief discussion below.

From Exploitation to Exploration

In a recent article, Michael Rosemann writes about the close relationship between exploration and exploitation capabilities of organizations (Rosemann, 2014):

Exploitation and exploration are closely related as exploitative capabilities can be seen as necessary, but not sufficient in a changing environment. An organization not able to even execute-to-promise will have no foundation for far reaching explorative endeavors.

While exploitation is concerned with increasing efficiency and effectiveness and typically incremental change through utilizing the same set of tools, management approaches, and techniques, exploration oriented BPM focuses on innovation of processes, services, products, and entire business models, thereby applying techniques of creative thinking, design, and communication (Table 3).

Table 3. Exploitation and exploration oriented BPM (Rosemann, 2014)

	Exploitation oriented BPM	Exploitation oriented BPM
Key believes	The role of BPM is to assure operational excellence and keep a big picture of potential incremental improvements	The role of BPM is to assure operational excellence and keep a big picture about potentially doing things different by use of new technologies, techniques etc.
Appropriate approaches	Quality management approaches, reference modeling, process integration, compliance	Design thinking, open innovation, product innovation
Application field	Already existing processes, data sources	New processes, data sources

It is our belief that both orientations are equally important. While continuous improvement has been a part of the BPM core for many years, the discipline must further build its exploration potential, and we must consider this in our BPM curricula. When they graduate from our programs, our students are confronted with new, emergent technologies on a daily basis. It is our responsibility to prepare them for a future characterized by digitization and continuous re-invention of processes. Topics such as big data analytics, sensor networks, or the internet of things now extend our traditional understanding of BPM. As a discipline, we are challenged to keep pace with the rapid technological developments of the digital age. We hope that we will see ourselves as drivers of change, rather than being driven by change.

References

Bandara, W., Chand, D., Chircu, A., Hintringer, S., Karagiannis, D., Recker, J., . . . Welke, R. (2010). Business Process Management Education in Academia: Status, Challenges, and Recommendations. *Communications of the Association for Information Systems, 27*(1).

Dumas, M., La Rosa, M., Mendling, J., and Reijers, A. H. (2013). *Fundamentals of Business Process Management*: Springer.

Fichman, R. G., Dos Santos, B. L., and Zheng, Z. E. (2014). Digital Innovation as a Fundamental and Powerful Concept in the Information System Curriculum. *MIS Quarterly, 38*(2), 329-353.

Harmon, P. (2010). The Scope and Evolution of Business Process Management. In J. vom Brocke and M. Rosemann (Eds.), (pp. 37-81): Springer Berlin Heidelberg.

Henfridsson, O., and Bygstad, B. (2013). The Generative Mechanisms of Digital Infrastructure Evolution. *MIS Quarterly, 37*(3), 907-931.

Nambisan, S. (2013). Information Technology and Product/Service Innovation: A Brief Assessment and Some Suggestions for Future Research. *Journal of the Association for Information Systems, 14*(4), Article 1-Article 1.

Recker, J. (2012a). Class Notes: Bpm Research and Education - How Was School Today? *BPTrends*.

Recker, J. (2012b). From Product Innovation to Organizational Innovation – and What That Has to Do with Business Process Management. *BPTrends*.

Recker, J. (2014). Suggestions for the Next Wave of Bpm Research: Strengthening the Theoretical Core and Exploring the Protective Belt. *Journal of Information Technology Theory and Application*.

Rosemann, M. (2010). The Six Core Elements of Business Process Management', in Vom Brocke, J. And Rosemann, M.(Eds.): Handbook on Business Process Management: Springer, Berlin Heidelberg.

Rosemann, M. (2014). Proposals for Future Bpm Research Directions. In C. Ouyang and J.-Y. Jung (Eds.), (Vol. 181, pp. 1-15). Cham: Springer International Publishing.

vom Brocke, J., and Rosemann, M. (Eds.). (2015). *Handbook on Business Process Management 1 - Introduction, Methods, and Information Systems*. International: Springer.

vom Brocke, J., and Schmiedel, T. (2015). *Bpm - Driving Innovation in a Digital World*. Berlin Heidelberg: Springer.

vom Brocke, J., Schmiedel, T., Recker, J., Trkman, P., Mertens, W., and Viaene, S. (2014). Ten Principles of Good Business Process Management. *Business Process Management Journal, 20*(4), 530-548.

Authors

Jan vom Brocke is head of the BPM group in Liechtenstein. He is Professor of Information Systems, the Hilti Chair of Business Process Management, Director of the Institute of Information Systems, and Vice-President of the University of Liechtenstein. He has over 15 years of experience in BPM research, teaching, and practice, and he is a Co-Founder and Co-Director of international Master- and PhD-Programs on IS and BPM (see: http://www.bpm-education.org). Jan has published more than 300 papers in renowned outlets, including *MIS Quarterly (MISQ)*, the *Journal of Management Information Systems (JMIS)* and the *Business Process Management Journal (BPMJ)*. He has co-authored and co-edited 23 books, including the *International Handbook on Business Process Management*, the book *Green BPM – Towards the Sustainable Enterprise*, and the book *BPM – Driving Innovation in a Digital World.* Jan is an invited speaker and trusted advisor on BPM serving many organizations around the world. You can contact Jan via mail at jan.vom.brocke@uni.li.

Stefan Seidel is Associate Professor at the Institute of Information Systems at the University of Liechtenstein. Stefan's main research interest is in how information systems (IS) can contribute to better business processes and, ultimately, improved social welfare. To this end, his current research mainly concerns IS-enabled organizational and societal transformation, organizational creativity and innovation, and green IS. Stefan's work has been appeared in major peer-reviewed journals (e.g., *MIS Quarterly* or *Journal of Association for Information Systems)* and he is co-

www.bptrends.com | 6

editor and co-author of the book *Green Business Process Management - Towards the Sustainable Enterprise.* He can be best contacted at stefan.seidel@uni.li.

Sanja Tumbas is a Research Assistant and PhD Candidate at the Institute of Information Systems, the Hilti Chair of Business Process Management at the University of Liechtenstein. She holds a Master degree in Information Systems from the University of Muenster, Germany. During her Master studies she was a scholarship holder of the German Academic Exchange Service (DAAD). Her research belongs to a broader stream of Social Studies of Information Systems. Specifically, the PhD project focuses on digital innovation and the distinct logics and cultures that drive organizational actors in innovating with digital technologies. In addition, she looks into innovative contexts such as entrepreneurial organizations and the role of digital technologies. To conduct parts of her PhD research, she was a visiting student at the Management Information Systems department at the University of Georgia, USA.