Chapter 3
Branching Logic in the Design of Online Learning: A Partial Typology

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ABSTRACT
Online learning requires a clear structure to enhance learning, particularly for those with little background in the subject. Structurally, the design of online learning may involve branching and merging, forking and joining of multiple branches, and other combinations of branching, for a learner or learners. Instructional branching is a tool that enables the achievement of multiple objectives. These include the following: (1) An Adaptive Curriculum: Adapting a richer curriculum to reflect the complex realities of a field and the real world; (2) Learner Support: Accommodating learners, who often have diverse needs based on their capabilities, ambitions, areas of study, and needs; (3) Learner Collaboration Support: Promoting the building of learning teams for the acquisition of collaboration, co-learning, and co-design skills; (4) Respect for Learner Decision-Making: Respecting the decision-making of learners, particularly in scenarios of simulations, games, problem solving, case studies and analysis, microsite presentations, slideshows and lecture captures, design, and innovation; (5) Maximizing In-World Opportunities: Taking advantage of opportunities in the environment such as the availability of a guest speaker, the co-funding of a shared learning endeavor, a partnership with a business entity, fieldtrip options, and/or other created opportunities. This chapter addresses various known branching designs on two levels: (1) course curriculums and (2) Digital Learning Objects (DLOs). It offers a typology of branching at the course curriculum level. Further, it covers branching in the DLO level based on specific cases. It analyzes the various points at which a curriculum converges and when it diverges (branches). Finally, the chapter includes a section on the mindful design of branching: design of the branching, the transitions, and proper learning assessments.

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INTRODUCTION

For a curriculum to be relevant, it must help transfer both knowledge and skills that are relevant in the real world. It must reflect the world’s complexity. If new learning changes old paradigms, clearly, the curriculum should reflect these findings. Further, it must support learners in their various learning and career objectives. A well designed curriculum must also enhance learners’ skills in collaboration—intercommunications, co-learning, and co-design. A strong curriculum should respect learner decision-making and self-directedness in ways that increase learner self-motivations and self-efficacy. And finally, a strong curriculum should include the maximizing of learning opportunities in the environment. At the heart of these curriculum objectives is branching, or the capability of diversifying a curriculum through multiple paths.

This chapter addresses some of the strategies for designing branching divergence in online curriculums and DLOs. It looks at strategies for re-integrating learners after divergent learning experiences. To clarify, branching learning is not about skipping the prior planning of an online course. The sequence of a course should be fairly defined, even if there is plenty of branching learning. There is no excuse for disorganization. However, even within structured learning and a general trajectory, there is plenty of room for adaptivity and the accommodation of serendipitous learning opportunities. Branching learning may occur at any time in a learning sequence. It may involve single individuals, dyadic teams, and other sized teams. The branching should add value to the learning without eliminating or over-shadowing the fundamentals. Any branching should clearly contribute to the learning objectives of the course or digital learning object. This chapter will include the design of proper learning assessments for branched learning. One clarification: This chapter addresses how branching logic is used in instructor-led high-interactivity courses, not in automated learning setups.

BACKGROUND

“Branching logic” in instructional design refers to the reasoned design of different paths (relationships) through a learning experience. At various curricular junctures, once certain standards or conditions are met, to use logical connectives, learners may go forward along a particular branch, skip another branch (“not” or negation), take multiple branches (“and” or addition or conjunction; fork or join multiple paths simultaneously), magnify multiple learning paths (multiplication), “select” between branches (“or” or logical disjunction or inclusive disjunction or alternation), or branch or merge to a single path, based on their performance or preference or other learning-based factors.

In terms of instructional design practice, “branching logic” has not been developed to any high formalism. The academic research literature contains little in regards to branched learning. Often, there is the sense that branching is designed by faculty, Subject Matter Experts (SMEs), and instructional designers without too much external reference to learning theory or practice. Sometimes, branching is fleeting and unnoticed; at other times, it’s a critical part of the course and the learning. A critical premise here is that e-learning path branching should be done with a clear pedagogical rationale.

The time assumption in the following depictions is that learners work towards progress at varying paces; other times, they may have to pause or stop temporally; for others, they may be stopping out permanently. Sometimes, the branching may begin early in a learning sequence and remain throughout the learning. Other times, the branching starts and stops during the learning sequence. For some, the branching occurs at the end of the learning sequence. The branching may be recursive; in other words, a learner may have to go backwards or review particular contents. The nature of time may be discrete, with hard deadline constraints for certain work to be achieved to have satisfactorily met the requirements of the branched