Chapter 19
Measuring the Digital Transformation of Education and Teaching

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ABSTRACT

The digital transformation has reached higher education and many faculty members find teaching in the digital environment hard. A key question for educational institutions is whether the uptake of blended learning within their digitization strategies matches the pace of technological innovation. This chapter discusses a model for monitoring the progress of educational digitization that has been in use throughout four years at HTW Chur, Switzerland. The model connects technologies to practices rather than abstracting technologies from them. This helps identifying performance indicators in campus-wide information systems for understanding the diffusion of technology uses among the faculty, and it helps categorizing new technologies towards their organizational innovation potential. The combined use of these performance indicators with the model supports tailoring faculty development activities for digitization strategies that are based on the actual development needs within the institution.

INTRODUCTION

This chapter is based on a journey of digitalizing higher education programs from traditional face-to-face teaching to blended learning at the level of an entire university. It is a response to the uphill struggle between expectations, assumptions, scale, and impact on the one hand, and organizational culture, practices, technologies, and budgets on the other. In this process, the role of faculty development is to prepare and empower the professors and lecturers for the efficient use of digital technologies and infrastructures for teaching. Conventional approaches to these challenges are training sessions, information events, competitions on innovative teaching, communities of practice or communities of inquiry (Garrison & Vaughan, 2008). However, these approaches require a good knowledge of the development needs, are hard to scale with the pace of technological innovation, are resource intensive, or have a limited impact on the organization as a whole.

The present work is rooted in combined investments in digital technologies and faculty development in relation to changing organizational practices from traditional university teaching to blended learning. Development interventions are a crucial success factor for this process because the transformation from primarily analog to digitally incorporated teaching practice also changes the faculty's development needs. Aiming these interventions too low, creates the impression among the faculty that they surpass the expectations of the transformative process, while aiming too high, creates the impression that the actual development needs are not respected. Both cases lead to tensions and to frustration in the organization that can endanger the transformative process and challenge faculty development as an organizational change agent if the organization's uptake of new practices is tied to ambitious timeframes and implementation plans. This raises questions on the nature and speed of transitions from traditional teaching to blended learning.

Responding to such questions requires faculty development units to be aware of the dynamics within their organizations while digitalizing education. This turns out to be a difficult problem because many activities are not communicated or are hidden, because the activity has been shifted into the digital realm.

The present research started from the fundamental question about the changing practices during transformation projects: *What data accounts for the organizational adoption of digital technologies and blended learning?*

Answers to this question help to choose appropriate supportive strategies for the different groups among the faculty. Such answers are also crucial for managing the complexity of digital transformation projects. This chapter addresses this question by presenting a meta-framework for planning and monitoring the dynamics and progress of faculty development interventions during the digital transformation of universities, in which blended learning practices are no longer considered as educational innovation but as non-optional elements of the teaching practice.

The framework presented in this chapter strives to structure the transformative process, to communicate progress, and to support the in-situ identification of barriers and bottlenecks as well as to guide the decisions to overcome them. Such transformations are closely related to the adoption of innovation (Rogers, 2003). Therefore, this chapter analyses the driving factors of the adoption of innovation that influence the cascades of smaller adoption processes that structure the overall transformation. From the viewpoint of faculty development, each adoption process is related to the mastering of different competencies, which in turn define the development needs. Moreover, adoption models represent the dynamics of the faculty's uptake of new practices by predicting the quantities within a cohort and a timeframe. This makes these models particularly useful for faculty development as these models help to identify competence gaps, barriers, bottlenecks, or diversions *during* the transformation process as well as provide performance and cost indicators for strategic decisions.

This chapter discusses the rationale of the framework in three parts: The first part focuses on the background of university scale transformation from conventional teaching to blended learning. This includes the present body of research as well as the environment that frames faculty development activities as part of the digital transformation of an organization. The second part links innovation adoption to the transformative process towards blended learning. This leads to a generic innovation cascade for transforming towards blended learning and explains the rationale that can guide faculty development interventions. The last part presents a case study in which the model has been applied and demonstrates the application of the indicators for monitoring the transformation process and selecting faculty development interventions. This part demonstrates that faculty development must not constrain itself to conventional approaches but has to address technological factors that accelerate or limit the empowerment of the faculty.

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