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Digital Transformation in Higher Education in Vietnam

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Abstract

This paper, aims to explore (i) what digital transformation means in the higher education context, (ii) what knowledge should faculty members equip themselves with in response to the forthcoming digitalization in their institutions, and (iii) what HEIs should bear in mind in designing professional development programs to support their faculty's preparation. Based on an exhaustive review of the literature, the paper has significant implications for HEIs in getting ready for their imminent digitalization.

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1 Introduction

The Fourth Industrial Revolution brought about dramatic changes in all aspects of life and work. As a result, digital technologies permeate our everyday personal and professional lives. Besides the huge benefits offered by digital technologies, people are encountering the huge challenge of making changes to survive and develop in the fast-changing world driven by technological advancements. As organizations whose traditional role is to plan, test and implement innovation, higher education institutions (HEIs) are expected to take the lead in exploiting technological tools to adapt to the evolving world, sustain their competitiveness in the technological era, and, above all, better respond to the needs of their students. And the key for HEIs to do so is nothing other than digital transformation (Lindvall & Ryve, 2019; Utomo & Darma, 2020; Sudarsana et al., 2019).

2 Materials and Methods

Digital transformation in higher education

In the higher education context, there has not yet been a consensus regarding a common definition or a commonly agreed model for digitalization. However, the definition by Rampelt et al. (2019), has so far been most cited in academic discussions of digital transformation. As defined by these researchers, digital transformation is "a transformative process that substantially influences all activities of higher education institutions. It permeates all processes, places, formats, and objectives of teaching, learning, researching, and working in higher education." They also emphasize that central to this transformation is the increasing use of digital media and technologies for teaching and learning, research, support services, administration, and communication, which is supported by upgraded infrastructure.

Obviously, this widely accepted definition implies a significant role of academic staff in that transformative process as they are deeply involved in almost all the aspects of digital transformation. This is also reaffirmed by Maria et al. (2021), in their systematic review of higher education digitalization. As they concluded in their review, the academic staff "play a vital part in the digital transformation process in higher education institutions, both at an organizational and technological level." Therefore, it's possible to say whether the digital transformation can be a success or not largely depends on this important actor.

Rampelt et al. (2019), also imply the reciprocal relationship between the faculty's professional development and HEIs' digitalization. Digitalization stresses the urgent need for lecturers to develop professionally in order to be able to use the upgraded infrastructure and exploit the technological tools to make their teaching more effective and to better support their students' acquisition of new knowledge and skills. On the other hand, the lecturers' professional development greatly affects digitalization as it is a prerequisite for a digitalized university to operate. Without academics with added competence to adapt to the technology-driven workplace, digitalized universities can't operate smoothly (Lachner et al., 2021; Özgür, 2020; Jang & Tsai, 2012).

3 Results and Discussions

The required knowledge framework for faculty in HEIs' digitalization

As discussed above, the teaching staff are the key actors in the digital transformation process of HEIs and assume a decisive role in the success of digitalization. The question is, what essential preparation that these actors should make in order to fulfill that role in HEIs' digital transformation? Within the scope of this paper, we focus on the knowledge they need to have to complete their tasks in digitalized universities.

The answer can be found in what is called the TPACK model or TPACK framework proposed by Mishra & Koehler (2006). They emphasize this model is the required knowledge framework that faculty must have in order to function well in digitalized universities. Since its publication in 2006, TPACK has become one of the leading theories regarding educational technology integration and had significant implications for faculty's professional development activities. In essence, this framework was developed from the 2-domain knowledge model advocated by Shulman in 1986 by including an additional domain namely technological content knowledge, making it a complete knowledge framework enabling faculty to fully exploit technological tools (hardware, software,

applications, associated information literacy practices, etc.) for more appealing and effective lessons (Mishra & Koehler, 2006). The TPACK components are illustrated in the figure below:

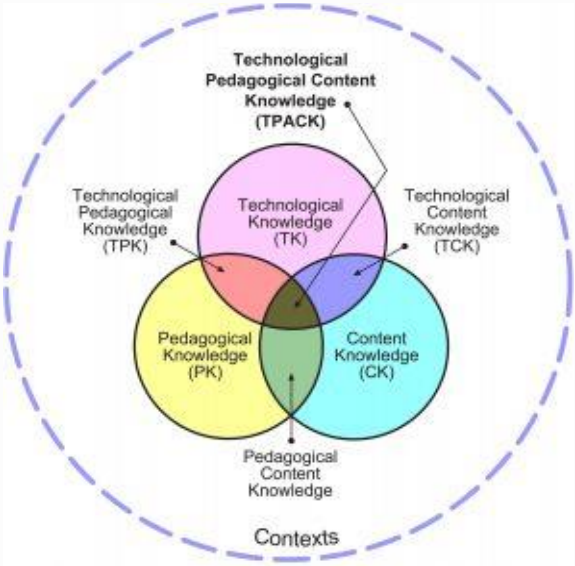

Figure 1: The TPACK framework (Mishra & Koehler, 2006)

As seen in the above figure, the knowledge framework required for the faculty to successfully integrate technology in their teaching is made up of a total of 7 types of knowledge. In that framework, Content Knowledge, Pedagogical Knowledge, and Technological Knowledge act as the foundation and the other four types of knowledge namely Pedagogical Content Knowledge (PCK), Technological Content Knowledge (TCK), Technological Pedagogical Knowledge (TPK), and TPACK (Technology, Pedagogy, and Content Knowledge are the interactions between and among the first three bodies of knowledge.

Content Knowledge (CK) is the teachers' knowledge about the subject matter that they are to teach to their students. As Shulman (1986), noted, this body of knowledge embodies "concepts, theories, ideas, organizational frameworks, evidence, and proof, as well as established practices and approaches toward developing such knowledge." Content knowledge plays a vital role in the framework, as only with in-depth content knowledge can teachers see how ideas connect across fields and to everyday life as well as help students create useful cognitive maps, relate one idea to another, and address misconceptions. Mishra & Koehler (2006), also emphasize the significance of the content knowledge component by describing the cost of faculty not having proper content knowledge as detrimental to students' learning, i.e. students receiving incorrect information and developing misconceptions about the content area, etc. Pedagogical Knowledge describes teachers' knowledge of the practices, processes, and methods regarding teaching and learning. PK encompasses the purposes, values, and aims of education, and may apply to more specific areas including the understanding of student learning styles, classroom management skills, lesson planning, and assessments. Technological Knowledge (TK**)** is defined by Mishra & Koehler (2006), as teachers' knowledge of, and ability to use, various technologies, technological tools, and associated resources. It comprises understanding educational technology, considering its possibilities for a specific subject area or classroom, learning to recognize when it will assist or impede learning, and continually learning and adapting to new technology offerings.

Pedagogical Content Knowledge (PCK), on the other hand, refers to teachers' knowledge regarding foundational areas of teaching and learning, including curricula development, student assessment, and reporting results. PCK focuses on promoting learning and on tracing the links between pedagogy and its supportive practices (curriculum, assessment, etc.). Technological Content Knowledge (TCK) is the understanding of how technology and content can both influence and push against each other. It involves understanding how the subject matter can be communicated via different technological tools, and considering which specific tools might be best suited for specific subject matters or classrooms. Technological Pedagogical Knowledge (TPK) is defined as the faculty's understanding of how particular technologies can change both the teaching and learning experiences by introducing new pedagogical

affordances and constraints. It also means understanding how such tools can be deployed alongside pedagogy in ways that are appropriate to the discipline and the development of the lesson at hand. Last but not least, Technological Pedagogical Content Knowledge (TPACK) is the intersection of the three larger underlying domains of content, pedagogy, and technology, forming an effective basis for the faculty's teaching using educational technology (Koh et al., 2013; Pamuk et al., 2015; Tijan et al., 2021).

Institutional professional support for faculty in preparation for HEI digital transformation: approaches and success factors

As discussed above, TPACK is a prerequisite for the academic staff to be able to function in digitalized universities and colleges. Therefore, in preparation for the digital transformation process to start, HEIs must support their academic staff in creating their TPACK in the form of professional development programs. Below are suggested instructional approaches that HEIs can use for the programs and the factors that HEIs should pay attention to guarantee such programs' success (Bygstad et al., 2022; Bai et al., 2021; Ritter & Pedersen, 2020).

Instructional approaches

There have been a variety of recommended approaches that HEIs can adopt in supporting their faculty in creating their TPACK. According to Niess (2011), theoretically, the following approaches can be employed in preparing the faculty for technology-enhanced teaching: self-assessment, learning-by-design approach, instructional modeling, collaborative lesson studies, meta-cognitive exploration of TPACK, and action research. In empirical research, however, the following instructional approaches were confirmed as effective in developing TPACK for the academic staff: inquiry learning approach, peer-coaching, authentic learning approach, project-based approach, and problem-based learning approach (Doering et al., 2009, Guzey & Roehrig, 2009, Tee & Lee, 2011).

Success factors

Effective instructional approaches for TPACK development are available, and HEIs can depend on their specific conditions to choose any from the suggested list above. However, in designing any TPACK development program, the following factors should be taken into consideration as they have been confirmed by numerous empirical studies to be influential to the program's effectiveness.

The first success factor to TPACK professional development programs is participants' engagement. This is confirmed by Jimoyiannis (2010), in an evaluation study, where they emphasized that to be successful, professional programs should ensure the participants' engagement because it was vital to the participants' full comprehension of new concepts. Secondly, authentic learning experiences also greatly affect the effectiveness of this professional development program. Empirical research by Tee & Lee (2011), confirmed this as it found the participants became better positioned to use TPACK more fruitfully when they were asked to design authentic or simulated complex situations. In their separate research works, Doering et al. (2009); Jimoyiannis (2010), shared the same viewpoint that authentic learning experience is essential because teachers' development on TPACK requires authentic learning experiences concerning real class situations. Collaboration is the third contributing factor to the success of TPACK development programs. The significance of collaboration was supported by Allan and his research team as they noted a significant change in the teachers participating in the collaborative curriculum development project (Walter et al., 2010). This finding was further enhanced by Jimoyiannis (2010), as they emphasized collaboration as a critical parameter for a successful TPACK development program for teachers. Guidance and continuous support are also indispensable factors (Blocher et al., 2011; Guzey & Roehrig, 2009; Trautmann & MaKinster, 2010). As agreed by these researchers, the forms of support vary, including peer support, expert support, as well as ongoing technological and curricular support to maintain teachers' momentum in the process of integrating technology in their teaching to enhance students' learning effectiveness. Last but not least, such aspects of TPACK development programs as the relevance between the professional development programs with curriculum, feedback, and self-reflection of the participants, and the length of the programs also contribute to the participants' success in achieving the expected TPACK learning outcomes.

4 Conclusion

Digital transformation is a buzzword for all organizations which want to survive and prosper in the technology-driven world. In the higher education sector, where competition is increasingly vigorous, digital transformation presents both challenges and opportunities for HEIs' sustainable growth. As the major part of digital transformation in HEIs concerns the faculty, it is important to identify what types of knowledge they should acquire in preparation for the drastic transformative process and what HEIs should do in supporting these key actors. By discussing the TPACK framework and reviewing instructional approaches and success factors for TPACK development programs, this paper has provided good suggestions for HEIs in preparing their faculty for the impending digital transformation.

Conflict of interest statement
The author declared that he has no competing interest.

Statement of authorship
The author has a responsibility for the conception and design of the study. The author has approved the final article.

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