DIVERSITY AND DIGITALIZATION AS VITAL KEY SUCCESS FACTORS FOR INDIVIDUALISATION OF LEARNING

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Digital transformation as driver of the epochal change

Transformation means conversion, re-modelling, re-designs as well as changes and revisions. The four main fundamentals of transformation are transforming competitive strategy into strategic renewal, transforming organisational development into cultural dynamics, transforming R&D into social innovation, and transforming the functions of management. These characteristics prove that transformations have always been part of social development, but their dynamics are growing steadily (Schieffer & Lessem, 2009; pp.23-35).

The peculiarity of the present epoch is that omnipresent transformations are superimposed by omnipresent digitization. If both are connected to one another, then the key driver is called digital transformation. It is the change of organisations by using and embedding the possibilities of digital support and services for the processes and functions of the organisation. Transformation and digitization are in a dialectical context. Transformations lead to a drive to rationalize with the help of digital technologies and media, which in turn lead to further transformations. The dynamics and complexity of change is currently so high that all stakeholders of the social developments have problems to cope with changes in the digital world.

Enormous challenges are generated by the fast growth of the networks, the dynamic development of the social media and social relations, the huge increase of knowledge and work requirements, the dynamics of science and technology, the increased security in general and data protection in particular, etc. If all these things are to be reconciled, the result is an enormous diversity. But the control and mastering of the (digital) transformations require a rich understanding and appreciation of cultural, sectoral, societal, organisational, and individual differences and diversifications (Schieffer & Lessem, 2009). Transformations are always embedded into the social and cultural background of the actors.

Holistic development of organisations

The holistic business process management is an important component of sustainable success recipes for organizations. It consists of the phases design, engineering, monitoring, and re-engineering (Schönthaler et al., 2011; pp.17-20).

The business process design is required when new business fields have to be integrated into existing process landscapes or new technical possibilities are introduced. Diversification leads to new business areas, digitization extends the technical possibilities. For this reason, organisations under the pressure of digital transformations have to go through this design process in several iterations.

The business process engineering includes the continuous further development and optimization of all processes. Proven processes will survive and will be combined with improved or partial new designed processes. In addition to a basic set of tried and tested offers, diversification opens up new target groups, which are integrated into the organization by extending the process landscape of the organisation. The increasing digitalisation of the organisation's processes necessitates a gradual change in all IT-supported and direct IT processes, which inevitably results in a continuous development of all processes up to an ever-increasing degree of digitisation in the organization.

The monitoring within the framework of the joint business process management is intended for the ongoing control and supervision of existing business processes in order to identify and eliminate bottlenecks in the processes or the provision of resources. It should reflect which diversification efforts are to be made and how their success rate is to be assessed. With regard to digitization, monitoring indicates how digitalization is to be integrated and what effects are expected from its further development.

The Business Process Re-Engineering ensures the partial or complete redesign or optimization of already introduced processes due to changed conditions. It is the central function of the business process management of organisations of all kinds. All processes of diversification are subject to this permanent reengineering. This means that all digitized processes or all processes that are digitally influenced are constantly renewed, expanded and adapted in the context of a holistic process optimisation.

Relevance of diversity as organisational principle

Diversity characterized the variety, manifoldness and multiplicity of objects and relations, processes and functions as well as actors and roles in an organisation. Therefore, diversity is an organisational principle. It is part of any organisational development, especially of its strategic orientation. Four strategies are essential for the organisation´s overarching vision, mission, and strategy, which determine the diversity management aspirations: managing workforce representations, managing workforce demographic relationship, managing diverse talent, and managing all strategic diversity mixtures (Roosevelt, 2010; pp.13-14).

Diversity influences all basic strategies such as long-term strategic orientation, the main strategies as general organisational development, the derived strategies of the divisions up to the portfolio design for the organisation and its parts. In particular, the opportunities of positioning of the organisation in the markets in relation to the costumers and the providers are pushed by a successful control of diversity and related diversification strategy. Diversification strategies are applied to use the diversity of the organisation for purposeful

and targeted improvement of the organisational behaviour and performance by exploiting the existing variety of factors of the organisation.

Diversification strategy is a sophisticated approach for vertical extension of organisational activities such as new products in the same application field or new technologies for the available products or vertical expansion of organisational activities such as new offers of upstream or downstream services in relation to the organisational core processes. The lateral diversification offers the chance of extension of the diversity of the organisation by new products and services. The conclusion of this context of diversity and diversification is that diversity can be used for diversification, and diversification can be applied for improving the diversity. This means, a direct control of diversity will be achievable.

Relevance of digitalization as organisational principle

Originally, digitisation was simply the transfer of analogue data into a digital form. Nowadays, the term has a much more complex, additional meaning. Many processes of any nature in the society are automated or part automated with the support of information technologies. Thereby, they are automatically transferred into a digitized world. The human being acting as a carrier of the organizations is, in turn, compelled to process former analogous processes in interaction with digital objects, methods and devices. Digitalisation becomes an organisational principle, because it becomes indispensable in the organisation.

In general, the digital transformation influences the development of organisation by four levers: digital data, automation, interconnection and human-machine-transactions. The main levers are supported by technology-driven enablers such as big data, internet of things, cloud computing, additive technologies, social media, robotic, mobile communication and apps. Levers and enablers provide as services the application of digitalization in many fields of research, development, and use such as smart systems, trace and tracking, autonomous driving, infotainment, e-business, etc. (Roland Berger Strategy Consultant / BDI, 2017), but in particular in the educational systems based on learning and training increasingly in a digital way.

The digitalisation is precondition and part of the digital transformation. The cross-linking of digitalization and transformation is realised by IT-subjects such as big data, IoT, smart systems, IT security, cloud computing, cyber-physical systems, augmented reality, etc. They will be able to be the key driver for the digital transformation of organisations, if they are really focussed on transforming the systems, processes or objects. New digital business models are important to secure the sustainability of the transformations in the digital age. One of the most relevant approaches in this sense are digital Ecosystems including economy, ecology, social aspects, and digitalisation as a complex set of subjects for the further development of organisations.

Inter-organisational relation of diversity and digitalisation

The inter-organisational context of diversity and digital systems was already given by the traditional information and technology management. The business continuity management based on the contingency planning including emergency plan, vital record plan, and backup plan supported by means of some combination of redundancy, diversity, mobility (McLeod & Schell, 2007; pp.225-226). A typical example of the use of proven principles of classical information processing and its application in the development and design of digital transformations and digital systems to new application areas at a much higher application level.

The system of forces and forms in organisations (Mintzberg, 1991) based on entrepreneurial, machine, professional, diversified and adhocracy forms will be superimposed by the digitalisation and the related and driven transformation forces. All forces and forms interact with one another in such complex situations as the transformation and possibly turnaround of the educational systems focused on training and learning. Therefore, direction, efficiency, proficiency, concentration, and innovation are redefined and pushed. The whole organisational system will not only be changed in the structural context, but rather it is also strategically reoriented (Senior & Swailes, 2016; pp.100-105).

The direction determines the strategy. The efficiency is influenced by the ratio of costs and benefits. The proficiency is characterised by the quality of the application of knowledge and skills. The innovation encourages adaptation and learning. The concentration provides an expression, how an organization is positioning itself with regard to different products, services and markets. Therefore, diversity is one of the key aspects for the development of organisational and of inter-organisational strategy and structure. The digitalisation has in relation to the diversity direct impact on the structure of the organisations and the corresponding strategy.

Impact of diversity and digitalisation on individualisation of learning

Diversification and globalization are inextricably linked. The trend is being reinforced by digitalization. Learners become more mobile through digital techniques and digital products. They are better and better able to choose from the wide range of offers, those which best appropriate to their interest. The development creates new demands on education products and services on the education markets. Educational organisations must adapt their strategies to the changes in time (Senior & Swailes, 2016). The interaction of users in social networks accelerates this process enormously.

The stronger individualisation is based on a comprehensive diversification in connection with the digitisation. Because more and more people are increasingly using diverse ways of accessing new products, services and offers through digitalisation, traditions are increasingly being questioned and more and more choices are made available to the individuals. However, this also results in a higher individual decision-making pressure, which in turn causes a change in value systems. Learners are more individualized and have less stable relations with

the educational organisations, but they are constantly in exchange with other stakeholders in order to find the best offer for themselves.

The digital natives, generation Y, prioritize their criteria in the educational choice. The individual self-realization and thus the less affinity to the educational organisation are based on a much higher self-attention. Learners are increasingly demanding the adherence of a work-life balance by their education providers. The entry of Generation Z into the systems of higher education will further intensify the demand for individualisation of learning, because this group of people has fully integrated the digitalisation into their daily lives and have learned to deal with complex situations and the related diversity.

Individualisation of learning in practice

The prerequisite for the individualisation of learning is the design of modular learning systems. Once developed learning components have to be used as often as possible because otherwise the efficiency of the learning offers is usually not guaranteed. The development of individual learning modules from a basic and well-structured knowledge is technically, organisationally, contently, socially and economically feasible. These smallest knowledge modules can be mapped in semantic networks in order to make them available for individual learning paths (Figure 1).
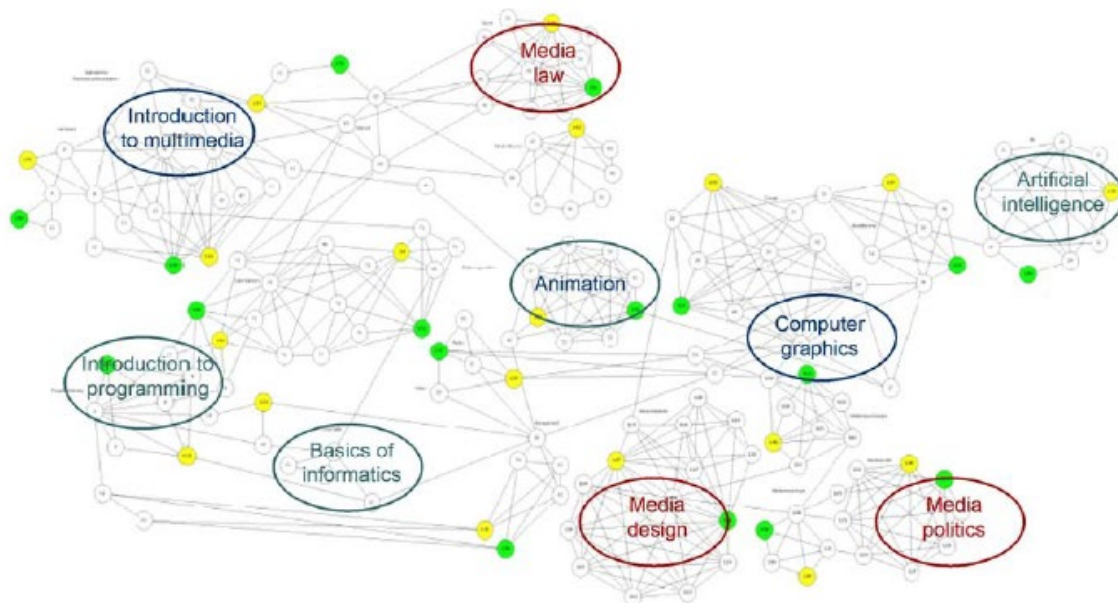

Figure 1. Granulated and structured learning objects as basis for individual learning paths

Individualisation as part of mass consumption in learning and training

Individualisation becomes part of the mass consumption in learning and training. It is the complementary development to the mass component production for user-individualised products in industry. After structuring the contents, the semantic network has been developed for creating an individual, on-demand generation of courses (Figure 2).

The provision of the study documents and learning contents will be realized course-wise supported by a multidimensional system of knowledge distribution, in which may be varied as dimensions: the knowledge of the learner, the optimal methodology used and the type of delivery channel and devices. Thus, the methodological and technical conditions are created to provide diversified educational modules for the use in the design of multivalent need-based forms of learning through channels varying due to the situation.
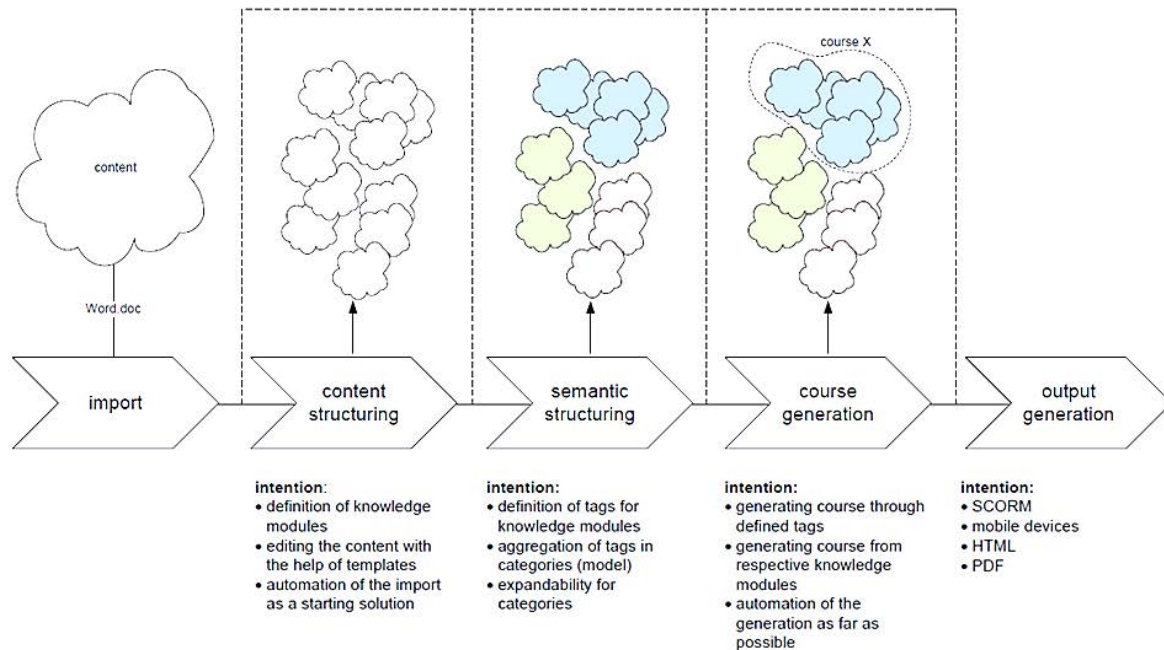

Figure 2. Structuring and schematic modelling of content for course generation

Conclusions

The mainstreams in the society are recently characterized by digital transformations. The result is an epochal and global change. The further successful development of organizations depends on the holistic understanding, design and control of the systems in general and of the educational systems in particular. Diversity is not only a characteristic of a system or its processes and functions as well as products and services, but it becomes more and more an organisational principle. The same development is typical for the digitalisation. A common indication of the maturity level of the development of systems is converted into an organisational principle. Both principles are key driver for the further development of organisations as well as the inter-organisational relations. The single organisation is pushed to more cooperation and competition in alliances or other related forms in order to be competitive and efficient in the future. Digitalisation enables the organisations to cooperate, to diversify their services and to individualise the learning, but it is also needed to realise the processes efficient and proficient. The individualisation of learning in practice is economically and technologically achievable by using the opportunity of diversification especially in the inter-organisational context and applying the means of the digitalisation. But, it will lead to more changes in the end, the so-called digital transformations of the educational systems.

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