

16 The role of education in sustainable development

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Introduction

An appropriate solution for fulfilling the role of education in sustainable development seems to be educational organisations that meet the criteria of turquoise organisations (according to the typology of F. Laloux). The reasons for choosing this type of organisation are explained in the initial part of the chapter, in the next part a case study is presented indicating the steps leading to building this type of organisation.

Changes in the organisation's environment and the response to them

The transformations associated with the Fourth Industrial Revolution are not only related to digitisation and automation. As in the case of previous industrial revolutions, entire sectors of the economy may face not only a radical transformation but also a decline, while new areas of activity emerge. Does such a transformation await the education sector? It is worth “taking 2 steps back” to see a description of innovation processes around/in the background of the education sector. We analyse selected aspects related to the current shape of growth trends in the environment of the organisation (metaphorically step minus 2), then look at selected trends in education (step minus 1) to discuss organisational contexts related to education and sustainable growth.

We start with the “minus 2 step”, describing the growth processes in the organisation's environment. We consider three descriptions of the development of innovation:

- 1 the so-called S-curve, which describes an innovative development by H. Altszuller (whose origins date back to studies from the 1950s of the last century); the S-curve indicates that initially the innovative development is relatively slow (linear growth), then enters the phase of extremely rapid growth (exponential growth), and in the final phase it again slows down significantly (again linear growth)

- 2 the so-called Moore's Law, describing the development of technology by G. Moore (founder of Intel); formulated in 1969, it originally said that the number of transistors in integrated circuits would double every 18 months
- 3 the so-called Kurzweil's law of accelerated development; formulated in the 1990s of the twentieth century by R. Kurzweil (at that time Kurzweil was the chief engineer at Google), this law says that when technology [of a given industry] becomes digital, when it can be written in the code of zeros and ones, then it begins to develop at an exponential rate, and its development can be described with the help of Moore's law.

It is easier to understand the scale of the changes of the Fourth Industrial Revolution and its impact on society when we overlay the graphs on each other. Moore's law seems to describe an exponential fragment of the S-curve by H. Altszuler (see Figure 16.1). On the other hand, the digitisation of subsequent areas of social life causes them to begin to change at an exponential pace (Kurzweil's law of accelerated development), not linear. In addition, we are dealing with a kind of overlap and mutual reinforcement of coexisting, exponential increases as described. As stated by P. H. Diamandis and S. Kotler S. (2020) the pace of developmental changes increases due to the overlapping development of individual industries, e.g., the development of biotechnology is further accelerated by the development of (among others) artificial intelligence and quantum computers.

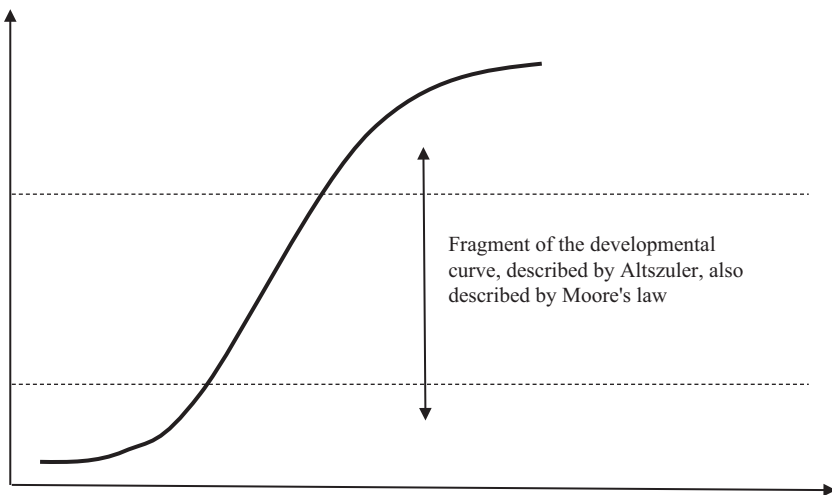


Figure 16.1 Diagram showing the common part of the S curve (by Altszuler) and Moore's model

Source: Own elaboration.

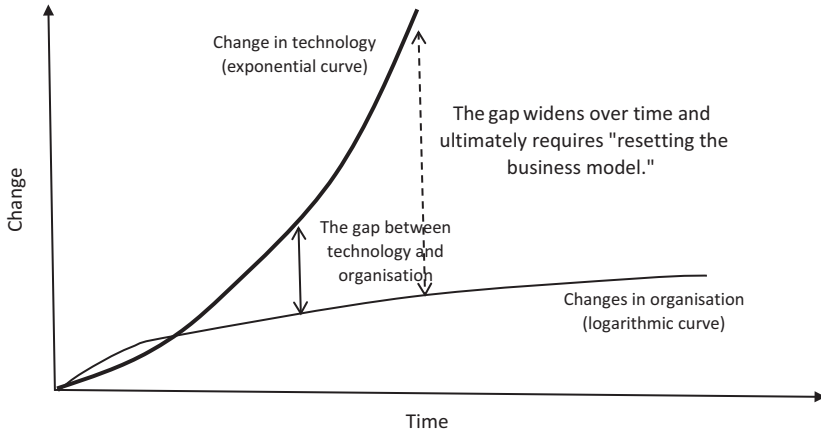


Figure 16.2 Chart describing the so-called Martec's law

Source: Own elaboration based on: Kupilas et al. (2019, p. 85).

Organisations are trying to adapt to changes in the environment caused by the development of technology. One of the models illustrating the impact of technological change on organisations and business models is the so-called Martec's law, formulated in 2013 by Scott Brinker. It states that technology is changing at an exponential (very fast) pace, but organisations are changing at a logarithmic (much slower) rate (Rosinski 2021; Kupilas Rodríguez-Montequín, Villanueva-Balsera, Álvarez-Pérez 2019; Brinker 2016). The main problem addressed in Martec's law is that "technology is changing faster than organisations can absorb the changes." (Dodd 2019)

The growing discrepancy between the development of technology and the functioning of the organisation is a driving force for companies to change. Market participants essentially adopt two strategies that are also reflected in the transformation of business models: evolutionary and revolutionary. Some companies adopt an evolutionary strategy, trying to minimise the discrepancies that arise. Often, the decision on the evolutionary strategy is associated with the occurrence of a critical event in the organisation – this event becomes the reason for the decision to change (Brinker 2020).

Most often, companies try to adapt agile management or lean management practices to increase the efficiency of the organisation (Brinker 2016b). In the short term, this solution has the desired effect but does not guarantee long-term effectiveness (see Figure 16.3).

The second strategy of action, which is a reaction to the same divergence of technology and the functioning of the organisation, can be described as revolutionary (Brinker 2016a; Brinker, McLellan 2014). The revolutionary strategy in

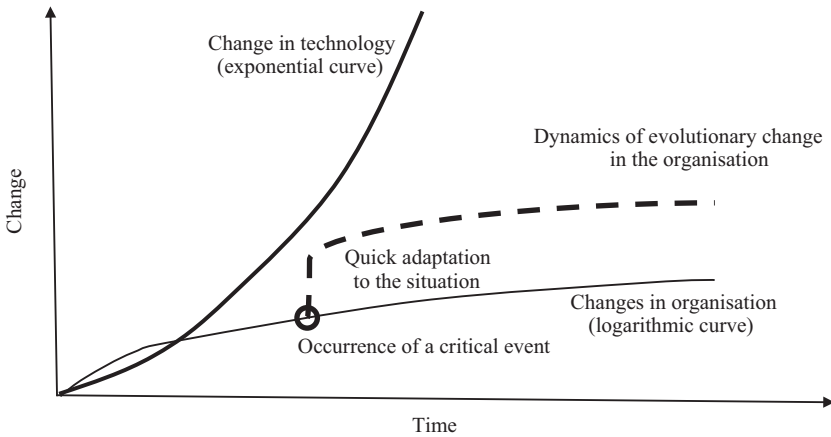


Figure 16.3 An organisation’s evolutionary strategy to minimise the gap between technology and organisational functionality

Source: Own elaboration based on: Brinker (2016, pp. 235–236).

the face of technological change had been noted for years much before Martec’s model was created because it appeared in a kind of summary of the changes of the third industrial revolution (Christensen, Raynor 2003). However, it seems that it is only with the development of the transformations of the Fourth Industrial Revolution that we started dealing with its popularisation in the context of the development of technology and organisational challenges associated with it.

In the revolutionary strategy (Figure 16.4) we are dealing with a fundamental change in the model of functioning of the organisation, and not merely with the improvement of the existing one (as in the evolutionary strategy). The assumption is not so much a “slightly more efficient” or “more flexible” system, but a completely new way of functioning of the organisation. The transformation of organisations affects the digitisation of technology but does not stop there (as it can happen in the evolutionary approach). Technological modification is the first step, followed by changes in the approach to collecting, analysing and interpreting data, changes in the culture of the organisation and the expected competences of employees. The way the company conducts individual operations is also changing (Chamorro-Premuzic 2021).

Thus, we get a completely new way of functioning of the organisation (Figure 16.5). It can, of course, be more effective and flexible, but it is primarily qualitatively (though not only quantitatively) different from the previous one.

These evolutionary and revolutionary reactions to the discrepancy between the level of technology and the way the organisation functions are reflected in the ways of shaping business models in the second decade of the 21st century. In

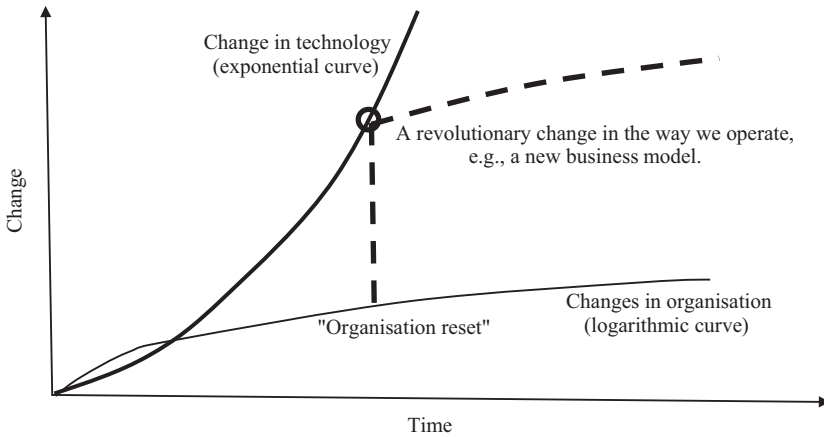


Figure 16.4 A revolutionary organisational strategy to minimise the gap between technology and organisational functioning.

Source: Own elaboration based on: Brinker, McLellan (2016).

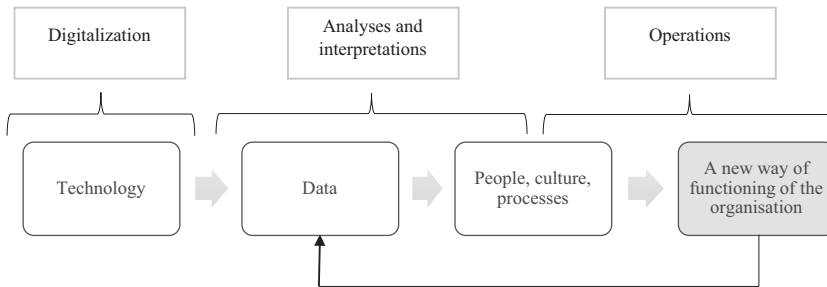


Figure 16.5 Stages of digital transformation leading to a data-centric organisation

Source: Own study based on: Chamorro-Premuzic (2021)

the course of the fourth industrial revolution, we observe transformations of both the overall logic of the business model and its constituent elements.

We observe primarily two solutions (Figure 16.6):

- 1 modification of existing models and adaptation to the changing environment of the organisation (analogous to the evolutionary approach)
- 2 construction of completely new models, resulting from the realities of functioning in the fourth industrial revolution (analogous to the revolutionary approach)

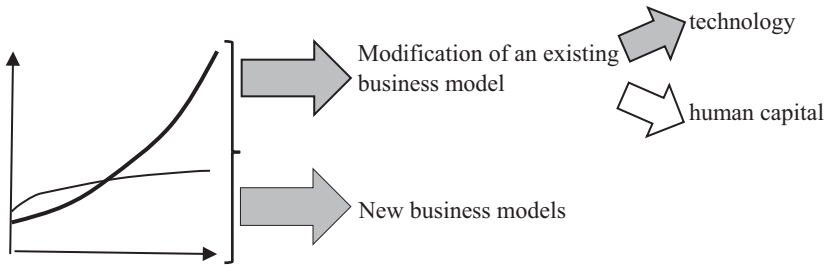


Figure 16.6 Targeting the organisation's response to the processes of transformation of the digital economy

Source: Own study.

The shape of the organisation dealing with education and growth responding to changes in the environment

In the previous part of the text, we took a kind of “take 2 steps back” approach to see a description of the innovation processes around/in the background of the education sector. By describing the environment of the organisation, we have taken a step forward, there is one more step back – thus one step forward to be in the right place and time of our narrative. This step is a reflection on the education sector. Due to the requirements of the text, I would like to put the spotlight on only particular fragments, specific opposites, indicating their significant role:

- 1 learning ceases to take place in organisations, it becomes a lifestyle:
 - earlier, when talking about education, we often talked about formal education (school, higher studies, certification of professional skills);
 - currently, we understand learning as lifelong learning (pointing to the concepts of lifelong learning or growth mindset), which is caused in a way by the need to change professions in the course of life related to the length of professional activity and the pace of changes in the environment
- 2 learning ceases to be related to the development of competences in the institution, it is associated with an active network of contacts
 - earlier, when talking about education, we associated it with a specific place: a school, a workshop, a centre or a training room
 - currently we understand it as the development of competences in relation to the social environment by acquiring not only knowledge, skills, and experience but also more primary forms such as habits of behaviour (Milkman 2022; Duhigg 2019).

Having shared this reflection, we find ourselves in a way “here and now”, so let us return to the problem defined in the title, which is: The role of education in

sustainable development. In other words: how can we talk about (sustainable) growth, education and the organisational context?

For reflection on this topic, it will be helpful to use a model: Reinventing Organisations Map, based on Frederic Laloux's book *Reinventing Organizations*, however (in the opinion of E. Szabolcs and M. Karoly), it goes beyond the breakthroughs mentioned in Laloux's study. For the purposes of this text, we used the 2.2. version of the map as published by its authors in April 2017 [<http://www.reinvorgmap.com>].

The theory of the functioning of particular "coloured" (Laloux 2016, p. 34), organisations describes the types of "whole" organisations, but these models relate to organisational processes, structures, and cultures. Therefore, it is difficult to state that a particular organisation is 100% "orange" or "green". Referring only to processes, we can analyse, for example, recruitment, establishment of objectives, development of a budget, resource management or personnel development and declare the advantage of the processes of a given type ("colour"). The operationalisation of understanding an organisation as a "network filled with processes of different colours" (Laloux 2016, p. 34) leads to the use of an organisation description model proposed by E. Szabolcs and M. Karoly from the Hungarian consultancy firm Circle43.

The transfer of the F. Laloux model (and its description in the separate context of the model of E. Szabolcs and M. Karoly) to the field of educational organisation took place in a separate text (Rosiński 2018). The same text (Rosiński 2018) explains the research methodology of the applied qualitative research: participant observation and partially categorised interview (Sztumski 2005) and the application of their results to the model of E. Szabolcs and M. Karoly.

The primary school in Będkowiec, described in the 2018 text (Rosiński 2018) and in the current text, may be an example, as an educational organisation, of a turquoise-type organisation. Thus, it does not belong to the typical solutions found in the education market, where amber organisations (free public schools) - dominate in the public sector; orange organisations (private schools with high tuition fees) - in the commercial sector, green organisations (schools run by associations, low tuition fees) - in the non-governmental sector. At the same time, the presented example of a turquoise-type educational organisation integrates certain solutions of each of the above (amber; orange; teal), being a school of each of the three dominant types during its development. Hence, the case study of the school in Będkowiec is so attractive.

Description of organisation

The organisation analysed is a public school in Będkowiec; it is run by a parents' association, based on a managerial model. The school is directly managed by the principal (matters related to pedagogical supervision and curriculum requirements imposed by the state) and the school manager (administrative matters related to the functioning of the school). The whole operation of the school is

supervised by the chairperson of the parents' association (recruitment, and dismissal of staff, approval of expenses, and salaries). Teachers are guaranteed career advancement opportunities under the same regulations that apply to other public schools.

As a public educational institution, the school does not charge any tuition fees and relies on an education subsidy from the state, which is based on the number of pupils attending the school, and voluntary donations to the association. There are approximately 80 pupils in grades 0 to 8, with no more than 14 pupils per class. In the same building, the school also runs three kindergarten groups of 20 children each.

While Będkowice has had a school for over 100 years, it has occupied its present building since the 1970s. An important event in the organisation's history was its acquisition by the parents' association from the commune in the year 2012. As a consequence of this change, only the building and its equipment remained, while the teaching staff and management were completely replaced. In 2012 the school had 28 pupils; at present (2022) about 140 children attend the school.

Results, discussion, reinterpretation of 2018 results

Based on participant observation and interviews, it was possible to identify unique phases in the functioning of the organisation:

Phase 1. (see Figure 16.7) "Just to survive and show others it was possible".

The phase is dominated by processes typical of amber organisations (pedagogical supervision requirements); there are many "red" processes (quick, authoritarian decisions characteristic of crises rather than the "violence-based" functioning of red organisations).

It should be noted that from the beginning of the organisation's existence, its leadership style (see the leadership style dimension) has been perceived as a means of empowering employees and has had a situational character (although the interviewees were not familiar with the concept of empowerment, their descriptions indicated that managers adapted to the situation of an employee or team).

Another important element was the shaping of the organisation's relationships with its internal and external customers (see dimensions: attitude during contact; stakeholder relationship). The interviewees emphasised the unique nature of the relationships within the team (friendliness and the shared working atmosphere from the very beginning of the organisation's functioning in its new shape) as well as partner relationships with the stakeholders (parents, sponsors, and local authorities). The managers mentioned also the primacy of a certain idealistic vision ("A school for our children", "A school where we would like to spend time ourselves") accompanied by a lack of an operational strategy (see work attitude dimension: vision – idealistic culture over strategy).

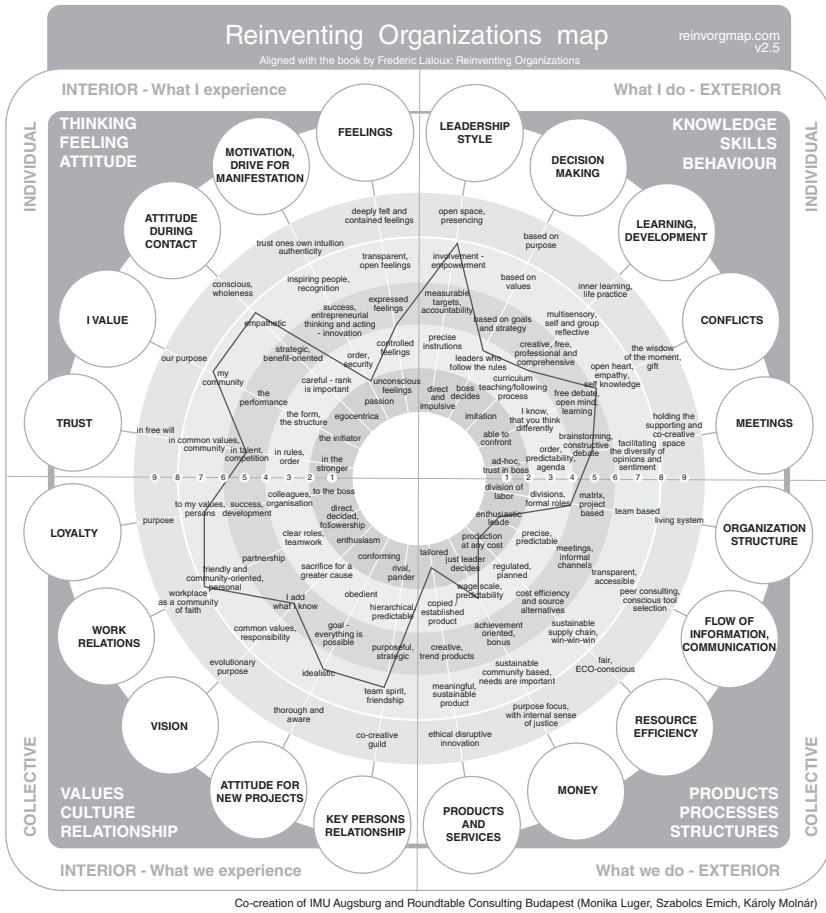


Figure 16.7 Phase 1 in the functioning of the organisation described using the categories of the Reinventing Organisations Map version 2.5

Source: <http://www.reinvorgmap.com>; access: 23.02.2023.

A completely new team of teachers recruited from among people with no professional experience was building a work climate characterised by friendliness and orientation towards community, cooperation and mutual support (see the dimension of work climate). It can be assumed that this was due to the absence of any previous negative work habits, a strong internal motivation to survive a difficult period (see dimensions: inner motive and drive for manifestation) and the modelling of behaviour used by the managers (leadership style, attitudes towards the organisation’s stakeholders presented not so much in declarations as in everyday situations in the workplace).

Therefore, it can be concluded that in this phase of the organisation's functioning, we were dealing with distinct seeds of a "green organisation" in terms of leadership, attitudes towards work, relations within the organisation, and relations with the organisational environment.

Interpreting the situation in phase 1, we can metaphorically state that despite the predominance of "amber" and even "red phenomena", "green processes" became, as it were, the "leaven" for the organisation's development towards "evolutionary turquoise".

Phase 2. (see Figure 16.8) "Common work is a value".

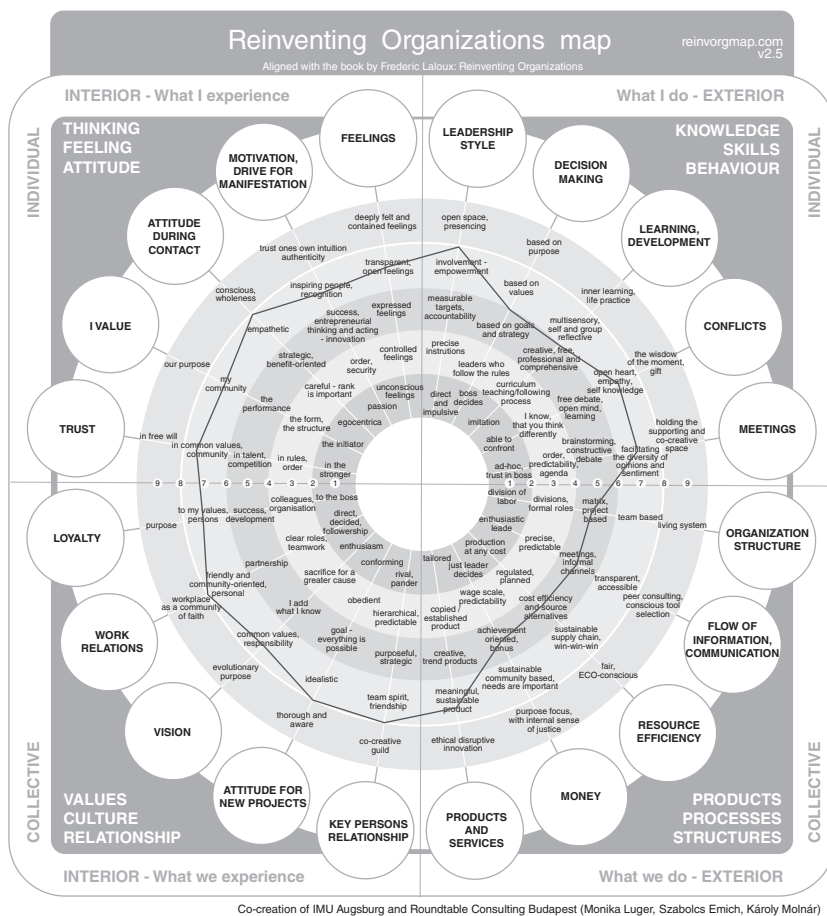


Figure 16.8 Phase 2 in the functioning of the organisation described using the categories of the Reinventing Organisations Map version 2.5

Source: <http://www.reinvorgmap.com>; access: 23.03.2023.

In this phase, what was symptomatic was the appearance of a considerable number of “green” processes with the simultaneous increase in the efficiency of managing amber processes (necessitated by the requirements related to pedagogical supervision and the organisation’s status of a public educational institution) as well as orange processes (connected with acquiring additional resources for the association running the school).

In phase 2 there appear elements of green organisations mentioned by F. Laloux (2015a, pp. 45–48; 2016, pp. 38–39) which are important for building evolutionary turquoise organisations in the future:

1 Empowerment

It can be assumed that on the basis of the previously existing mutual support and empowerment-oriented management style, changes aimed at “being inspired” begin to appear in employees’ attitudes (see dimensions: inner motive, drive for manifestation).

Alongside these changes, a new way of thinking about employee remuneration is developing (see salary dimension) - employees (through their representative) gain full access and decision-making power regarding school expenses; it can therefore be said that there is a participative orientation towards remuneration. On the one hand, the employees participate in decision-making regarding financial matters and, on the other hand, they control the school’s expenditure. Hence, it becomes clear to them whether pay rises are feasible or not and what the available funds are spent on.

- 2 An organisational culture based on shared values and inspiring goals
- 3 Values become an important element in decision-making (see dimensions: decision-making, loyalty); this is evident not only and not so much in formally declared values, as in the recruitment, selection, promotion and career path development processes of employees.

The work climate is becoming an important value for employees (see work climate dimension): one employee aptly summed it up by saying that “our workplace is like being on vacation”.

Another element that is changing is the employees’ self-awareness (see dimension: consciousness of self); on the one hand, this influences their professional development in this organisation (the school employed people with no previous experience) and, on the other hand, we can talk about the influence of the organisation itself (through management styles and behavioural modelling by managers).

4 The perspective of all interest groups

The partnership with stakeholders (see dimension: stakeholders’ relationship) involves not only teachers (joint decision-making) and parents (awareness of needs, managing expectations); the institution’s stakeholders are also its sponsors (through their children they often become customers of the school’s educational services) and local authorities (through positive

feedback from parents addressed to local authorities, the perception of the school changes for the better). Despite the growing number of children, pupils are also partners all along. At the beginning of the school, when there were only twelve students, it was possible to implement the “extended family” model in relations with them, at the development stage, which is the subject of this analysis; this is done through the behavioural modelling exercised by the management (shaping attitudes of teachers) and careful recruitment and selection of candidates for teaching positions (candidates’ initial attitudes).

Furthermore, taking into consideration the elements mentioned by F. Laloux (2015a, pp. 59–66; 2016, pp. 38–39) as important for the building of evolutionary turquoise organisations, the following elements appear in phase 2:

- 1 “Values/an internal sense of rightness as a compass”: Those managing the school are guided by very similar values in their own lives.
- 2 “Overcoming ego fears”: Because of their life experience, they are able to look at themselves from a distance; during the early years of the school, the management team built mutual relationships based on trust and, consequently, they tend to build similar trust-based relations with other people.
- 3 “Relying on one’s strengths”: reflecting the shift from “the paradigm of not having to the paradigm of strengths” was reflected
- 4 “Longing for completeness”: We do not come across such lofty phrases as implied by F. Laloux (2016, p. 39), however, for the managers, the school becomes a way of life, a place which consciously “creates culture for the community”.

Phase 3. (see Figure 16.9) “An accidental, unnoticeable breakthrough”.

The turquoise process, a pioneer for the organisation was linked to a standard (as in ‘amber’ organisations) annual obligation. However, the process itself and its end result went very much beyond the scope of amber, orange or green organisations. Because the analysed school had been operating as a ‘green’ organisation for about a year (as described in phase 2), it was doing things that were important to itself and for ‘our children’. It turned out that the permanent (‘amber’) obligation to organise a school excursion had become a unique milestone in its development: “the excursion of our dreams”. As in the turquoise organisation, everyone with an interest in the outcome of the venture was involved in the decision-making process about and organisation of ‘the excursion of our dreams’. This means that the decision-making process involved the children, their parents, teachers, managers and sponsors. Thanks to the active involvement of all parties in the decision-making process, the end result exceeded their original expectations and was observed with great attention by other schools and neighbouring communities.

Phase 3 results appear to stem directly from phase 2, in which the school as an organisation became saturated with processes of a “green” nature. The

emergence of the turquoise process went unnoticed; it was to some extent the consequence of a certain “critical mass of green processes” in the organisation. The emergence of the turquoise process did not cause any “earthquake” or “Copernican revolution” in the organisation. There was no change in the organisation’s functioning with respect to the Reinventing Organisations Map. However, the repetition of the same turquoise process (Decision Making) in the

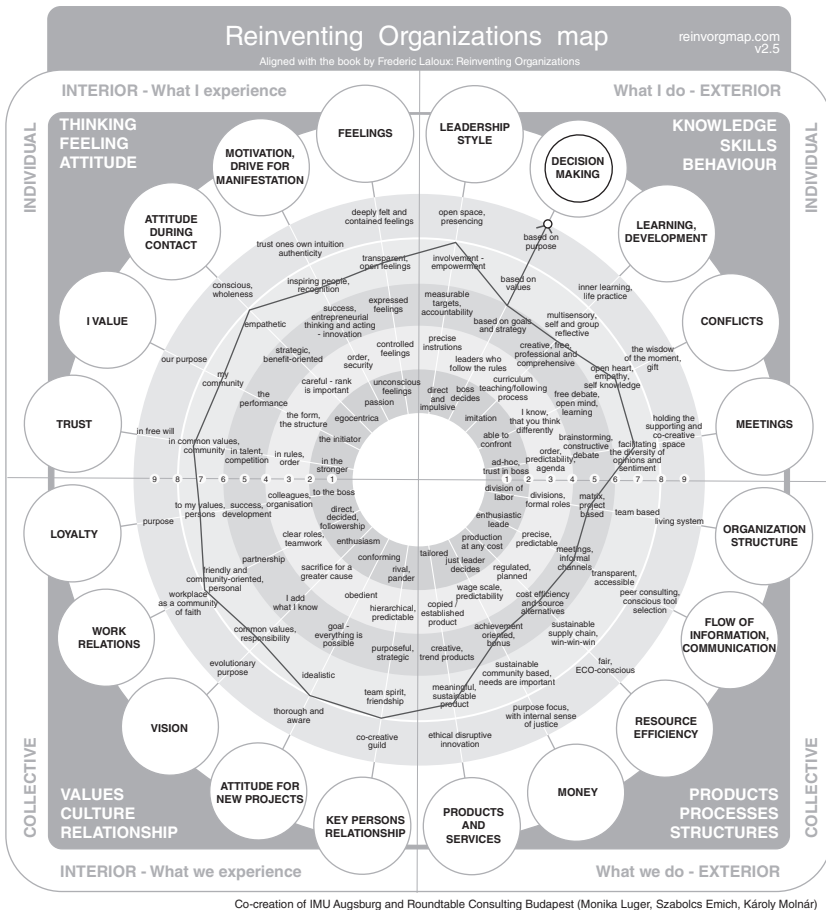


Figure 16.9 Phase 3 in the functioning of the organisation described using the categories of the Reinventing Organisations Map version 2.5. and the repetition of one organisational process (Decision Making)

Source: <http://www.reinvorgmap.com>; access: 23.03.2023.

following year resulted in the spontaneous launch of subsequent “turquoise” processes.

It seems, therefore, that one of the ways to achieve a “turquoise transformation in the organisation” is to launch a single process at the teal level; process abrasion for two to three years (see Figure 16.9). Other processes begin to “rise” to a higher level (teal); some will remain at lower levels, which is consistent with the Laloux model.

Phase 4. (see Figure 16.10) “The ship on course towards the turquoise islands”.

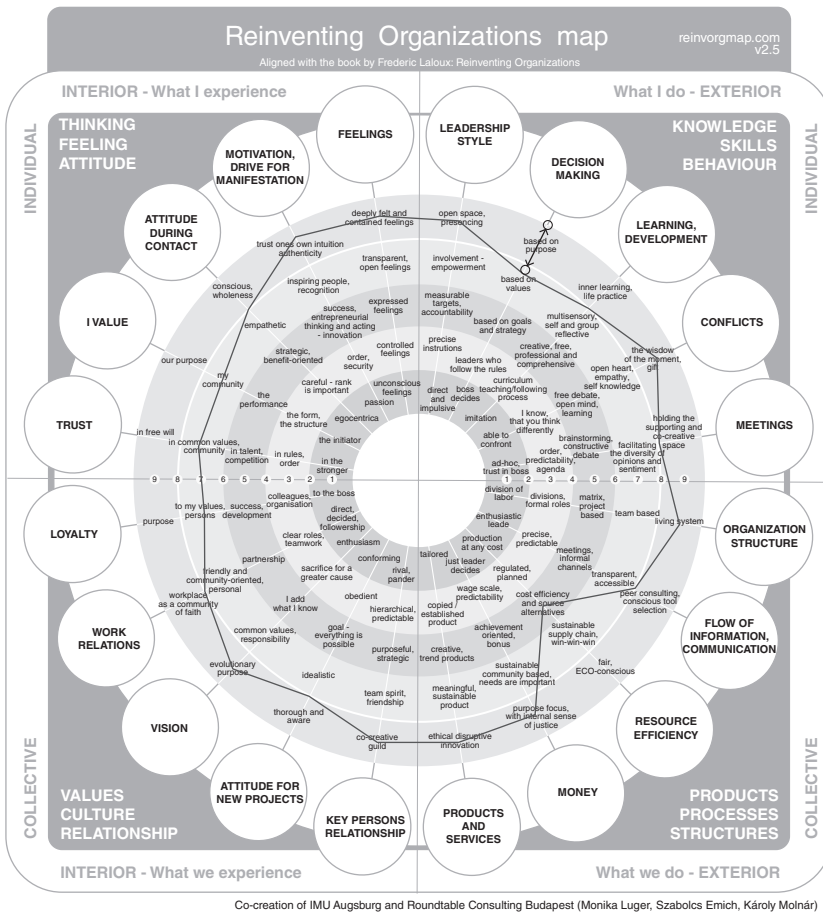


Figure 16.10 Phase 4 in the functioning of the organisation described using the categories of the Reinventing Organisations Map version 2.5

Source: <http://www.reinvorgmap.com>; access: 23.02.2023.

While the first turquoise process was, as it were, the result of a coincidence or “a critical mass of the green processes taking place in the organisation”, subsequent turquoise processes were a process of increasing their number based on the initiative of employees.

The employees themselves proposed innovative teaching methods and an innovative system of motivating pupils to exceed their own limitations. Such initiatives occurred simultaneously with the transformation of the organisation itself (see Figure 16.4). There emerged such phenomena characteristic of turquoise organisations as:

- 1 Self-governance: there was a fluid structure (formally, there are three teams and managers – a requirement for a school as an amber organisation); however, from a functional point of view, what we are witnessing is fluid movement between systems, shifting responsibilities, collective knowledge creation.
- 2 Completeness: working for the organisation allows one to discover who one is and to develop oneself; those working for the school share their passions with the pupils (as this is described by Laloux (2016, p. 55) “they shed their masks of *the professional P*”
- 3 Evolutionary purposefulness: changes in the organisation’s environment (changes in the system of education, modifications in the grant amount) make it difficult for the employees to “listen to themselves and understand which way the organisation is naturally heading” (Laloux 2016, p. 55).

It is worth having a closer look at Phases 3 and 4 because they can indicate a model of a “step-by-step” process of consciously shaping a turquoise organisation. It appears that the factors which facilitated the appearance of a turquoise process are as follows:

- A considerable degree of saturation of the organisation with processes at the level of “pluralistic green”.
- After achieving a certain “green critical mass”, generating a turquoise process, “the turquoise snowball starts rolling downhill”.
- As in competence development systems, repeating at least one turquoise process becomes a development priority and triggers the development of other areas towards evolutionary turquoise (as in competence development systems, once we learn communication skills, we will very likely develop competences in such areas as giving presentations, conducting negotiations, assertiveness or teamwork).

Additionally, besides phase 3 and phase 4, it seems that the important role was played by organisational leadership oriented towards a situational approach to management aimed at employee empowerment. Hence, despite the school’s

initial difficult economic position, the organisational processes changed from amber or even red ones towards a “green organisation”.

Conclusions

An appropriate solution for fulfilling the role of education in sustainable development seems to be educational organisations that meet the criteria of turquoise organisations according to the typology of F. Laloux. The steps leading to building this type of organisation could be

- the creation of “a critical mass for green organisational processes”,
- the appearance and repetition of a single turquoise process as a developmental priority,
- the emergence of subsequent turquoise processes as a result of the existence of a single turquoise process consistently implemented in the organisation

Obviously, it is necessary to keep in mind the organisation’s limitations (a primary school), size (originally it was a relatively small organisation) as well as the specificity of the public sector as a management environment.

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