Chapter 7
What Can STEM Education Systems in the World Learn from the Israeli Case?

Abstract This Brief illustrates the application of a full risk management process for an education system—STEM education in Israel. We hope that this description illustrates the suitability of risk management processes also for educational organization. In this chapter, we suggest conceptual ideas that stood behind the methodological risk management process we applied in our study. We hope that these guidelines as well will be useful for other nations, which realize lately the importance of STEM education as a basic knowledge required for all their K-12 graduates.

Keywords Risk management · STEM education · Conceptual ideas · International readership · K-12 education · Meta-practices · MERge model · Internal dimensions · External dimensions

7.1 Meta-Practices of Risk Management

In this chapter, we suggest the following conceptual ideas that stood behind the methodological risk management process we applied in our study. Since no hierarchy exists between them, they are presented in an alphabetically order.

Acknowledge the importance of STEM education. Any knowledge at any level in the STEM subjects will give children a competitive advantage in their future professional lives. By a competitive advantage we do not advocate competition; to the contrary: the more skills a person has, the more he or she tends to collaborate in order to exhaust these skills more meaningfully and efficiently. Therefore, in line with the value of diversity (see below), in order to allow each child to find his or her the adequate professional development path, basic STEM education should be provided.

Adopt a *MERge* perspective (Hazzan and Lis-Hacohen 2016). The *MERge* perspective advocates that practitioners should have three meta-skills: Management, Education, and Research to successfully exhaust and promote their professional

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development. Clearly, these three meta-skills were largely expressed in the risk management process of STEM education in Israel, as described in this Brief.

Be agile. Agility means many things. In the case of STEM education, we propose to adopt the agile idea of setting long-term targets and then achieving them in small and gradual steps. These small steps should be accompanied with a careful examination of the results of each step, in order to plan and apply the next steps wisely.

Be open, talk about problems. Without admitting the problems, problems can neither be located nor treated.

Be proactive. Proactivity means that a practitioner does not wait till a problem starts effecting the results of his or her organization, but rather, looks ahead, plans the future, and acts methodologically toward its accomplishment. This approach is totally different from the reactive approach, which guides practitioners to wait till a problem emerges, and then start analyzing its source and trying to fix it. The risk management process described in this Brief illustrates how a *proactive* approach can also be adopted in the public sector in general and in education systems in particular.

Enable each child to exhaust his or her potential. This idea should be considered as one of the basic principles of risk management processes conducted in educational systems and organizations. In practice, on the individual level, as soon as it is recognized that a child needs a special learning environment, because he or she is either gifted or face some other challenges, in the proactive spirit of risk management, this need should be treated in one of the suggested strategies for risk management processes (Sect. 2.4).

Give top priority to teachers' voice. Many reports, which discuss the topic of education from different perspectives, are published without including the teachers' opinions. Furthermore, in many cases, teaches are not invited to serve in committees, which deal with subjects that teachers are the experts about them. Clearly, this situation is unaccepted and should be changed.

Increase diversity and inclusion. As our community becomes more diverse and multicultural, it is essential to inspire the values of inclusion and diversity in any educational program in general, and programs that plan for the future, as is done in risk management processes, in particular.

Increase teacher autonomy. This guideline stresses the need to give teachers the academic freedom in order to accomplish their job targets successfully. It should be remembered that, as professionals, teachers are *the* experts about teaching.

Share responsibility of the education system with different sectors. The risk management analysis presented in this Brief reflects a multi-faceted perspective on STEM education that is not limited to educational lens. Due to the inclusion of stakeholders from different sectors in our study, it was possible to elicit a wide perspective at the risks with which STEM education in Israel faces, wider than any sector by itself could have been produced.

Use wisdom generated, collected, and gathered in other domains. Such a wide perspective allows to learn from other kinds of organizations, cultures, societies, and disciplines. In our era, the ability to learn from so many resources, beyond our immediate zone, should be exhausted intensively.

7.2 Summary

This Brief suggests to implement risk management processes in STEM education in general and on the national level in particular. We note that though the focus was placed on STEM education, the *technology* has not been identified as a risk by the different stakeholders. Further, the risk categories did not address what happens in the school in general—e.g., organizational structure, teaching load, teacher teamwork, etc. This observation is interesting since in many cases when an education system is examined, part of the attention is directed toward these *internal* factors. Accordingly, we suggest that the approach proposed in this Brief has the potential to add new and *external* dimensions—such as proactive approach, global perspective, and cross-sector collaboration—with respect to the analysis of education systems in general and the promotion of STEM education in particular.

Reference

Hazzan, O., & Lis-Hacohen, R. (2016). *The MERge Model for Business Development: The Amalgamation of Management, Education and* Research, SpringerBriefs in Business. http://www.springer.com/us/book/9783319302249