

Empowering Capacity Building – The Implementation and Impacts of the EMVITET Project

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ABSTRACT

The path towards Education 4.0 in Vietnam requires new mindsets and new competencies of teachers and educational institutions. In the Empowering Vietnamese VET Teachers for Transformation towards Education 4.0 (EMVITET) Capacity Building in Higher Education Erasmus+ project, Education 4.0 competencies in pedagogy, digital technologies and learning ecosystems were developed during a three-and-a-half-year process (2019–2022). Six Vietnamese educational institutions participated in the project and three European universities provided the facilitation of the process. This article describes how the EMVITET project was designed and implemented to create an empowering and effective learning process by utilising a participatory and collaborative approach. The other aim is to illustrate the impacts and implications of the project and draw conclusions on how to build a sustainable learning ecosystem for Education 4.0 in Vietnam.

KEYWORDS

Education 4.0;
Capacity building project;
Teacher development;
Empowerment;
Educational change.

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1. Introduction

The general objective of the Erasmus+ Programme is to support, through lifelong learning, the educational, professional and personal development of people in education in Europe and beyond. Capacity Building in Higher Education (CBHE) projects support the modernisation, accessibility and internationalisation of higher education. The projects aim to build cooperation between the EU and partner countries, like Vietnam, and support partner countries in addressing challenges in the management and governance of their higher education institutions. This includes improving the quality of higher education, developing new and innovative education programmes, modernising higher education systems through reform policies and fostering cooperation across different regions of the world through joint initiatives (<https://erasmusplus.org.ua/en/erasmus/ka2-cooperation-for-innovation-and-good-practices/capacity-building.html>).

In this disruptive world – with ecological and societal crises, and rapid technological developments towards Industry 4.0 – educational institutions are challenged to rethink the source of the quality of education. What are the most relevant competencies to teach? What kind of pedagogical practices and learning environments are required in order to achieve them? How can education help the world solve constantly arising challenges and what are the relevant competencies of teachers that are required for that? For sustainable development, educational institutions have to simultaneously respond to increasingly complex demands – such as massification, globalisation, marketisation and digitalisation – by focusing on co-creative collaboration and participating in inter-organisational networks (Giesenbauer & Muller-Christ, 2020). They also need to respond to the varying competence requirements of the world of work (OECD, 2018).

The concept of Education 4.0 has emerged to describe the elements of quality education in times of disruption. It highlights flexibility with the educational offerings, lifelong learning conceptions,

digitalisation being incorporated into educational environments and teachers' new role as coaches and mentors (Miranda et al., 2021; Shahroom & Hussin, 2018). Education 4.0 goes beyond traditional approaches, and it not only refers to the changes in technology but also to the changes in humanity (Leonhard, 2017). In the Empowering Vietnamese VET Teachers for Transformation towards Education (EMVITET) (4.0) CBHE Erasmus+ project (hereafter, *the EMVITET project*), the concept of Education 4.0 was determined:

Education 4.0 shifts mindsets and approaches in learning and teaching. Digitalisation enables learning to occur anywhere which makes learners key actors in their learning. Teachers change their role to facilitators of learning. Instead of focusing so much on degrees, learning concentrates on relevant competencies. Education 4.0 refers also to ecosystems of educational institutions and the world of work, which produce innovations and evolve in the change. It means that in education we do not just adapt to changes, but we actively build our own meaningful future. In Education 4.0, the traditional ways of implementing education are not enough, but we need to rethink learning and education to match the needs of the changing world. (Kunnari, Ho & Nguyen, 2019)

The development of Education 4.0 operates as a continuum in strengthening student centeredness and competence-based education with realistic tasks and authentic learning settings, stimulating students' responsibility and reflective ability in their learning process, supporting the facilitating role of teachers and being able to deploy different competence-based assessment methods (see Koenen et al., 2015). In addition, education 4.0 requires a shift from ego thinking to eco-thinking (Danon, 2019) and from ego systems to ecosystems (Scharmer, 2019) in order to build a solid ground for cooperation, collaboration and networking.

2. The aims and approach of the article

This article describes how the EMVITET project was designed and implemented in developing Education 4.0 in Vietnam. First, as project coordinators, we will describe the core elements of creating an empowering and effective process for capacity building. The other aim is to illustrate the impacts and implications of the project and, finally, draw some conclusions on how to build a sustainable learning ecosystem for Education 4.0 in Vietnam.

We apply the approach of qualitative practice-based research (Heikkinen et al., 2016) and utilise practitioners' experiences in building new knowledge and understanding, in this case, especially utilising the perspectives of the project's coordinators. However, our perspectives as coordinators are strongly founded on intensive collaboration with six institutions' Vietnamese teachers and educational managers and on close observations of the activities. In this article, we have also utilised all the data collected and created during the process, such as surveys and interviews, meeting memos, digital documentation of the workshop outcomes, and artefacts and research articles jointly produced by project partners.

3. The EMVITET project developing Education 4.0 in Vietnam

The EMVITET project was created to support the development of Education 4.0 in Vietnam. In the concept of Education 4.0, the links between three key partners (schools, administrators and industry) are essential in order to create a responsive environment in which to promote creativity, innovation and productivity in a knowledge society (Vietnam News Agency, 2017). One study within the Association of Southeast Asian Nations found that the personal readiness for Education 4.0 is very high, and all stakeholders groups, policymakers, lecturers and students agreed that they should learn, unlearn and co-learn for self-improvement (Jamaludin, 2019). For this kind of learning process, the EMVITET project aimed to build effective elements.

Häme University of Applied Sciences (HAMK) and the Ho Chi Minh City University of Technology and Education (HCMUTE) led the project preparation in collaboration with two other Vietnamese universities – the University of Technology and Education, University of Danang (UTE-UD) and Lac

Hong University (LHU) – and with three Vietnamese colleges: Hue Industrial College (HueIC), the College of Technology II (HVCT) and Ho Chi Minh City Industry and Trade College (HITC). Two European universities, KU Leuven from Belgium and Dublin City University (DCU) from Ireland, were invited to join in order to work as facilitators with HAMK. The project received funding for a three-year development process (2019–2022) from the European Union.

To respond to the development needs, the EMVITET project aimed to create a new learning ecosystem for Education 4.0 in Vietnam based on student-centred learning, competence-based education and collaboration in digital environments. The desired change in the Vietnamese context required new ways of operating in professional networks including working-life partners. This aim was achieved by building the following development cycles (Work Packages [WPs]) utilising a participatory action research approach (Kemmis & McTaggart, 2005): WP 1: Preparation; WP 2.1: Establishing; WP 2.2: Piloting; and WP 2.3: Ingraining. In these development cycles, teacher learning and organisational development were intertwined. Vietnamese teachers and managers identified their specific development needs and contextualised the development activities. The WPs related to quality assurance (WP 3), dissemination (WP 4) and management (WP 5) – with their various activities, meetings and outputs – supported the process and created wider impacts in Vietnam. In Figure 1, the main activities in each WP are described.

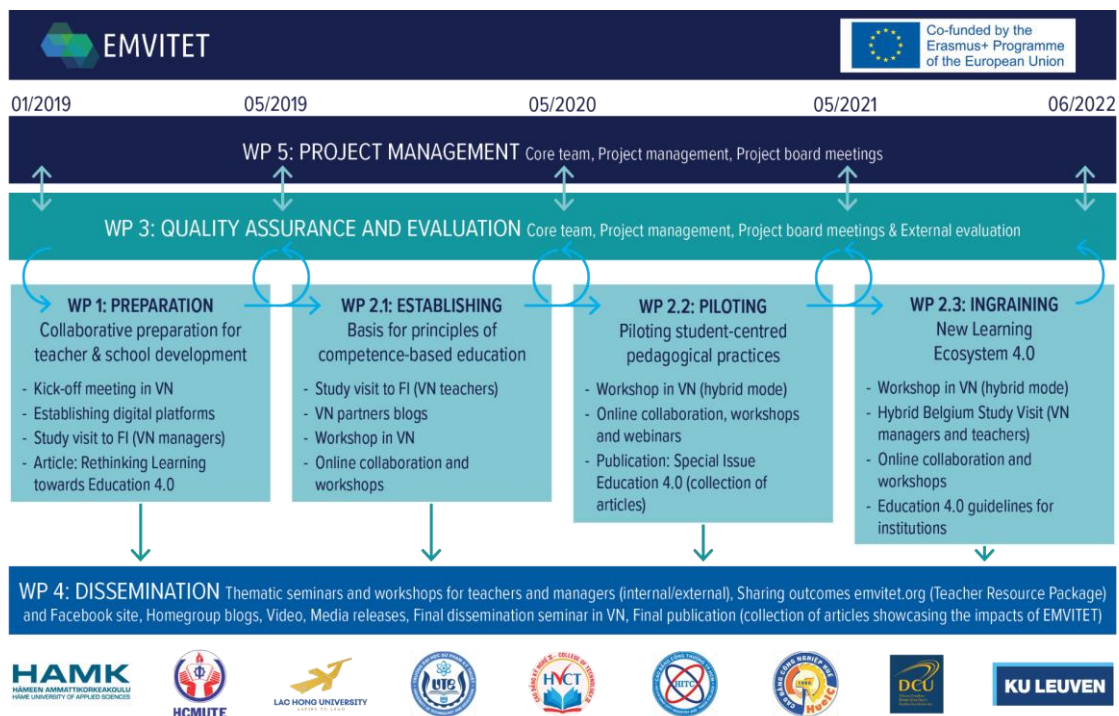


Figure 1. The process and elements of the EMVITET project

The central aim of the EMVITET project was to empower teachers, as key actors in Education 4.0, to develop their professional practices to correspond to the needs of both students and working life. To prepare well for teaching and learning related to Education 4.0, managers from the Vietnamese partners had an official one-week study visit to HAMK (2019) to familiarise themselves with Finnish perspectives and practices on Education 4.0 and to build a common understanding and support for the forthcoming development process. This was an important element in order to ensure effective outcomes in the project. Following the managers' study visit, altogether 33 Vietnamese teachers from partner institutions were selected to be a key target group in the project. The teachers' study visit to Finland started the teachers' development process in the project. During the study visit, the teachers experienced

best practices in learner-centred, competence-based innovative teaching and learning methods. After that, the development process continued with piloting Education 4.0 practices with the facilitation of European educational developers. Various activities (like online, face-to-face and hybrid workshops) were organised to promote collaborative learning. Digital platforms and tools (Moodle, EMVITET Partners Facebook group, Google Drive, ePortfolios, Digital Badges, Padlet etc.) were used throughout the project in assessing and guiding teacher development, in supporting continuous interaction, and in sharing and caring between project partners.

The COVID-19 pandemic changed the ways of teaching and learning rapidly and unexpectedly. Vietnamese educational institutions closed their premises in February 2020 and European universities followed this orientation in March 2020. The pandemic situation increased the importance of blended and online learning. Therefore, the relevance of the EMVITET project grew to be larger than expected and it provided much-needed support, first and foremost to partner institutions, their teachers and managers but also to a larger number of teachers and educational institutions beyond the EMVITET partnership through its wide dissemination activities. Due to the pandemic, some of the project activities were delayed and an extension of six months was granted in which to finalise the results and focus on ingraining and dissemination activities.

4. Empowerment building for developing Education 4.0

The full name of the EMVITET project, ‘Empowering Vietnamese VET Teachers for Transformation towards Education 4.0’, refers to the fact that empowerment is crucial in making changes. Teacher empowerment is conceptualised as a process in which teachers learn to take charge of their growth (Bogler & Somech, 2004), and that is why it is closely connected to building teacher agency and ownership. Furthermore, teacher empowerment has been studied and found to have many positive associations with teachers’ work-related outcomes (Lee & Nie, 2014), for example, organisational and professional commitment (Bogler & Somech, 2004), innovative behaviour (Ghani, Hussin & Jusoff, 2009), receptivity in curriculum reform (Lee, Yin, Zhang & Jin, 2011) and job satisfaction (Wang & Lee, 2009).

When planning the project activities, teacher empowerment was designed based on socio-constructivist perspectives on teacher learning (see, e.g. Lave & Wenger, 1991; Salomon & Perkins, 1998), highlighting the active role of teacher learners and learning as a collaborative process. In practice, this meant that participating teachers were encouraged to reflect on their individual starting points and to apply new Education 4.0 practices in their work context, in their own way. Furthermore, the aim was to create a personal experience for the teachers of a learner-centred process during study visits, workshops and collaborative online activities. The English language was not easy for all the Vietnamese participants, so they were given possibilities to discuss and reflect on new ideas using their own language. Furthermore, to increase engagement, EMVITET teachers gained experience of using ePortfolios as a tool for reflecting and demonstrating their professional competence development. Their individual learning outcomes were recognised, and encouraging feedback was given.

In the project implementation, a collaborative way of working as a core element in building empowerment was at the centre. The management structure ensured collaboration in all the key areas of the project: leadership, the teachers’ development process and administrative management. The important goal was to ensure that the different groups were working in the same direction. Collaboration and team building were facilitated through an equal partnership between Vietnamese and European developers with the leadership of HAMK and HCMUTE, and by organising regular meetings to support the development process (project board, core team and project management group meetings). For EMVITET teachers’ collaborative learning process, institutional teams called Homegroups (with 5–6 members in each of the six institutions) were established in the early phase during the study visit to Finland, and each Homegroup worked as a core internal development team in each institution. The Homegroups had a joint responsibility to take care of the development activities, which was supported

by the European facilitators. The team spirit of the Homegroups was an essential aspect of building empowerment.

Both the managers' and teachers' study visits were important elements in creating an empowering experience and ensuring effective outcomes for the project. Because of the shared learning outcomes in place during the managers' study visit, EMVITET managers were able to support both teachers' competence development and overall development process and further ensure ingraining the development results in their own organisation. The teachers' study visit equipped the teachers with the understanding, know-how, perspective and agency to develop their practices and to collaborate in building Education 4.0 in the Vietnamese context.

In addition, digital tools and environments were utilised for ongoing communication, which aimed to sustain engagement and inspiration. The environments were used for different purposes: Moodle worked well in communicating about the development tasks, meetings and activities; EMVITET partners' Facebook group was used for sharing and caring; and Zalo groups were used for collaboration between Vietnamese partners. Besides the digital learning environments, face-to-face meetings and workshops were an important part of building up the community of practice. Empowerment was especially born from continuously working together across institutional boundaries, helping each other, sharing knowledge and lessons learnt with others and sharing artefacts which demonstrated the competencies acquired in the project.

5. Impacts and implications of the EMVITET project

The EMVITET project created a very intensive three-and-a-half-year process for developing Education 4.0. The impacts and implications have been documented and presented throughout the project in various ways (with surveys, collaborative analyses and artefacts, and research articles). However, it has been noted that many impacts also happen on the outskirts of the core development activities, and that is why it is challenging to document the total impact of the EMVITET project. From the beginning of the project, EMVITET partners were active in disseminating the outcomes and new ideas of Education 4.0. They organised many extra events and dissemination activities which were not planned in the actual project plan. Furthermore, the project created a platform for numerous informal interactions and connections, which led to many personal learning outcomes that were impossible to capture. In this section, we aim to summarise the central impacts that are closely tied to the core development activities.

5.1. The clarification of Education 4.0 competencies

Teacher learning related to Education 4.0 competencies was the central aim of the project. At the beginning of the project, it was not clear what these specific competencies were. Thus, one very essential outcome of the project was that Education 4.0 teacher competencies were defined with European facilitators and further reflected upon and developed with Vietnamese partners. Specific learning outcomes and assessment criteria were defined into the following three competence areas:

- *Pedagogy in Education 4.0*, meaning competencies in designing and implementing competence-based and student-centred learning to match the needs of Industry 4.0
- *Digital technologies in Education 4.0*, meaning the competencies to effectively use technology to enhance and transform teaching and learning practices related to Education 4.0
- *Learning ecosystems in Education 4.0*, meaning the competencies to engage with communities within education and industry in order to create connections and support the collaboration needed in Education 4.0

These competence areas were used in all three development phases (establishing, piloting and ingraining), resulting in nine badges being available to be awarded to Vietnamese teachers. A detailed description of the specific outcomes and criteria for each of the nine badges and how ePortfolios and open digital badges were used in facilitation can be found in the article by Korhonen et al. (2022).

Furthermore, the competence areas created a framework for quality evaluation in assessing the project's outcomes at the student, teacher and educational institution levels. The areas worked well in illustrating and disseminating the practical outcomes of Education 4.0 development. As one central output and the manifestation of Education 4.0, EMVITET partners created Guidelines for Implementing Education 4.0 in Vietnamese Institutions utilising the same division of the areas. In addition, the learning materials for wider use, called the Teacher Resource Package, employed the same structure. The guidelines and Teacher Resource Package can be found www.emvitet.org. These competence areas helped EMVITET partners to create a common language for Education 4.0 development and also disseminate the development outcomes effectively.

5.2. The achievements in developing pedagogical practices in Education 4.0

In the previous study related to the EMVITET project's impact after one year of implementation (Kunnari et al., 2021), Vietnamese partner institutions described the project's impact on the change in teachers' mindsets and the diverse application of teaching methods. Teachers described how their pedagogical practices have improved and how they have managed to pilot them successfully. In particular, they had enriched learning with digital technologies, focused on cultivating interaction and collaboration in learning, and they had taken students' perspectives into account to increase activation. The student-centred approach had been strengthened and learning had become more interesting, lively and active for students. The very crucial factor in these achievements was that teachers were highly motivated to make changes. They mentioned that their mindsets have changed.

In the development of Education 4.0 pedagogical practices, changes in the assessment are crucial. In the EMVITET project, new ideas – such as 'assessment for learning' and 'assessment as learning' – were introduced. The article of the EMVITET partners (found in this same special issue; Jiang et al., 2022) describes how peer assessment as learning can be implemented successfully by clarifying the purposes and expectations of peer assessment, by paying enough time and attention to the evaluation criteria, by anonymising peer assessment and by ensuring that there are multiple peer assessors in order to have reliability and validity. The authors also suggest that teachers should give students more responsibility and control in assessment in order to create an inspiring learning process. One essential implication of the EMVITET project was that the assessment practices were seen in a new light in Education 4.0 and new forms of assessment were created.

In the final evaluation of the achievements in developing pedagogical practices, EMVITET partners highlighted that student-centred learning and competence-based active learning were set as the paradigms of learning and teaching. Teachers have learned to design inspiring learning processes with new methods and techniques, putting students at the centre and emphasising team learning and collaboration between students. They also highlighted to what extent they have been able to disseminate the practices effectively, as one partner mentioned: 'We have shared EMVITET project content with almost all the lecturers in the university'. Furthermore, EMVITET partners have revised curricula in order to integrate soft skills and apply project-based learning, design thinking, flipped learning etc. This means that the development of pedagogical practices was not just happening at the individual teacher level and the aim to ingrain these new practices at the institutional level was also achieved.

5.3. The achievements in the meaningful use of digital technologies in Education 4.0

The previous study about the EMVITET project's impacts (Kunnari et al., 2021) evaluated what EMVITET partners have achieved after one year of project implementation in developing the meaningful use of digital technologies and how EMVITET partners managed when the worldwide COVID-19 pandemic started. Even though the partners confronted a lot of challenges when rapidly

shifting to online teaching, they felt that they already had good knowledge of how to do that successfully. The learning gained from the study visits had a strong effect on that. EMVITET partners developed new policies for online teaching and learning, established learning management systems and used digital tools to inspire and engage their students. Thanks to the participatory and collaborative approach of the EMVITET project, they felt confident and motivated to work remotely and were able to creatively develop online teaching and learning. In addition, EMVITET teachers also supported their colleagues by organising training and workshops regarding the use of digital tools and environments. The COVID-19 pandemic pushed EMVITET partners to act rapidly, and in this way, it increased and strengthened the impacts of the project.

In the final phase of the project, some studies and final quality evaluation shed more light on the achievements in the use of digital technologies in Education 4.0 and how the EMVITET project has deepened the understanding of Vietnamese partners about the key quality elements of eLearning. The study of Vietnamese partners, in this same issue (Nguyen et al., 2022,), related to students' perspectives on critical success factors of eLearning, reveals that internet quality, students' self-efficacy, accessible and up-to-date learning materials, enthusiasm while teaching, and content and property of subject are the top five influential factors. This study can support Vietnamese educational leaders and teachers in making decisions and strategies about e-learning.

Another study of EMVITET partners (Nguyen et al., 2022,) found, that the EMVITET project has greatly supported the partner institutions in successfully deploying an online environment for their teaching-learning activities. The study presents that online teaching has been efficient in improving the diversity of educational activities and students' engagement in their studies and research. It was also found that collaboration and interaction among colleagues and students, as well as knowledge transmission, have benefitted from online working. The essential practical implication is that online working was noted to increase the openness of the learning culture, the possibilities to learn from each other and collaborating more effectively in the continuous development of Education 4.0.

In the EMVITET project implementation, the use of an ePortfolio as a tool for supporting and facilitating the professional learning of teachers had a major effect. Participating EMVITET teachers successfully used ePortfolios (Korhonen et al., 2022), and also, the use of ePortfolios spread to their students. The study by Nguyen et al. (2022), based on experiments in four institutions, analysed how students' ePortfolios – such as learning portfolios, assessment portfolios or showcase portfolios (Clemson, 2022) – can be applied successfully and the factors to consider. A digital portfolio is a very meaningful tool in Education 4.0 and this article gives a promising vision of how it can be used effectively to inspire students to take the lead in their own learning and to empower them to demonstrate their competencies to their future employers.

When summarising the most important impacts in the development of digital technologies and environments, in the final quality evaluation, EMVITET partners highlighted the same impacts as in the previous phases. At the individual level, teachers have learned how digital tools can be used in a pedagogically meaningful way. For example, they learned how they can be used to support students' self-regulated learning, ownership, peer learning and joyfulness, and how they can be used to enrich assessment activities. EMVITET teachers have also learnt to give students space and opportunities to experiment and test the digital tools and environments themselves. At the institutional level, after the pandemic the development of learning management systems has created a foundation for comprehensive support for online learning and also for blended learning activities. Furthermore, the EMVITET partner institutions have managed to take big steps in developing new forms and provisions for eLearning. Some of them also mentioned that they have established special units to support eLearning activities, which is a very meaningful achievement in making the development of eLearning sustainable at the institutional level.

In addition, the EMVITET project has supported the development of eLearning environments and blended learning by equipping workspaces for students, teachers and industry partners to work collaboratively. Due to investment in these facilities, students are better able to use digital learning environments and to share their innovative ideas and work together with others on them. Some institutions invested in facilitating the development of online learning in terms of producing learning materials, content and managing online classrooms. Partners have actively shared their outcomes in using the equipment to enhance the learning experience and develop their own practices.

5.4. The achievements in learning ecosystem building for Education 4.0

Learning ecosystems for Education 4.0 refers to new kinds of learning communities and networks between students, teachers, educational institutions and working-life partners which are essential in learning the relevant competencies. Learning ecosystems rely on pedagogical well-being and a collaborative learning culture, where teachers work together as facilitators and enablers of collaborative learning and engage working-life partners in the learning processes. The aim is to create added value for all the stakeholders. In the first study regarding the impacts of the EMVITET project (Kunnari et al., 2021), EMVITET partners already expressed how they have managed to collaborate effectively with their students, with their Homegroup and with other EMVITET teachers. They also organised collaborative activities for their other colleagues to share their development outcomes and to inspire them to join in the development. According to the partners, the change towards collaborative activities within the institutions was significant, and they described how impactful it has been in relation to raising the awareness of and promoting the best practices of Education 4.0. In the same study, they also highlighted that the project facilitated building new forms of collaboration with the industry.

Introducing the HAMK Design Factory (DF) concept during the study visits in Finland had a significant impact. EMVITET partners were impressed with how the HAMK DF worked as a physical, social and digital environment, connecting company people, students, teachers and researchers in working together with ambiguous business challenges. The HAMK DF concept is based on design thinking in which the needs of end users and customers are taken into account as a starting point when starting to build solutions. In the study by Kunnari et al. (2022), the concrete achievements of all six partners are described in detail (i.e. how they built their own innovation spaces utilising design thinking and DF principles). The article demonstrated that the DF concept can be successfully applied in Vietnam, and it can help to make industry– education collaboration more systematic and sustainable. All the EMVITET partner institutions made their own kind of development steps towards their own innovation spaces.

In the final evaluation, besides developing innovation spaces, EMVITET partners listed many other achievements related to ecosystem building with the world of work. They mentioned that they have developed their curricula to include design thinking, creativity building and project-based learning in order to ingrain the learning activities with working life. They had created development projects to meet the needs of regional society by integrating learning and development. They had set up an industry advisory board and launched digital platforms for industry collaboration and a technology transfer fair. They had also organised field tours to companies, including virtual tours, in a more systematic way and workshops in which enterprises give talks to students. They have started internships with company partners, designed a course called industry-semester, connected with alumni and launched an employer club. They also reported how these achievements had increased students' motivation and their possibilities to create professional connections.

The final achievements in learning ecosystem building can be analysed on different levels, which are all essential. The central idea in the learning ecosystem is that you move from ego thinking to eco-thinking (Danon, 2019), meaning that you are not just concentrated on yourself but also on the common good, on what you can achieve together. In relation to this, one partner mentioned: 'Good collaboration with stakeholders leads to strength, motivation and responsibility, which in turn leads to success'. For students, this means that they understand the value and benefits of peer learning and collaborative

activities. Students understand that collaboration skills in themselves are crucial for one to succeed in the changing world and that is why one develops them consciously. For teachers, it means that they focus on building collaborative learning for students, sustain team working with their colleagues and they build fruitful connections with industry. Teachers understand the benefits of multidisciplinary work and are ready to make changes based on the arising needs. As a manager of an educational institution, one must support the development of creativity and a collaborative learning culture, teamwork, experimenting and innovations. Managers also encourage their staff to go beyond organisational silos and collaborate with other institutions and working-life partners. Based on the evidence collected during the whole lifespan of the EMVITET project, the participants have made these kinds of concrete development steps towards sustainable learning ecosystems and understood the crucial role of collaborative actions. In addition, because of digital environments like Zalo and Facebook, they can continue to effectively share and support the development of Education 4.0 in the future too.

6. Conclusions

The ultimate goal of the CBHE project is to build the capacity of educational institutions to continuously enhance the relevance and quality of their education and to match the needs of the rapidly changing world of work. Based on the achievements of the EMVITET project described in this article, we can recognise that EMVITET partners have demonstrated a lot of evidence of how they have been able to modernise their education and how they have built a sustainable learning ecosystem with which to continue Education 4.0 development in Vietnam. In this article, we do not explore all the challenges which are related to development but more wanted to describe the positive achievements and draw conclusions about the success factors.

In the final dissemination seminar of the EMVITET project, the highest educational authority in Vietnam – the Ministry for Education and Training – was very pleased with the input from the EMVITET project:

The EMVITET project has significance in the context of education in Vietnam, especially in education reform. The objectives of the project have been meeting the orientations, directions and solutions to the fundamental and comprehensive innovation of the education sector in Vietnam, such as developing an ecosystem for the digital transformation of teaching and learning; implementing a digital platform for online teaching and learning, combined with face-to-face teaching with advanced features in order to support personalised learning and enhance experiences; and connecting an online teaching platform with an educational institution's administration platform. Moreover, training human resources for digital transformation in education improves the digital capacity of learners, teachers, employees, education managers and the staff in charge of digital transformation and IT in the education sector. The results of the project have significant importance for the current situation of Education 4.0 and propose policies, mechanisms and solutions to be implemented.

One of the key success factors behind why these impacts were achieved was selecting over 30 teachers who were to be engaged in the development process and who took ownership of developing teaching and learning practices in their institutions with their Homegroup as an institutional development team. The engagement was supported by empowering activities during the project; when they learned to collaborate successfully, they recognised each other's achievements and became recognised themselves. Another success factor is that by developing Education 4.0 practices, EMVITET teachers found out that new ways of implementing pedagogical practices created inspiration and engagement for students, even though the new practices were not easy for students at the beginning. Furthermore, the engagement and participation of managers created very essential support for building a new learning culture.

At the end of the project, EMVITET teachers were asked what the most meaningful thing for them personally was. A word cloud was created based on their short responses (see Figure 2).

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