

FOREWORD

InScience Press is delighted to publish this book entitled *Education Applications & Developments V* as part of the Advances in Education and Educational Trends books series. These series comprise authors' and editors' work to address global research, although focused in specific sections, in the Education area.

In this fifth volume, a dedicated set of authors explore the Education field, contributing to the frontlines of knowledge. Success depends on the participation of those who wish to find creative solutions and believe their potential to change the world, altogether to increase public engagement and cooperation from communities. Part of our mission is to serve society with these initiatives and promote knowledge, therefore it requires the reinforcement of research efforts, education and science and cooperation between the most diverse studies and backgrounds.

The contents of this 5th edition show us how to navigate in the most broadening issues in contemporary education and research. In particular, this book explores four major topics within the broad theme of Education, corresponding to four sections: "Teachers and Learning", "Organizational Issues", "Teachers and Students" and "Projects and Trends". Each section comprises chapters that have emerged from extended and peer reviewed selected papers, originally published last year in the proceedings of the International Conference on Education and New Developments (END) conference series (<http://end-educationconference.org/>). This meeting occurs annually with successful outcomes. Original papers have been selected and the authors were invited to extend them. The extended versions were submitted to a new evaluation's process, afterwards the authors of the accepted chapters were requested to make the necessary corrections and improve the final submitted chapters. This process has resulted in the final publication of 23 high quality chapters organized into 4 sections. The following sections' and chapters' abstracts provide some information on this book's contents.

Section 1, entitled "Teaching and Learning", offers research about foundations in the education process itself, in various contexts, both for tutors and students.

Chapter 1: *Human Being Development: A Holistic and Complex Extensive Review on the Social Dimension*; by Bertrand Dupuy, Roger Boileau, & Tegwen Gadais. A previous paper focuses on the research protocol used to conduct a holistic and complex review on the social dimension of the human being. This theoretical chapter focuses on created a model about the constituent elements of social development of human beings evolving into a contemporary democratic society. From a cross-reading of the thoughts of ancient and contemporary authors, a number of structural, conceptual and dynamic elements related to this subject emerged. The linkage and articulation of these elements gave birth to an integrative model reflecting the complexity of the different components of the social dimension of

human beings and their development. This chapter, based on Bronfenbrenner's ecological approach, unveils the process of developing this grid as well as the justification of the constituent elements that it comprises. It establishes a first foundation of knowledge synthesis on the social dimension of human beings.

Chapter 2: Creating Contemporary Picture Short Stories Using Intertextual Heroes and Plot Subversion - An empirical research; by Christina Kalaitzi. The objective of the present research is to explore the extent to which preschoolers are able to recognize intertextual connections and schemata and build upon them by subverting the plot of classic tales. According to previous findings, children in preschool age are able to acknowledge familiar plots and reproduce the basic narrative structure using pictures as a source. Providing that during preschool age, narrative skill establishes the grounds for narrative comprehension and literacy emergence, it is highly important to examine the potential of the narrative skill. For the purposes of this empirical research, a teaching intervention is conducted with a sample composed of preschoolers from two public Greek kindergartens. The preschoolers' performance is evaluated through context analysis. The interpretation of expression patterns identified in preschoolers' produced narrative speech shows that they are able to introduce familiar fairytale characters into their posterior narratives attributing to them distinctive roles. Furthermore, they are able not only to distinguish fairytale patterns, but also to subvert them by narrating a different sequence of events. The present research contributes to the discussion regarding the extent to which narrative skill could be developed during early childhood. Based on the results, narrative skill can be enriched through the combined use of intertextual connections and patterns subversion.

Chapter 3: French Immersion Teacher and Student Perceptions about Learning Science in a Second Language; by Yovita Gwekwerere & Ginette Roberge. In Ontario, students enrolled in English language schools have the option to learn academic subjects in both French and English (French Immersion). In response to requests for instructional support from French Immersion (FI) Science teachers, representatives from the Council of Ontario Directors of Education approached Laurentian University researchers to embark on a project that would contribute to building the capacity of teachers who teach Science in French in the Junior and Intermediate grades (7-10). This study utilized a mixed methods approach to investigate teacher perceptions about teaching science to second language learners, their science efficacy beliefs, and students' engagement. A total of 37 grade 7-10 FI teachers and their respective 324 students participated in the study. Findings show that most teacher participants were generally confident about their knowledge of science, felt that they taught the subject effectively, and were continually striving to engage their students in science classes. However, these teachers faced unique challenges concerning limited language proficiency among students, and lack of suitable instructional resources. Student surveys show mixed results in terms of their self-efficacy and self-regulation, those with genuine interest in science, were more likely to be confident in their ability to succeed in FI science classes.

Chapter 4: *The Lifestyles and Health Habits of Students from a Quebec University*; by Marie-Claude Rivard, Paule Miquelon, Émilie Pérusse-Lachance, Alexandre Busque, Sylvie Ngopya Djiki, Élisabeth Lavallée, François Trudeau, & François Boudreau. Despite the physical and psychological benefits associated with healthy lifestyle habits, approximately 50% of Canadians fail to adopt an active lifestyle and a healthy diet (Statistics Canada, 2014). University students are no exception to this tendency, even though the literature acknowledges the benefits of healthy lifestyles for academic success (La Cascia et al., 2019). In this context, the objectives of this study were to: 1) examine the lifestyles and health habits of a sample of Quebec university students and 2) explore this sample's needs with respect to strategies that can be used to promote healthy habits on campus. A cross-sectional design, a web-based survey (n = 1,980 students), and three focus groups (n = 22 students, ~7/group) were used to reach these objectives. The results showed that: 1) 55.2% of students were considered sedentary and 81.2% did not meet the Canadian recommendations regarding vegetable and fruit consumption and 2) lack of time and excessive workload were the main barriers to physical activity practice and maintaining a healthy diet. Future research should focus on maintaining a balance between offline (e.g., workshops) and online (e.g., computer tailoring) interventions to promote physical activity and healthy diet maintenance throughout the academic year.

Section 2, entitled “Organizational Issues”, gives a glance on tools for implementing organizational learning and change in the education context.

Chapter 5: *A Humanising Pedagogy: Being a Conscious Presence in the World*; by Leila Kajee. Many consider education an arena designed to eliminate structures of oppression, by equipping learners with the necessary abilities to change repressive structures that exist in society. This is significant in the context of South Africa given its history of segregation and apartheid. Also in the context of South Africa's linguistically and culturally diverse classrooms, it is inevitable that teaching and learning from a social justice perspective be prioritised to address injustices and inequities. This chapter draws on conversations with teachers, in which their understandings of a humanising pedagogy, and what this requires of us in the context of teaching and learning environments, are explored. The chapter concludes that a humanizing pedagogy is crucial for both teacher and student success and critical for the academic and social resilience of students. The work emanates from a project between universities in South Africa and Brazil.

Chapter 6: *Principals' Entrepreneurial Leadership Empowering Parents of Marginalized Populations*; by Devorah Eden. The aim of this study is to explore principals' entrepreneurial leadership in a school of a socially marginalized population over a period of eighteen years. The school serves the children of undocumented work migrants and refugees in Israel. These people are perceived by the law as temporary, with no possibility of becoming citizens. However, their

children are eligible for an education, as specified in the Law of Compulsory Education. Principals as entrepreneurs have a vision, seize opportunities and engage in innovations, and use networking to pursue their goals. This qualitative study used a 'critical event' inquiry method to reveal the events that triggered the principals' entrepreneurship towards the parents. Principals' acts and perceptions were retrieved from different sources. The different sources include interviews with teachers, interviews with the principals and their interviews on the media and the internet, and school observation, over a period of eighteen years. It was found that the principals applied entrepreneurial leadership to facilitate the parents in accumulating social and cultural capital that would enable them to become part of society by mobilizing funding, volunteers and projects. This study contributes to our knowledge, since it discusses the possibilities and scope of principals' entrepreneurial leadership.

Chapter 7: *The Screeners Project - The age of new communication*; by Petra Pětiletá. Nowadays, daily-use of a computer, notebook, tablet, and other display is natural. Thanks to the development of new technologies, we are gradually moving from textual-cultural to hypertextual expression. The Internet is a relatively new data medium and requires a new method of reading and working with information. New media, coupled with technical advances (in addition to art), brings about a cultural transformation of mass society through a wealth of easily accessible visual data with different purposes and content. Contemporary life in our global society manifests itself in two ways: everyday life in the real world without a connection and a digital platform through which one is connected via a screen. The rapid development of the Internet and digital technologies is also reflected in art education as well as the creations of students without the use of computers.

Section 3, entitled “Teachers and Students”, provides studies within educational programs and pedagogy for both teachers and students.

Chapter 8: *Self-Assessment through the Metacognitive Awareness Process in Reading Comprehension*; by Katerina Kasimatis & Theodora Papageorgiou. This study aims to investigate the relationship between adult self-assessment and the level of metacognitive awareness in reading comprehension. The sample of the research was adults who were participating in a training programme in order to obtain a certification of pedagogical competence during the year 2017-2018. MARSİ (Mokhtari & Reichard, 2002) was used as a research tool and open - ended questions were distributed to the trainees. The study focused on the overall index and the metacognitive development of the trainees. Both quantitative and qualitative analysis of the data was conducted. The analysis of the data revealed high level of awareness of metacognitive reading strategies ($M > 3.5$), which is also in relevance to high quality educational level of the trainees and their age ($M = 35$). With regard to the effect of the training on their metacognitive awareness, there has been a statistically significant increase in the overall average of MARSİ, which indicates the positive impact of the training on a population of high educational level and older than the

normal trainee population. The qualitative analysis of the data revealed the enhancement of self-assessment among trainees and the development of reading skills through the use of digital technologies etc. The positive contribution of the training to the participants' metacognitive awareness seems to be focused only on those with pre-existing teaching experience and have been more highly self-assessed.

Chapter 9: *Legal Case vs Legal Text - How to teach law in teacher training*; by Zoltán Rónay. Both scholars and educators agree on the importance of law education for future teachers. However, the predominant majority of methodological literature deals only with the K12 level. Law is complex, it has its own challenging terminology. The novelty of this chapter lies in offering methods for the implementation of these elements and presenting an example of how it is possible to ensure the basic legal and ethics preparedness of students in a teacher training programme. Our institute (Eötvös Loránd University, Faculty of Education and Psychology, Institute of Education), which is responsible for the pedagogical content of teacher training, recognised the lack of these elements in teacher training curricula. To this end we designed a course on legal and ethics knowledge. This course did not have antecedents, thus the author of this chapter, as the responsible professor, had the freedom to compose the methodology and content. The title of the course is "The Legal and Ethics Framework of the Teaching Profession." This chapter presents the challenges during the first two semesters, the experiences of which involved modifications, and the students' opinions about the course. Furthermore, the chapter offers best practices and tools for teacher educators in other countries.

Chapter 10: *A Model for Modified Music Standards in Professional Music Training: A Case Study*; by Hua Hui Tseng. Music standards equip music educators with abilities to translate music education verbiage to administrators and policymakers so that the latter may more readily comprehend standard instructional vocabulary. One of the realities of music education is its teachers work as professional musicians whose administrators have little training in music education and knowledge of the 2014 National Coalition for Core Arts Standards' educational standards for fine arts disciplines, including music. The purpose of this paper is to use the National Association for Music Education's three artistic processes of creating, performing, and responding (CPR) guidelines for music teachers to analyze and explore evaluation measures and the process of giving students tools in instructional programs. The focus is the guidelines' areas and practices across a range of standards representative of the quality of learning outcomes and balanced music curriculum, including responding to and creating and performing music. Insight into some of the implications of students' results is gained through the Music Department in the Tainan University of Technology, Taiwan. The findings demonstrate that accurate assessment of music performance in authentic contexts is realized by raising the quality of practice, defined as meeting learning objectives in performance, that conform to academic and performance requirements' criteria.

Chapter 11: *The Introduction of Programming in K-12 Technology and Mathematics - Teacher choice of programming tools and their perceptions of challenges and opportunities*; by Niklas Humble, Peter Mozelius, & Lisa Sällvin. Many countries have started the process of involving programming in K-12 education. Most experts agree that this will be a positive change, but there are no concrete guidelines on which tools to use, and how to address challenges for the involved teachers. The aim of this study was to describe and analyse teachers' perceptions of integrating programming in technology and mathematics, and their view on programming tools. A case study strategy was used, with two versions of an introductory programming course as the case study units. For both course versions, technology and mathematics teachers taking the course could choose between textual programming in Python and block programming in Scratch. Data have been collected in a mix of submitted essays, programming solutions and researchers' observations. Findings show that a challenge in learning and integrating programming is the perceived time trouble, while an opportunity is that programming is perceived to be fun. Regarding the choice of tools, the majority of the teachers used Python themselves and mentioned that they could see a greater potential for it as a tool in education. However, many of them stated that they still will start off with Scratch, due to the lower threshold for novice programmers.

Chapter 12: *Does it Add up? Designing Elementary and Preschool Teacher Professional Development to Improve Student Achievement*; by Ken Newbury, Deborah G. Wooldridge, Susan Peet, & Cynthia D. Bertelsen. The quest for effective teacher math professional development that positively influences student achievement is the genesis of this two-year, mixed methods quasi-experimental design research study. The research evaluated the impact of a comprehensive embedded 120-hour professional development initiative on preschool and elementary math teachers' knowledge, beliefs and behaviors and changes in their student's math achievement. An external evaluation from year 1 and year 2 revealed statistically significant changes on measures of teacher math content knowledge for Treatment group vs matched Control group who completed the Teacher Knowledge Assessment System (TKAS), an online system for administering the Learning Mathematics for Teaching (LMT) assessment. The LMT measures teachers' basic mathematical knowledge and teachers' pedagogical content knowledge in mathematics (Hill, Schilling, & Ball, 2004; Phelps, 2011). Student achievement changes from Treatment teacher classrooms increased in year 1 with significant changes found in year two compared with matched Control teacher classrooms on a variety of grade aligned student achievement measures. Findings from this study demonstrate the potential of effective teacher math professional development on both teacher math content knowledge and on student achievement. Implications for future research that result from this study are presented.

Chapter 13: *Reading Competency and Summarizing Skills in Primary School Children: An Explorative Survey*; by Antonella Valenti & Lorena Montesano. In the present society, one of the fundamental objectives of school is learning to read a text. "Learning to read" is a complex process, implying not only the ability to associate the corresponding phoneme to each grapheme, but also the ability to understand the meaning of a text. It is a crucial achievement, fundament of the more general study skills, on which largely depends the educational and academic future of each student. In the recent years, learning to read has become the subject of systematic international and national evaluations, associated with recurrent requests to carry out initiatives aimed at the reduction of the poor comprehenders. Summarizing is one of the key strategies for a good reading comprehension, since learning from long texts result difficult for many students. Starting from these considerations, we evaluated the summarizing skills in a group of primary school children. We also measured the skills of text comprehension, referring to the ability of semantic and lexical inference, to the vocabulary skills and to the metacognitive skills. The aim was to investigate the relations between summarizing and students' general reading competency.

Chapter 14: *Understanding why some Future Teachers Find it so Difficult to Follow Written Instructions*; by Janaina da Silva Cardoso. A difficulty in following simple written instructions has been identified amongst university students of teacher education in Brazil. This Exploratory Practice (EP) study, conducted as part of a TEFL Practicum course at the State University of Rio de Janeiro, Brazil, aimed to understand what lies behind this difficulty. The research project was divided into two phases: an online questionnaire, answered by 16 students, and an EP activity, involving another 14 learners, all aged between 20 and 35. This specific "work of understanding" was important for them because their success at university depended partly on their ability to follow instructions. Moreover, as the learners in question were teachers-to-be, their ability to give their own students clear instructions was also a consideration. The study was initially designed as a participatory action research project with the main focus on finding solutions to the problem at hand, but it was subsequently transformed into an EP project with the main aim of simply understanding the situation and familiarizing the participating learners with the principles of EP. The participants' and respondents' difficulties in following instructions were found to be related to the learners themselves (e.g., lack of attention) the teachers (e.g., unclear instructions), and other factors.

Chapter 15: *Gender Differences Between the Perceptions of Physics and Science in General Amongst Senior and Junior Students at a South African University*; by Leelakrishna Reddy. It is widely accepted from literature that male students outperform their female counterparts in science, and in particular physics. Accordingly, gender differences stem from their prior backgrounds in mathematics, physics and differences about their attitudes and beliefs about the subject. To measure students' differences in perceptions regarding physics and science, use is made of a questionnaire that is comprised of two sections; A (four questions) and

B (fifteen questions). In section A students were required to respond to questions that relates to their relationship between life and physics, chemistry and mathematics, while in section B, a probe is made regarding their confidence in physics and chemistry. 101 students participated in this study. Results are presented in both numeric and in percentage form. The fundamental difference between the genders is that in both groups there appears to be a strong affinity for chemistry for the female students, and even a stronger liking for chemistry by the senior analytical chemistry students. The males on the other hand shown an average liking for chemistry in both cohorts, but a slightly better liking for physics as a subject. From this anecdotal study, it appears that females show more preferences for science and chemistry than their male counterparts do.

Chapter 16: *Gender Differences in Physics Anxiety at a South African University*; by Leelakrishna Reddy. From literature, it is known that anxiety for physics amongst female students appears to be higher than for male students. This study is carried out to determine the role that gender plays in their preference to physics and the anxiety they experience in the subject. To measure the anxiety that students experience in physics, use is made of a modified physics anxiety questionnaire. This questionnaire has a rating scale from +1 (minimal anxiety) to + 5 (very high anxiety). 64 students participated in this study. Results for this study is presented both in numeric and in percentage form. From this study, it was revealed that female students have a significantly higher level of physics anxiety compared to their male counterparts. Besides the females having a higher level of anxiety in the thought of seeing their physics assessment marks, both males and females have a similar level of anxiety for the item relating to fear of failing their physics tests or examinations. The anxiety experienced by male students is their desire to excel in the subject and thus they appear to be more focused in their physics studies, while female students are overcome by the complexity of the subject and present a higher level of anxiety in the subject.

Section 4, entitled “Projects and Trends”, presents chapters concerning, as the title indicates, education viewed as the center for innovation, technology and projects, concerning new learning and teaching models.

Chapter 17: *Flipped for Critical Thinking: Evaluating the Effectiveness of a Novel Teaching Approach in Postgraduate Law Modules*; by Margaret Liu. Flipped classroom is a novel model that can help students develop their learning skills of critical thinking by students’ engagement to enhance their learning experience through team working and pre-designed class activities with tailor-made questions. However, the literature about flipped teaching reveals that it is still underutilized and underexplored in the higher education law teaching. This study aims to fill in this gap by developing a flipped learning model that can provide a foundation in practice for higher legal education. This chapter presents a new flipped classroom model and information about how this model promotes greater critical thinking in a flipped classroom environment that was evaluated based on Module Evaluation Questionnaires and final module grades for the test of effective learning

and teaching quality. Research was conducted using eleven-week-long postgraduate law modules of ‘international trade law’, ‘international criminal law’ and ‘international human rights’. Data was collected from students who completed module survey and submitted summative assessment for their final module grades. Result shows that over 90% post graduate law students found the flipped classroom model to be either effective or very effective to promote critical thinking. Students were satisfied their learning experience with their counterparts and interaction with lecturers.

Chapter 18: *Development of Interdisciplinary Instruction Using Inquiry Based Science Education*; by Eva Trnova. The task of the current educational system is to give all pupils competences they will need to prosper in the global economic competition. However, pupils very often consider learning content to be useless for their everyday life. In the context of natural sciences, this is not only about the choice of learning content but also about how science subjects are taught. Pupils are not usually able to connect knowledge from individual natural science subjects and to solve interdisciplinary problems so typical for everyday life. This could be one of the essential reasons for the lack of pupil interest in the study of natural sciences. An interdisciplinary approach to teaching could be the way to solve this situation. However, teachers usually lack training in interdisciplinary instruction, and they do not know the appropriate educational methods supporting interdisciplinarity. It is vital to educate them on how to carry out interdisciplinary instruction to satisfy pupil requirements. This study introduces inquiry-based science education as a suitable educational strategy for efficient interdisciplinary instruction. Research findings confirming the effectiveness of pre-service teacher education in interdisciplinary instruction using inquiry-based science education are presented.

Chapter 19: *Challenge Based Learning (CBL)*; by Mariano Sánchez Cuevas. A new education for the 21st century requires comprehensive training by students. An education focused on the development of cognitive skills, abilities, and attitudes that allow them to approach and design solutions for the main social challenges. This change in the educational paradigm demands the incorporation of new teaching and learning methodologies. In this chapter, Challenge-Based Learning (CBL) is presented as a pedagogical proposal to favor the development of transversal and disciplinary skills, collaborative work, leadership, research, critical and reflective thinking. CBL allows students to be involved in real teaching contexts so that through the design and implementation of projects, they generate proposals for solutions to the main social challenges. This paper describes the background, the characteristics, the teaching process, and the methodology, in its different stages for developing CBL, as well as its main differences with other active methodologies that are used to develop problem-solving skills. Finally, the CBL stages are exemplified within a university experience and its implementation through the project called Social Reconstruction. This project allowed the participation of students and teachers in a multidisciplinary and collaborative way for the social transformation of two Mexican communities affected by the earthquake of September 19, 2017.

Chapter 20: *Development and Effectiveness of “Content-Focused Accessible E-Learning Materials” for English Learning Targeting Visually Impaired University Students*; by Chikako Ota. Visually impaired students need to have printed learning materials converted into media such as enlarged print and braille, and they need enhanced ICT environments such as sound and screen magnification. These modifications are known as “technical” accessibility to information. However, these enhanced learning materials are not always sufficient. This study presents pioneering attempts to modify printed learning materials into content-focused accessible e-learning materials that help visually impaired students to learn English independently. The original materials used in this study are self-learning exercise books for remedial English grammar study. The students used the modified e-learning materials and provided feedback from the following perspectives: 1) effectiveness of the materials, 2) suggestions for improving/revising materials, and 3) suggestions to further develop the materials for student autonomy. The study then analyzed students’ grades before and after using the modified materials. Study results revealed that the modified materials were more effective, especially for students with severe visual impairment. This finding is significant as it provides new insights that will help facilitate visually impaired students’ self-learning.

Chapter 21: *Positive and Negative Feelings of Learning with Digital Technologies Among Higher Education Students in Ghana*; by Justice Kofi Armah & Duan Van der Westhuizen. A scan of research literature that targets the experiences of students in Ghana when they use digital technologies for learning, shows that little is known about student experiences of learning with technologies, or how negative they feel when doing this. The Joint Information Systems Committee’s (JISC) digital experience insight survey offers insight into how students are using technology in the higher education learning environment. The survey has four dimensions, “digital life of students”, “digital at the university”, “digital at course level” and “student attitudes to digital”. Therefore, in this study, students in three dual-mode HEIs were targeted to complete the survey instrument. The responses of 1937 students were captured by means of an online questionnaire, and the data were disaggregated by mode of study. While these data confirmed that students have positive feeling towards the use of digital technologies in their subject discipline, they also suggested that fulltime (residential) students are more positive towards digital technologies for learning than distance learners. They also have less negative feelings toward digital learning than distance learners in managing online information. Therefore, it becomes clear that dual-mode institutions need to take additional measures to scaffold distance learners appropriation of digital technologies (tools and skills) for learning.

Chapter 22: *Students’ and Teachers’ View on School-Dependent Factors that Affect Students’ Assessment Performance*; by Marcin Fojcik, Martyna Katarzyna Fojcik, June Audsdotter Stafnes, & Bjarte Pollen. The paper attempts to name, define and evaluate various factors that may influence the assessment of students. The idea behind an exam for students is to determine to what extent students have learned

(assimilated) the course content. The exam is also a type of summative assessment that is designed to determine whether students can select and apply effective study strategies and whether they know how to prepare for and perform during the exam. Both scientific publications and the authors' experience show that in many situations, students do not achieve an exam result that matches OR is in line with their skills. In this chapter, the authors focus only on factors that may depend on the strategy of the university, such as stress management, examination techniques, understanding of tasks etc. The authors collected data to investigate what kinds of study and examination strategies students use and how these strategies satisfy student assessment results using qualitative and quantitative methods. The results were used to identify which factors have the greatest impact on student performance. The chapter presents some suggestions on how schools and universities can support students to be more prepared and more aware of themselves in such situations.

Chapter 23: Cultural Heritage as Built Environment Education Resource: Pupils and teachers evaluating learning within Lost Traces project; by Marta Brković Dodig, Sarah Klepp, & Angela Million. Monuments as facets of our material culture can be focal points of built environment education. Cultural heritage can enhance teaching of curricular subjects and can provide par excellence cross-curricular opportunities. Yet, studies evaluating educational experiences involving cultural heritage sites are scant. Therefore, this chapter presents results of an evaluation of learning experience with pupils and teachers participating in a 'Lost Traces' project. Questionnaires and group interview with card sorting task revealed educational methods the pupils selected as helpful for developing a myriad of competencies – from perceiving and feeling, analysing and communicating monuments related themes, to artistically intervening on sites and developing designs for the future use. LT projects promote diverse competences and highly enrich learning experiences. Pupils appreciated the ability to independently assemble teams spanning across generations, bring in their own ideas, work directly with experts, engage with interesting topics on-site. Yet, future project should allow for joined-up planning and careful programming of project phases and educational tools jointly with pupils; include more intensely social negotiation of what heritage is with different stakeholders to facilitate the process of monuments interpretation, thus, further broaden pupil's understanding of heritage.

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