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CURRICULUM & TEACHING STUDIES | REVIEW ARTICLE

How to mainstream to the changes in the world of work: Analysis of the European educative curriculum programmes about health and safety

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Abstract: Integration or “mainstream” of safety and health in the school curriculum is a priority for the European Union, specifically, from the publication of the Community Strategy on Occupational Safety and Health (2014–2020) published like document titled “How to adapt to the changes in society: a new community health and safety strategy”. In this sense, fostering a culture of prevention in students will develop responsible attitudes in both personal and professional life. This article analyses, in a comparative way, different strategies and processes of integration of safety and health in school curricula in European Union countries (United Kingdom, France, Belgium, Italy, Spain and other countries.). The methodology is qualitative (content analysis) using the “AQUAD Five” software. The sample is the set of institutional campaigns and educational programs applied in the various European education systems. In definitive, promote safety and health in the school curriculum with success and quality assurance in the education of our students must be made from three perspectives: (1) towards a safe and healthy school: “holistic” approach; (2) safety and health as a transversal subject at school: “curriculum” approach; (3) transition from school to working life: “workplace” approach. Our proposal is: to

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Antonio Burgos-García is a PhD and Professor in the Department of Curriculum of the University of Granada (Spain). He has participated in several research projects and has published several papers in the field of school health and safety. The lines of study are: occupational health and safety, professional development of teachers, educational organizations, occupational training, etc. These topics have been published in journals indexed in impact databases, such as Taylor & Francis, SCOPUS (SJR), Thomson Reuters (SSCI-Web of Knowledge) ERIC, ERIH.

PUBLIC INTEREST STATEMENT

This article analyses, in a comparative way, different strategies and processes for integrating health and safety into the school curriculum in the different countries of the European Union (United Kingdom, France, Belgium, Italy, Spain, Sweden, Denmark, Portugal, Germany and other countries). This article is the result of a research on health and safety at work in schools funded by the Spanish Agency for Occupational Health and Safety (INSSBT, Ministry of Employment, Government of Spain). Specifically, it is aimed at training students in the acquisition of a culture of occupational risk prevention. The information analysed belongs to the different institutional campaigns and educational programmes implemented in the different European education systems. In summary, our proposal is: to offer key guidelines to improve the educational and organizational performance in the teaching and learning process (Primary and Secondary Education) and to integrate safety and health in the school (curriculum) in order to reduce the accidents of our future workers.

offer key guidelines to improve the educational and organizational performance in the process of teaching and learning (Primary and Secondary Education) and integrate safety and health at school (curriculum) in order to reduce accidents of our future workers.

Subjects: Educational Research; Primary; Elementary Education; Curriculum Studies

Keywords: occupational safety and health culture; school curriculum practices; qualitative research

1. Statement of the problem: Why educate for health, safety and well-being?

The World Health Organisation (WHO) defines health as “a state of complete physical, mental and social well-being”Burgos-Garcia (2014), education has an essential role to play in enabling the great majority of people to tend towards that state, by preparing new generations for their adult lives. For young children (nursery, infant, primary, secondary), the education will address general concepts of health, safety and well-being, as well as social aspects. Then, for teenagers and young adults (vocational education, higher education), the focus will be on gradually acquiring social and professional skills promoting the concept of health, safety and well-being at work. This requires work not only on the content of the teaching but also on the places where the teaching is carried out. The environment in which children and young people are educated should be exemplary. First, educational establishments should be healthy and safe. Pupils and students can then engage in a more comprehensive approach covering not only the facilities and equipment but also the procedures, the management and the very culture of the education institution. In this sense, is presented a table with the different resources and educational materials related to teaching of health and safety in the European schools (Table 1).

In this sense, how to mainstream safety and health into school curriculum? The European Union strategy on health and safety at work underlines the necessity of strengthening the prevention culture by means of education, awareness training, and anticipating new and emerging risks in order to maintain and improve the quality of work. Occupational health and safety has to be part of an integrated strategy to encompass all the necessary aspects of education, training, research and innovation. To promote a prevention culture among future workers and employers, it is necessary to integrate, or “mainstream”, safety and health into education. If children and young people get acquainted with safe and healthy behaviour, more safety and health in their future working (and private) life can be expected.

A research, carried out by Occupational Safety and Health Agency (OSHA, 2012), says the most common deaths from child accidents, are: traffic accidents (41%), drowning (15%), intentional injuries (14%), other injuries (6%), fires (7%) and falls (4%). It is also interesting to note, from this same study, that in 2006, 9.6% of the Spanish child population under 5 years of age suffered an accident; this percentage amounted to 11% among girls and boys aged 5–15 years. Four out of 10 boys and girls between 0 and 4 years old had a fall at ground level, and among those under 0 and 4 years old, it rises to five out of 10. The blows are equally common accidents in the two age groups (20% and 18%, respectively). Almost 60% of children between 0 and 4 years old had accident at home, stairs or portal, while in boys and girls between 5 and 15 years old, they were more frequent in the street or highway (27.5%) and in the school centre (26%). In 70% of the accidents registered in children under 5, an emergency centre was visited, while it dropped to 60% among children under 5 to 15 years old.

Another study published by the Mapfre Foundation and the Spanish Society of Medicine (2010) indicates that a total of 458,635 children (17.8%) of the total number of accidents that occur (excluding traffic accidents) suffer children aged between 0 and 14 years where they are treated in primary care health centres for falls, cuts, wounds, burns, asphyxiation, poisoning and

Table 1. Educational materials and resources

Materials/resources	Comment (description)
National healthy school standard guidance	United Kingdom. National programme that provides an accreditation process in order to promote cooperation in education and health.
“Splaot” Safe play at all times	United Kingdom. Community Campaign “Laing Homes” and conceiving prevention as an area where development of resources, ideas and lesson plans for teachers, based on a construction site.
Check it out	United Kingdom. Teaching materials for the education sector with specific examples of risks in the workplace.
The safe school	Netherlands. This initiative focuses on improving communication on safety and violence in and around schools.
Safety School (FAOS)	Greece. Development of comprehensive procedures to monitor safety education in schools and implement measures for collaboration between public and private sector.
School healthy environment	Sweden. Programme to design a work environment and learning in schools.
At the safety school	Italy. Conceptual and methodological framework to show teachers and teachers how to integrate occupational safety and health into programmes.
OSH integrated in curricular standards	Italy. Planning and testing of standard training modules on security in schools and vocational schools.
“Segurit@”; “Take care of your life!” or “No badis y no badis: El carrer de la prevenció”	Spain (Andalusia, Cantabria and Catalunya, respectively). Development and dissemination at national level of educational tools to foster a culture of prevention.
Armi project: “Ar and Mi at school”/New kids on the job	Denmark. Project to develop basic skills and attitudes and to make a positive contribution to health and personal safety and the environment.
Preventing accidents to children and young persons in agriculture	Ireland. Development and implementation of a programmatic document on security that shows how to manage occupational safety and health on farms.
Synergie	France. Sectorial project with the objective of the work of students within an enterprise is economically and socially useful.
Students make safe machines	Belgium. Manual-preventive and educational guides for students coming to joining the labour market.
Young people want to live safely	Germany. Competition for students of vocational schools.

electrocutions by this order. These data reflect its importance while pointing out that in the European Union, more children die from accidents than from the sum of all childhood diseases.

Another more recent scientific contribution, which is carried out by the Spanish Association of Pediatrics (AEPap) and the Mapfre Foundation (2014), shows us the situation and the key elements that have determined the accidents suffered by the child population in Spain. This study indicates that 57.2% of the accidents occurred in schools, parks, gardens and streets, and 42.8% happened in the home. Accidents in the home are more frequent when the child’s age is lower and the percentage of accidents increases when they happen at school, when the child is older. When the accident occurs in the home, it occurs in the classroom (23.8%), children’s bedrooms (10.2%), parents’ bedrooms (9.3%) and in the kitchen (10%). Accidents are occurring outside the home; the most frequent are at school (44.6%), public parks (21%) and on the street (20%). The typology of accidents suffered more important were falls (56.7%) and blows against objects, people or animals (26.2%).

Therefore, according to these studies and researches, it is necessary to have a culture of prevention of occupational risks, especially since childhood as its impact on aspects as important as health and

safety guarantee and protect something as fundamental as life itself. For this reason, we understand that perhaps from the school we could adopt measures that could generate a preventive culture capable of raising awareness about occupational risks and the possibility of avoiding them.

In any case, this article shows of good practice examples for school and vocational education throughout the member states of European Union, representing all stages until the end of compulsory education and covering a whole set of approaches, methods and tools to integrate occupational safety and health into the learning process and in the working environment inside and outside of schools.

2. The process of mainstreaming occupational safety and health in school curriculum

Mainstream occupational safety and health into school curriculums a process covering six different steps (OSHA, 2012). These steps come from a process model that is often used for quality management and also in the field of vocational education. The six steps are comprised of “success factors” identified like factors that supported the successful process of mainstreaming safety and health into education. The six steps (information, planning, decision, realization, evaluation and follow-up) are linked together according to a logical order (Nyhan, 2008). Following these steps should improve the quality of the mainstreaming process and its results.

Step 1: Information

Before the project starts, the necessary information should be collected, e.g. figures referring to accidents of children and young people, data referring to the number of safety lessons given in schools or data referring to the working conditions in schools and other educational establishments.

Step 2: Planning

It has to be clarified in advance which partners should participate in the project to support the mainstreaming process. Existing experiences and structures can be used for the project, e.g. health promotion networks, cooperation with safety and health authorities and their training institutes.

Step 3: Decision

The first two steps should be completed before a decision can be made on carrying out a pilot study of the project. At this stage, the general aim of the project and operational goals should be defined. Deadlines and responsibilities should be described within an action plan.

Step 4: Realization

This is the implementation phase of the project. Successful mainstreaming activity will more likely depend on the following factors: the recognition of safety and health as an inherent part of lifelong learning; a broad understanding of safety and health including physical, mental and social well-being; a direct relationship of educational measures to the workplace; and the involvement of experienced teachers to develop the programme and its material.

Step 5: Evaluation

Evaluation should be an integral part of the process. It should accompany and improve the mainstreaming process. Additionally, the results of the project have to be evaluated regarding their sustainability and their transferability to other institutions and in other cultural contexts.

Step 6: Follow-up

During the project, a promotion plan should be developed and possibilities of a follow-up should be considered.

3. Purpose and research aims

Purpose of this study is, a comparative way, to analyse the importance of the integration in school curriculums of occupational safety and health. In this sense, the aims of this research paper are:

- To know the current situation of the different European educational systems as teaching centres for occupational health and safety.
- To discover and analyse, in a comparative way, educational experiences in health and safety.
- Clarify educational and organizational performance to facilitate the teaching and learning process in health and safety.

4. Methodology

4.1. Scope of study: Sample

The sample is given by the “source documents”, for example, programmes, plans, databases, documents and legislation, relating to occupational safety and health in the school context. These documentary sources provide a way to understand current educational practices, knowing how these practices have evolved and clarify matters related to this evolution (McMillan & Schumacher, 2006). The scope of study is mainly written sources; specifically, it has made a comparative study of different countries of the European Union through databases and electronic documents.

4.2. Data analysis

In our research, the model has been developed content analysis (qualitative methodology), defined as a technique that has moved from analysis of the messages based on assumptions of systematization and quantification procedures, to search for latent content. Cohen and Manion (2007) consider the content analysis as a research method that is used to make reproducible and valid inferences from data. To perform the content analysis, we used the data analysis program “AQUAD Five” with the aim of reducing representation, contrasting goals and verification of data obtained in the documents analysed.

5. Results of the qualitative analysis performed

The process of mainstreaming safety and health curriculum in European Union countries is determined by the six steps set by OSHA (2012) and Nyhan (2008). In this sense, we show the results of our research from a comparative perspective.

Step 1: Information

Statistics or statistical data referring to high rates of accidents of children and young people are an important basis to start the mainstreaming process. Figures can give rise to a project as in the Synergie project, France, or in the German project “Young people want to live safely”. In the FAOS project, a special diagnostic survey was carried out by all heads of secondary schools at regional level in the Prefecture of Archaia, Greece. The Swedish “School healthy environment” is based on research on the theme “Working life in schools”, which gathered together the researchers at the Swedish National Institute for Working Life who work on school issues.

Step 2: Planning

The active participation of all possible intermediaries is necessary to develop a comprehensive educational approach: schools (head teachers/school managers), parents, assistant teachers and health technicians.

Schools (European projects: “School healthy environment”, Sweden; “Armi project”, Denmark; “Synergie”, France and “National healthy school standard”, England) have a direct responsibility to ensure the safety of students in education, specifically in vocational education where specific risks

may occur, and an indirect responsibility to prepare children for future life. This includes helping children to develop increasing responsibility for their own and others' safety. The British Royal Society for the Prevention of Accidents provides a framework for a school health and safety policy. Furthermore, part of the young workers website from this society is aimed at teachers involved in setting up and coordinating work experience programmes for their students.

Parents (“Check it out”, England and “The safe school”, Netherlands): Children and young people often turn to their parents for information and advice about jobs. Besides giving advice, parents must know about workplace rights and responsibilities. In many countries, parents are required to sign a work permit for their child. Reaching out to parents means:

- Identifying organizations that are parent-run or that serve parents.
- Conducting workshops for groups of parents in the community.
- Distributing posters, brochures and other materials.

Assistant teachers (“Splaat”, England and “Occupational safety and health integrated in curricular standards”, Italy): Young people are effective trainers: they bring energy and enthusiasm to their teaching, speak the language of their peers, serve as role models to other young people and provide a fresh perspective on workplace issues. Promoting peer education means:

- Identifying programmes or people interested in sponsoring peer educators.
- Providing materials and training to the peer educator advisers.
- Helping advisers to include safety and health in their programmes.

Health technicians (“Safety School: FAOS” and Spanish projects: “Seguritat”, “Take care of your life!” or “No badis y no badis: El carrer de la prevenció”) share information with young patients about a variety of health risks, but they rarely discuss the risks of workplace injury. Because of their direct contact with young people and their prominence in the community, healthcare providers can be effective advocates for teen worker safety and health. Promoting occupational safety and health to healthcare providers means:

- Contacting providers in community and school health clinics.
- Providing resources and training to medical providers, e.g. distributing videos to share with young patients and putting posters in the waiting room.
- Asking local hospitals to provide data on work-related injuries.
- Giving presentations or writing articles for the professional health associations.

Step 3: Decision

This step defines the objectives, measures, operational targets and initiatives of the mainstreaming occupational safety and health into education project. An action plan should be set up according to the key elements of the mainstreaming process. For example, in case of the “National healthy school standard”, England, these key elements are: partnerships, programme management and working with schools. In the “School healthy environment” project, Sweden, an action plan must be drawn up that includes measures, costs, timetable and divisions of responsibility for implementation. Before the project will be implemented, it should be tested in a pilot project.

Step 4: Realization

Safety and health form part of all aspects of the daily and working life. Today, a more “transversal” integration of occupational safety and health aspects in different subjects and over the whole educational process is aimed at, taking into account the age and education level of the children. In the

United Kingdom, national evaluation criteria and curriculum guidelines (such as the national curriculum) are important levers for influencing the direction of teaching practice and school management.

Students training on risk factors must to be, previously, with an introduction about safe and healthy behaviour, playful and referring to their daily life. Examples of this can be seen in cases like “At the safety school”, Italy, Spanish projects and in the “Armi project”. However, it is possible to deal with professional risks with these children by using specific “attractive” professions (e.g. “Splaatt”, England: construction work).

The development of teaching resources by experienced teachers with a deep insight into school education practice ensures that the resources are relevant and of high quality. This is mentioned in the case study “Check it out”, United Kingdom, and in the description of the “Splaatt project”, England. The chance for teachers and health and safety experts to work together increases the experience on both sides. The interactive approach requires an active and creative contribution from the pupil/student, as, for example, in the “Young people want to live safely” case, Germany. However, interaction suggests also the cooperation between teachers, students and prevention officers.

For the projects in secondary and vocational education, the students often interact not only with their classmates but also with their teachers and professionals. Several projects have developed a great variety of teaching tools. This is an extra attraction for the pupils and of course also for the teachers that can use didactic materials and resources in different forms, so that they can think about different ways of learning occupational safety and health. An example of this is the “Armi case of Denmark”, with the differentiation between the “Ar” and “Mi” project (primary school) and the follow-up “New kids on the job” (15–18 years old). Safety and health should not be limited to the class room (e.g. local authorities, and education institutions), as, for example, in “Splaatt”, England; “At the safety school” project from Italy and “Synergie”, France. Pupils and students can make real experiences and they are given the responsibility for performing health and safety measures by themselves. This increases the transferability of the projects.

Step 5: Evaluation

The evaluation of the cases is important to measure the effectiveness of each mainstreaming project. The evaluation criteria of the European Network of Health Promoting Schools could form the basis of the evaluation of occupational safety and health. These criteria are:

- A significant number of people participating.
- The supporting testimony of participants.
- Teachers who are satisfied and feel empowered.
- A response from the community in affirmation of the work done.
- External recognition of the programme.
- Continued support.
- The integration of evaluation as a normal part of a school's activities.

Furthermore, evaluation should be an inherent part of every project. Evaluation should be carried out during the project continuously and should have a positive impact on the mainstreaming process itself.

Step 6: Follow-up

A follow-up project could be:

- The transfer of the project model or of existing tools to other schools, organizations, sectors.
- The improvement of the project model or of existing tools.
- The development of additional products.

Mainstreaming occupational safety and health into education should be a permanent process of development to prepare children and young people for their future working (and private) life and to improve the learning and working environment of schools.

6. Discussion: Diversity in school curriculum practices in the European Union

To achieve integration of safety and health in the school curriculum is necessary to develop good practices and improvement strategies to guide the process of teaching and learning in safe and healthy behaviours in different countries of the European Union. In this sense, we provide strategies for improvement when we analysed the key elements in the process of teaching and learning in educational levels of Primary and Compulsory Education on the basis of the six steps or “success factors” identified like factors that supported the successful process of mainstreaming safety and health into education (OSHA, 2012).

6.1. Towards a safe and healthy school: “Holistic” approach

A “holistic” approach to mainstreaming safety and health in school education would be the following four cases highlight different aspects of this approach (Parson et al., 2005):

- Creating or improving individual attitudes and perceptions of safety and health in school.
- Designing school as a workplace that is appropriate to the needs of pupils and teachers.

The “National healthy school standard” (NHSS) provides a national accreditation process for education and health and supports the work of “healthy schools programme” coordinators across England. The NHSS covers national targets and local action plans with operational targets coordinated at a regional level. In order to achieve a classification as a “healthy school”, schools must have achieved targets set by the national programme.

“The safe school” (Netherlands) is a national campaign that focuses on increasing communication regarding safety and health. Different instruments have been developed to analyse the schools and to set up their own local action plan regarding safety.

FAOS “Light in school safety” (Greece) is based on a stepwise participatory approach by voluntarily involving public and private organizations. One main area of the project is training the trainers on safety and health, including first aid training.

“School healthy environment” (Sweden). This project aims that everyone (local, regional and national authorities) takes part in the school’s development. This method is based on working groups using a questionnaire and setting up an action plan for improving the working and learning environment in schools.

6.2. Safety and health as a transversal subject at school: “Curriculum” approach

To integrate safety and health into the school curriculum and especially in the curricula of vocational education is a major task (Salminen, 2008) (Burgos-Garcia, 2014). The curriculum approach today is mainly based on two concepts:

- (A) To integrate occupational safety and health as a **transversal** topic in different subjects as a part of lifelong learning.
- (B) To develop key competences in occupational safety and health for pupils/students and teachers. The focus has moved from “teaching” occupational safety and health knowledge in a “one-way-system” to **experience-oriented learning based on a dialogue** between pupils/students, teachers and occupational safety and health professionals.

The following four cases offer a conceptual and methodical framework for teachers on introducing occupational safety and health, examples of good practice in primary school.

“At the safety school” (Italy) provides teachers with a conceptual and methodical framework to introduce occupational safety and health into the teaching syllabus. A distinctive element of this project is the active participation of teachers within the development of the course model and a training process model for teachers who wish to apply the method.

“Examples of good practice to promote health and safety in primary schools” (Spain). Good practice examples of how to develop and disseminate teaching tools are to promote a prevention culture at primary schools, especially by introducing new and interactive methods. The main aim is to involve the pupils so that they are able to acquire the necessary knowledge to implement effective prevention measures in their daily environment.

The “Splaatt” (Safe play at all times) (England) initiative is part of the “Laing Homes” community programme and provides training packages. The initiative aims to raise children’s awareness of the dangers on building sites and to equip them with the knowledge to manage risks, for example, by visiting construction sites.

“Ar and Mi at school” and **“New kids on the job”** (Denmark). This case study covers a project for primary schools and a follow-up project reflecting the first steps of young people into working life.

6.3. Transition from school to working life: “Workplace” approach

In vocational and technical education, it is a step from education to the workplace. Preparing for the challenges of future working life should form a basic part of education (Salminen, 2008) (Burgos-Garcia, 2014).

“Preventing accidents to children and young persons in agriculture” (Ireland). This Irish project deals with the work environment of a farm. A “Code of practice on preventing accidents to children and young persons in agriculture” has been developed within the project. According to this code, farmers are required to develop a “safety statement” and to carry out a comprehensive risk assessment.

“Synergie” (France). The basic idea is to empower pupils by giving them proper economic and social skills within a company during their work placement. The pupils are given the responsibility of helping to improve health and safety in an enterprise. It started in the wood-processing sector and has been extended to the construction and public works trades, the graphics industry, and the car-body works and metallic structures sector.

“Students make safe machines” (Belgium). Vocational education in technical schools includes practising with machines. The teaching model was to adapt the existing old machines to the current standards. Together (students and teachers), measures were discussed and, finally, the students put the best actions into practice.

“Young people want to lives safely” (Germany). This project aims to integrate the safety and health into the curriculum of vocational schools. The project is carried out as a yearly competition and focusing on different subject areas like electricity, noise, falls and dangerous substances.

7. Conclusions

Finally, from our analysis, we think that all European countries must develop a school health policy and should include the safety and health into curriculum together with other aspects of school life. One key is the finance and resources from Local Administration authorities to impulse safety and health into society. These authorities need the support of Regional or State Government for effective integration of health and safety at school. It should also be a continuous process, with strategies and tools that allow students, teachers, parents and labour-educational Authorities to continuously review policies expressed in Community Strategy on Occupational Safety and Health (2014–2020).

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