

COMPETENCES IN HYGIENE IN THE SPANISH CURRICULUM OF THE MINISTRY OF EDUCATION ACCORDING TO THE ORGANIC EDUCATION LAW (LOE)

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Abstract

The aim of this research was to determine Hygiene competences that Spanish citizens must acquire in their compulsory stage of schooling and to address the competences in this area available for students to acquire through the possibilities provided in the Spanish official curricula. An analysis instrument was defined to achieve these objectives. This instrument includes the nine main problems in Hygiene and the competences that students must acquire to face them. To this end, a literature review, a Delphi study and a meeting of experts in Health Promotion and Education were carried out. Official curricula of Primary and Secondary Education, published in the Spanish Official Gazette (BOE), have been analyzed with the instrument in order to evaluate if they respond correctly to the Hygiene competences that students must acquire. The study results allow us to introduce curricular and educational proposals suitable for educational administrations, universities and teacher training centers.

Keywords: Health competences, hygiene, curriculum, compulsory education.

1 INTRODUCTION

In recent years there has been growing interest in the development of certain competences in education beyond the simple acquisition of knowledge. This is the case of health problems that warrant the acquisition of competences in order for citizens to cope with them. We understand competence to mean that required by an individual to effectively respond to the problems he or she may encounter throughout his or her lifetime, putting into action conceptual components (knowledge), procedural components (knowing how) and attitudinal components (knowing how to be) Gavidia et al.[1]. When applying these ideas to the field of health, it could be said that competence in health is the capacity and determination for personal and collective health-related problem-solving held by young people.

In 2011 the COMSAL (Competencias en Salud-Competences in Health) research project was set up under the title "Competences to be acquired by young people and their teachers in health education during compulsory schooling", in the framework of which this study is included. The objective of the COMSAL research project is to study those health competences that are actually acquired, and that should be acquired, by Spanish citizens during compulsory education, along with competences in Health Education attained by future primary and secondary school teaching staff during their University education in Spain.

The COMSAL research team is made up of 16 professors from the Universities of Valencia, Alicante, Elche and The Basque Country, from different knowledge areas (Public Health, Didactics of Experimental Science, Psychology, Pedagogy, Social Work, Speech-therapy and Physiotherapy), several Primary and Secondary Education teachers and consultants from Teacher Training Centres.

The COMSAL Project covers eight health areas: Food and Physical Activity, Addictions, Mental and Emotional Health, Sexuality, Accidents, Hygiene, Environment and Health Promotion. Of the different health areas defined in the COMSAL Project, this study focuses on the area of Hygiene.

By means of this research we attempted to ascertain if compulsory education (Primary Education and Secondary Education) allows the necessary competences in Hygiene to be developed by pupils, in order to prevent or cope with problems linked to this health area that could emerge in their daily life either at present or in the future.

2 RESEARCH OBJECTIVES

The objectives of our research are the following:

- To prepare a curricular analysis instrument that includes the definition of competence in Hygiene that should be acquired by Spanish citizens during their compulsory education; the specification of Hygiene-linked problem areas or situations that affect the Spanish population to a greater extent; and the determination of the competency areas to be developed by pupils in relation to each health problem in the scope of Hygiene.
- Evaluate the official curricula of compulsory education (Primary and Secondary) proposed by the Ministry of Education, in its Royal Decrees of Minimum Teaching Requirements [2] [3], in relation to the competency areas defined within the scope of Hygiene.

3 HYGIENE AND ITS IMPORTANCE AT SCHOOL

Even in the most ancient civilizations, Hygiene has been considered an important element in the life of its peoples and the governing classes from different eras and societies have considered it as an important social assets.

However, the concept of Hygiene overlaps Public Health and Health Promotion so with the aim of laying out the framework of our research it would perhaps be useful to differentiate these concepts. Thus Hygiene is defined as “the set of conditions and practices that serve to preserve health” and aimed at “maintaining the body in good physical condition and avoiding disease” [4].

Following the recommendations of the World Health Organization Health Promotion is defined as “the process of enabling people to increase control over, and improve their health” and Public Health as “the science and art of promoting health, preventing diseases and prolonging life” [5].

We easily associate certain behaviours such as handwashing or toothbrushing with Hygiene, but Hygiene is linked to many health problems. It is important to know about the health problems caused by not practicing good hygiene so as to prevent them.

Among the health problems linked to Hygiene we could mention the following: infectious diseases such as pulmonary tuberculosis, pneumonia, whooping cough, legionella, etc.(of bacterial nature) or influenza and childhood diseases such as measles, rubella, mumps or chicken pox (of a viral nature); parasite diseases such as those caused by roundworms, hydatid cyst and head lice; diseases caused by poor oral health such as tooth decay or gingivitis; Sexually Transmitted Diseases (STDs) such as gonorrhoea or syphilis; food poisoning; posture problems; allergies or cancer.

If we look to the Spanish National Health Survey for years 2011.2012 on problems or chronic diseases we can see around 10% of children and adolescents between 0 and 14 years of age present with chronic allergy [6].

With regards cancer this is one of the main causes of death worldwide and in the year 2012 some 8.2 estimated deaths were attributed to this disease. Approximately 30% of these deaths are due to five behavioural and food-related factors (high body mass index, insufficient intake of fruit and vegetables, lack of physical activity and use of tobacco and alcohol) and, consequently, may be prevented.

All of the above indicates the importance of hygienic measures and the need for individuals to include them in their daily life. Many behaviours are often adopted from childhood and adolescence, and the same applies to hygiene habits. The adoption of these habits is influenced by the way each person is and ultimately the education he or she has been given both at home and in school. In this sense, it is of capital importance to address Hygiene in schools and try and incorporate the issue into the everyday job of teaching staff therefore we consider of particular importance the study of how the issues concerning Hygiene are approached and addressed in schools.

4 METHODOLOGY

In order to reach the objectives proposed, firstly the analysis instrument in the scope of Hygiene was designed and prepared and subsequently the curricular analysis of the Royal Decrees of Minimum Education Requirements published by the Education Ministry [2,3] was carried out using the instrument designed.

4.1 Preparation of the curricular analysis instrument

In order to reach the first objective proposed a qualitative research was conducted in two phases: 1- Identification of the problems or situations related to health that pupils should be familiar with and a proposal for the development of competences; 2- Delphi study to reach a consensus on the proposals for competences for each health problem or situation.

First phase: a literature review was conducted of the literature that included recommendations and proposals of international and national organisations on the priority health problems with the aim of selecting the most common.

Using the review that had been conducted a first list was obtained of health problems existent that pupils should be aware of and which were grouped into eight health areas. The health areas are “the situations, contexts or settings where we might find a set of inter-related health problems, and which might be tackled jointly” according to the definition agreed.

The health areas defined are those of Addictions, Food and Physical Activity, Sexuality, Mental Health, the Environment, Accidents, Health Promotion and Hygiene, the health issue on which our study is focused.

Subsequently the research group proposed for each of the health areas the competence to be developed in compulsory education, taking into account the three dimensions in each one: knowing (conceptual content), knowing how (procedural content) and knowing how to be (attitudinal content), along with the competency areas necessary for their acquisition.

Second phase: the research group’s proposal was submitted for consideration by a group of experts in two Delphi rounds in 2012 and following a 5-point Likert scale and then a face-to-face meeting with experts.

The questionnaire was first sent out to a group of 113 experts. The second mailing increased the sample to 160 experts, making every effort to obtain at least 10 external opinions for each health area, based on the recommendations of Okoli and Pawlowski [7]. In the case of Hygiene 13 experts reached the second Delphi round.

For the results analysis the Mean (M) and Standard Deviation (SD) were calculated in each item thereby determining the importance given and the degree of consensus reached in each one.

With the results obtained in the second Delphi round a meeting of experts in Health Promotion and Education was organised (March 2013), in the Faculty of Teacher Training of the University of Valencia. This meeting provided the opportunity for the experts taking part to debate, along with members of the COMSAL research group, the data obtained until consensus was reached with regard to the formulation of statements and general assessments. All items were studied taking into account the suggestions of Coll and Martín that what was necessary and essential should be separated from what was desirable since “not everything we would like children and young people to learn can be taught; not even what is more than likely to be beneficial for children and young people to learn” [8].

Thus, the competences and competence areas necessary for their development were assessed taking into consideration the score given to each item 1= totally disagree and 5 = totally agree and Standard Deviation. The assessment used the initials SIP, that took into account the following criteria: $4 \leq M - SD \leq 5 = S$ (Substantial or Necessary), $3 \leq M - SD < 4 = I$ (Important) and $M - SD < 3 = P$ (disPensable). The end of the expert meeting concluded with the definitive design of the analysis instrument for the scope of Hygiene in which the areas considered to be necessary or substantial are written in bold text and the areas considered to be important are written in regular text. The areas that were considered to be dispensable were not included in the text.

It was agreed that the problems or situations related to Hygiene to be addressed during compulsory education are: oral hygiene, personal hygiene, infectious diseases, parasitism, allergies, cancer, postural hygiene, sexual hygiene and food hygiene.

4.2 Analysis of the official curricula of compulsory education

Once the competency areas of the scope of Hygiene were defined in the analysis instrument designed, the curricular analysis was carried out in order to fulfill the second of the intended objectives.

The sample to be researched was the regular curriculum of the Organic Law of Education (LOE) [9] published in the Spanish Official Gazette (BOE) as Minimum Education Requirements for Primary and Secondary Education [2, 3]. In order to conduct the curricular analysis, firstly we proceeded to read the curricula and relate certain curricular aspects (objectives, content and evaluation criteria), of the different knowledge and subject areas, with competency areas defined in the instrument to which they unmistakably contributed. The analysis was carried out by two different people and their proposal revised by a third person, all of whom belonged to the research team. Subsequently a tally was made of the curricular elements that contributed to developing the competency areas within the scope of Hygiene.

5 RESULTS

Below are some of the results obtained in this study. Table 1 shows the proposal of content areas necessary for the development of competence in Hygiene, which becomes the definitive instrument for curricular analysis. In it we define the competence in Hygiene and its three dimensions (knowing, knowing how and knowing how to be) along with the nine health situations relative to the scope of Hygiene and the competency areas for each one of them to be developed by pupils during their compulsory schooling.

Table 1. Curricular analysis instrument in the scope of Hygiene.

Competence: “To develop and maintain daily hygiene standards that prevent the onset of disease and improve quality of life”.
Knowing: The necessary measures for body care and the consequences of not doing so. The agents that might bring on disease and their routes of transmission.
Knowing how: Developing the necessary behaviour patterns for maintaining proper body and environmental hygiene. Correct use of health care services.
Knowing how to be: Avoid being a carrier in the transmission of disease. Develop strategies for improving personal and environmental health.
Problem area: Oral Hygiene
Knowledge to be acquired
<ul style="list-style-type: none"> - Anatomy and functions of oral structures. - Oral problem-related diseases (tooth decay, gingivitis, etc.). - Prevention factors. Tongue, gum and tooth hygiene. - Influence of eating habits on having a healthy mouth.
Procedures to be used
<ul style="list-style-type: none"> - Identify the elements that are harmful to oral health (poor diet, smoking, lack of proper brushing, etc.) - Make good use of the accessories for mouth care and hygiene (toothbrushes, dental floss, etc.).
Attitudes to be developed
<ul style="list-style-type: none"> - Acquisition of the habits necessary for having a healthy mouth. - Promotion of appropriate eating habits that avoid an excess of sugary products. - Understand the need to visit the dentist regularly. - Be aware of the effects of poor oral hygiene.

Problem area: Personal Hygiene
Knowledge to be acquired
<ul style="list-style-type: none"> - Anatomy and physiology of the skin and sensory organs. - Hygiene standards for leading a healthy life (personal cleanliness, of clothing, footwear, etc). - Risks involved in piercings and tattoos. - Outcomes of not maintaining proper daily hygiene.
Procedures to be used
<ul style="list-style-type: none"> - Identify the features of different items of clothing along with their appropriate seasonal use. - Know how to put personal hygiene habits into practice.
Attitudes to be developed
<ul style="list-style-type: none"> - Put into practice good personal hygiene. - Be aware of the risks of not using good hygiene habits. - Acknowledge proper use of clothing, something that will favour others' acceptance of you and you of yourself.
Problem area: Infectious Diseases
Knowledge to be acquired
<ul style="list-style-type: none"> - Concept of infection, its sources and transmission mechanisms. Main existing infectious diseases. - Preventive measures for avoiding contagion. Example: vaccination. - Basic workings of the immunological system.
Procedures to be used
<ul style="list-style-type: none"> - Recognise the symptoms of an infection - Identify the public health measures that reduce the transmission of infectious diseases. - Analyse the prevalence and incidence of infectious diseases in different countries.
Attitudes to be developed
<ul style="list-style-type: none"> - Raise awareness of the repercussion of infectious diseases and their transmission. - Develop responsible behaviours that prevent disease transmission. - Evaluate public health measures and use health care services when necessary. - Sensitivity and solidarity when facing diseases with particular incidence in developing countries.
Problem area: Parasitism
Knowledge to be acquired
<ul style="list-style-type: none"> - Concept of parasitism. Main parasites that affect humans, for example worms, tapeworms and lice. - Reservoirs and entry routes of the parasite. - Hygiene measures that avoid contagion.
Procedures to be used
<ul style="list-style-type: none"> - Identify the hygiene measures that prevent contagion of parasites (handwashing, hairwashing, food preparation, etc.). - Know how to apply the proper hygiene measures in relation to pets.
Attitudes to be developed
<ul style="list-style-type: none"> - Adopt responsible behaviours when facing possible contagion - Introduce appropriate measures of hygiene into one's personal and daily life setting.

Problem area: Allergies
Knowledge to be acquired
<ul style="list-style-type: none"> - Concept of allergy. Main allergens (hair, food, dust, etc.). - Symptoms produced by allergies
Procedures to be used
<ul style="list-style-type: none"> - Know how to apply hygiene measures to minimise the effects of allergies. - Link different seasons of the year to the onset of the most common allergies. - Identify the ingredients that can bring about allergies on labels, menus, shopping bags, etc.
Attitudes to be developed
<ul style="list-style-type: none"> - Predisposition to doing household chores that help to maintain environmental hygiene. - Be alert to one's own responses and those of your setting to possible allergens.
Problem area: Cancer prevention
Knowledge to be acquired
<ul style="list-style-type: none"> - Concept of cancer. - Risk factor: genetic, environment, lifestyles. - Cancer prevention and detection measures.
Procedures to be used
<ul style="list-style-type: none"> - Recognise the behaviour standards appropriate for minimising the risk of the onset of cancer. - Analyse the main environmental factors existent in one's inner circle that could bring about the onset of cancer.
Attitudes to be developed
<ul style="list-style-type: none"> - Adopt healthy lifestyles that may prevent cancer. - Raise awareness of the importance of having regular check-ups for the possible early detection of cancer and use of the health care services when necessary.
Problem area: Postural Hygiene
Knowledge to be acquired
<ul style="list-style-type: none"> - Anatomy and physiology of the locomotor system (skeletal and muscular systems). - Diseases related to the locomotor systems (spinal curvature, hernias, sprains, breaks, etc.). - Preventive measures. Proper postural habits and physical activity.
Procedures to be used
<ul style="list-style-type: none"> - Identify the elements that negatively influence the locomotor system (adoption of bad posture, making incorrect movements, sedentarism, obesity, etc.) - Recognise and use the proper measures for avoiding the onset of conditions related to the locomotor system.
Attitudes to be developed
<ul style="list-style-type: none"> - Acquisition of correct postural habits, raising awareness of the effects of bad posture. - Value the benefits brought about by the practice of physical activity.

Problem area: Sexual Hygiene
Knowledge to be acquired
<ul style="list-style-type: none"> - Anatomy and physiology of the female and male genitalia. - Measures of sexual hygiene. - STDs, routes of contagion and their outcomes on health. - Protection methods against STDs.
Procedures to be used
<ul style="list-style-type: none"> - Practice self-examinations of the testicles after showering and self-exploration of the breasts regularly for early diagnosis of diseases. - Use the necessary measures for carrying out proper genital hygiene (daily shower as well as thorough washing and drying of genitals). - Recognise the onset of symptoms linked to infections (bad smells, itching or burning) - Use the necessary protections methods against STDs.
Attitudes to be developed
<ul style="list-style-type: none"> - Raise awareness about the importance of having regular check-ups and going to the health services whenever in doubt. - Raise awareness about the importance of practicing proper genital hygiene in order to avoid infections. - Raise awareness about the health risks of unsafe sexual relations.
Problem area: Food Hygiene
Knowledge to be acquired
<ul style="list-style-type: none"> - Concept of food hygiene. - Main food-borne diseases. Concept of infection and food poisoning. - Prevention methods of food-borne diseases. - Basic measures when facing possible infections and food poisoning.
Procedures to be used
<ul style="list-style-type: none"> - Identify the factors that cause diseases brought about from handling foodstuffs (inadequate conservation temperature, lack of cleaning, insufficient cooking time, incorrect handling, etc.) - Recognise the symptoms of any possible infections or food poisoning (nausea, stomach ache, sickness, diarrhea, fever, etc.) - Recognise foods in poor conditions. - Carry out appropriate hygiene measures in the conservation and handling of foods.
Attitudes to be developed
<ul style="list-style-type: none"> - Evaluate the need for putting into practice basic rules of food hygiene. - Raise awareness of the importance of the “sell-by” and “best before” dates on foods. - Introduce into daily habits a correct conservation and handling of foods.

The results from analysing Royal Decree 1513/2006, dated 7 December, by which the Minimum Education Requirements are established for Primary Education [2] and Royal Decree 1631/2006, dated 29 December, by which the Minimum Education Requirements are established for Secondary Compulsory Education [3] are presented below in tables 2 and 3.

Table 2 shows the tally of curricular contributions in the scope of Hygiene by educational stage, knowledge areas or subjects or by dimensions. Thus, we can observe that the number of curricular contributions to the field of Hygiene is higher in the Primary Education stage than in Secondary Education (60 contributions as opposed to 53 contributions). In relation to knowledge areas these are

physical education (39 curricular contributions) and natural, social and cultural science (21 curricular contributions) the only ones that contribute specifically to the development of Hygiene in primary education. Similarly, physical education (31 curricular contributions) and natural sciences (22 curricular contributions) are the only subjects that specifically contribute to the development of the field of Hygiene in Secondary Education. With regard to the dimensions the curriculum considers knowledge to a greater extent over procedures or attitudes, both during the Primary as well as the Secondary Education stages.

Table 2. Tally of curricular elements that specifically contribute to developing the scope of Hygiene for educational stages, subjects and dimensions.

STAGE	SUBJECT OR KNOWLEDGE AREA	DIMENSION			TOTAL
		Knowledge	Procedures	Attitudes	
PRIMARY	Natural social and cultural science	15	3	3	21
	Art education	0	0	0	0
	Physical education	12	10	17	39
	Spanish language and literature	0	0	0	0
	Foreign language	0	0	0	0
	Maths	0	0	0	0
	Education for citizenship and human rights	0	0	0	0
	TOTAL	27	13	20	60
SECONDARY	Natural science	21	0	1	22
	Visual arts and crafts	0	0	0	0
	Physical education	13	11	7	31
	Spanish language and literature	0	0	0	0
	Foreign language	0	0	0	0
	Maths	0	0	0	0
	Education for citizenship and human rights and Ethics	0	0	0	0
	Social science	0	0	0	0
	Music	0	0	0	0
	Technology	0	0	0	0
	Latin	0	0	0	0
	Information technology	0	0	0	0
	TOTAL	34	11	8	53

Table 3 shows the tally of curricular contributions to the nine health-related problems or situations defined within the scope of Hygiene. Thus, it can be seen that postural hygiene is the health-linked situation most specifically addressed in curricula (65 contributions) followed by personal hygiene (24 contributions). With a lesser degree of development are sexual hygiene, infectious diseases, oral hygiene, parasitism and allergies. The absence of curricular contributions for cancer prevention and food hygiene stands out.

Table 3. Tally of curricular elements that specifically contribute to the different Hygiene-related problem areas.

HEALTH-LINKED PROBLEM OR SITUATION	STAGE		TOTAL
	Primary	Secondary	
Oral hygiene	3	2	5
Personal hygiene	15	9	24
Infectious diseases	1	6	7
Parasitism	3	0	3
Allergies	1	0	1
Cancer prevention	0	0	0
Postural hygiene	35	30	65
Sexual hygiene	2	6	8
Food hygiene	0	0	0

6 CONCLUSIONS

This study has allowed us to specify competence in Hygiene, the three dimensions of Knowing, Knowing how and Knowing how to be that integrate it, the problems or situations relative to Hygiene that affect Spanish citizens, as well as the competency areas to be developed by pupils during their compulsory education in order to cope with them. With all this a curricular analysis instrument was prepared for the scope of Hygiene and has been applied to the official curricula of compulsory education published in the Spanish Official Gazette (BOE) [2, 3].

From the results obtained it can be observed that the Primary Education stage contributes to a greater extent than Secondary Education to the development of competence in Hygiene, with a total of 60 curricular contributions as opposed to 53 curricular contributions respectively.

In the stage of Primary Education the knowledge dimension is that which is more considered in the official curricula in relation to Hygiene, followed by attitudes and lastly by procedures. In Secondary Education it is also the knowledge dimension that appears more often in official curricula but in this case followed by procedures and finally by attitudes.

The knowledge or subject areas that specifically intervene in the development of the competence in Hygiene are physical education and natural, social and cultural sciences or their equivalent in Secondary Education, natural science. The contribution of the rest of knowledge or subject areas to the field of Hygiene was negligible.

The situation regarding Hygiene that is addressed with the greatest consideration is postural hygiene (65 curricular contributions) followed by personal hygiene (24 curricular contributions). Problems or situations related to Hygiene of sexual hygiene, infectious diseases, oral hygiene, parasitism and allergies are contemplated in official curricula although they receive fewer curricular contributions. Cancer prevention and food hygiene are not specifically contemplated in official curricula.

Some competence areas defined in the scope of Hygiene do not appear in official curricula. These areas are the concept of parasitism, allergy and cancer, the recognition of the symptoms of the different diseases, scheduling regular check-ups as a means of prevention or the health care resources available to all.

The proposal of competence areas in Hygiene to be developed in compulsory education formulated in the instrument designed aims to serve as a reference framework for preparing teaching material by teaching staff and centres, text books by editorials, and for the specification of curricular proposals by the Education Authorities.

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