Implementation and evaluation of a distance learning programme on school safety and hygiene

Syrou Niki
Laboratory Teaching Staff, Dept. of Physical Education and Sport Science, Univ. of Thessaly,
nikisyrou@uth.gr

Sourtzi Panayota
Professor, Faculty of Nursing, National and Kapodistrian University of Athens
psourtzi@nurs.uoa.gr

Abstract

Introduction: Schools have a great responsibility in health promotion and prevention of accidents and diseases. However, school infrastructures are often lacking in safety and hygiene. *Aim*: The investigation of the effectiveness of a distance learning programme in school safety and hygiene, carried out on Moodle asynchronous e-learning platform. *Methodology***:** This is a quasi-experimental study with pre- and post-measurement, without a control group and with a sample of 379 teachers in January-February 2018. Data were collected via a validated questionnaire and data analysis was performed by SPSS 22.0. *Results*: After the programme, a statistically significant increase in the mean values of teachers' knowledge (p-value=0,000) and behaviour (p-value=0,001) on school safety and hygiene was found, as well as a non-statistically significant, improvement in their attitudes. Also, the programme was positively evaluated by teachers and with minor difficulty. *Conclusions***:** The results indicate the positive outcome of the distance learning programme and propose it as an alternative way of training for saving resources and time.

Keywords: school safety, school hygiene, distance learning programme, teachers

Introduction

School is a place to develop knowledge, skills, socialization, to play, as well as a place where there are hundreds of students, teachers and other staff. This is why school has a great responsibility to promote health and prevent accidents and illnesses (Liberal et al., 2005). However, the school environment often is lacking in safety and hygiene conditions.

According to studies, over the last 30 years it has become increasingly apparent that accidents are frequent in schools and constitute a major public health problem (Maitra & Sweeney, 1996; Di Scala et al., 1997; Miller & Spicer, 1998; Junkins et al., 1999; Sosnowska & Kostka, 2003; CFSP, 2007; Petridou, 2011). In an extensive literature review of 42 studies on the causes of school accidents and their characteristics, it was found that both student characteristics and the structure and activities of the school are related to school accidents (Laflamme et al., 1998). A descriptive study by Syrou and Sourtzi (2012a) in 42 schools in one provincial prefecture has shown significant deficiencies of infrastructures that make them dangerous for pupils' safety. In addition, no periodic control of school safety was reported in any of the sample schools (Syrou & Sourtzi, 2012a).

Concerning communicable diseases, studies indicate that the probability of contact with pathogens increases, when children are in public places, such as schools, rather than in their home environment (Galanakis, 2009) and that infections from person to person are very common in schools (Bergeson, 2004). In addition, their transmission is favoured, as pupils are in close contact and share materials and equipment (CDC, 2013). According to the Centres for Disease Control and Prevention (CDC), infectious diseases are responsible for the millions of school days lost from nursery to high school in public schools in the United States every year (CDC, 2013). A descriptive survey by Syrou and Sourtzi (2012b) in 42 prefectural

primary schools showed lack of hygiene in the walls (86.7%), surfaces and equipment (83.3%) and ground (78.5%) of schools, as well as shortages of cleanliness and equipment in the sanitary facilities. It is worth mentioning that periodic control of school hygiene by responsible authorities did not take place at 92.9% of schools (Syrou & Sourtzi, 2012b).

In recent years, e-learning programmes have been implemented and bibliographic sources indicate that they are a convenient and flexible option of education (Giosos & al., 2008), as a result of the rapid evolution of information and communication technologies (Katsarou & Delulis, 2008). New technologies give the chance of distance training in different geographical areas with asynchronous processes (Kerrey & Isakson, 2001). E-learning asynchronous training programme or asynchronous tele-learning, means the physical distance learning process, computer-aided, in which the learners can access a supportive educational software, whenever they want/can (Katsarou & Delouli, 2008). Without time and space limitation, it is possible for someone to train a large number of participants, to reduce training costs and bureaucratic dysfunctions and to have flexibility in managing rhythm and teaching time (Papadakis et al., 2003; Collis, 1996).

From time to time various studies were conducted, mainly on students, evaluating the effectiveness of distance learning programmes or courses, either individually - in terms of structure / functionality or perceptions, satisfaction and learning outcomes (Leasure et al., 2000; Hersh et al., 2001; DiBartola et al., 2001; Xu & Jaggars, 2011; Karaman et al., 2013) - or compared to conventional/traditional educational programmes or courses (Markellos et al., 2001; Allen et al., 2006; Lahti et al., 2013; Harrington, 2014). Most of these studies have shown that learners expressed satisfaction with the online education programmes (Hersh et al., 2001; Karaman et al., 2013; Fincham, 2013) and also that well designed asynchronous online education methods can be also effective and appropriate compared to conventional/traditional educational methods (Markellos et al., 2001; Allen et al., 2006; Lahti et al., 2013; Harrington, 2014).

Aim

The aim of the study was to investigate the effectiveness of an e-learning (or distance learning or online) health education programme (intervention) implemented by first author via an asynchronous tele-education method to teachers of primary and secondary schools on their knowledge, attitudes and behaviour in school safety and hygiene.

In this study, the term “school safety”, relates to the physical school environment and refers to the creation of risk free conditions and compliance with the safety standards of the school building and equipment, in order to prevent or eliminate the presence of risk factors for causing accidents in the school population. Correspondingly, the term “school hygiene” refers to the creation of conditions and practices in the school premises and equipment, that prevent the spread of pathogens and communicable diseases.

Methodology

This is a quasi-experimental study with pre- and post-measurement without a control group. The sample of the study consisted of 379 primary and secondary school teachers, who accepted to participate in an innovative asynchronous distance learning programme. The programme was titled "School Safety and Hygiene: A Significant Chapter in Health Education", had 50-hours duration and was conducted through the Moodle (Modular Object Oriented Developmental Learning Environment) online platform in January-February 2018. The selection of teachers was made by convenience sampling, as it was required to be members of the Scientific Association for the Promotion of Educational Innovation (EEPEK), in order to participate in the training programme.

In order to measure and evaluate the teachers’ knowledge, attitudes and behaviour in school safety and hygiene, an anonymous, coded and weighted questionnaire (Syrou, 2014) was used for this study. Cronbach's alpha was measured for the questionnaire subscales and

was found between 0.73 and 0.91. The findings are comparable to Cronbach's alpha with the previous study (Syrou, 2014) (Table 1).

Table 1. Cronbach's alpha for each scale of the questionnaire

Number of Questions	Scales Measurement	Cronbach's alpha (Syrou, 2014)	Cronbach's alpha (this study)
30	Knowledge in school safety	0,81	0,78
26	Knowledge in school hygiene	0,81	0,79
21	Attitudes to school safety and hygiene	0,77	0,73
11	Behaviour in school safety	0,93	0,91
11	Behaviour in school hygiene	0,86	0,88

The aim of the training programme was to inform and sensitize teachers on safety and hygiene of the physical school environment (building facilities) and encourage them to implement with their students health education programmes and actions to improve the quality of the school environment, in the context of exploratory, experiential and collaborative learning. The learning material of the online programme was the same as that used in the conventional programme in school safety and hygiene implemented by the first author in the past (Syrou, 2014).

On the first page of the online programme its purposes were clearly defined. The first section then referred to the concept of school safety, to research data on childhood and school accidents and to safety standards in schools. The second section referred to the concept of school hygiene, to school canteens and to research data and prevention measures of communicable diseases in schools. The third section mentioned the responsible authorities for the school safety and hygiene and the role of Health Education. In the fourth section there was a reference to the structured weighted observation checklist of the risk factors of the physical school environment (building and equipment) (Syrou, 2014).

The learning material was posted on the web moodle platform, through which there were carried out group discussions with messaging, electronic processing activities of each section and electronic delivery of the final evaluation essay. Participants also had the ability to exchange e-mails.

Procedure

The process of conducting the programme was the following: In December 2017 the Training Committee of the EEPEK sent to teachers of primary and secondary education of the country, an informative letter about the online training programme in school safety and hygiene. Then the teachers who wanted to participate submitted an application. Their selection was made by the Training Committee of the EEPEK in January 2018, on the basis of the following criteria: to be members of the EEPEK and to submit an electronic application on time. If there were many requests, then priority was given to those who had not previously attended other training seminars of the EEPEK or had attended the least hours. A specific of the seminar informative letter was sent to the selected participants, which included instructions for registration, connection and use of the e-learning platform to ensure the best conditions for the implementation of the online training programme.

Basic conditions for the successful participation in the programme were the selected teachers to study the learning material of each week and to answer the closed-ended questions of each section with a degree of success of at least 65% (average of all weeks), to write a final essay of 500-1000 words, post it on the Moodle platform and finally to comment on at least one final essay of a co-trainee. The final essay was about planning and development of a health education programme in school safety and hygiene.

Finally, the participants were informed by the trainer on completing (voluntarily) an anonymous questionnaire on their knowledge, attitudes and behaviour in school safety and hygiene, before and after the programme. The questionnaire was electronic (in google form) and on its first page there was an informative note about the aim of the study and its use that was both improving the questionnaire and the content of the training.

Data analysis

The statistical program SPSS 22.0 was used (significance level a ≤ 0.05) for the descriptive and the inferential data analysis. Mean values ($\bar{x}$) and standard deviations (SD) were used for descriptive statistics. Mean values were tested with the t-test for independent samples (confidence interval 95%), because it was not possible to match before and post questionnaires.

Results

The teachers' response rate before the intervention (pre-test) was 70.4% - 379 questionnaires were given and 267 were collected - and after the intervention (post-test) 203 questionnaires were collected (53.6%).

Demographic characteristics

Regarding the demographics, 75.7% were women, 39.1% were between 40-49 years old and 63.3% were married and had children. Regarding the level of education, 18.7% had more than one diploma/degree, 72.7 % had a master's degree and 8.6 % had a PhD. Regarding the work status 66.7% of teachers were not in a position of authority. In addition, 37.8% had participated in continuous education programmes for school health and safety and 53.4% had participated in a First Aid course. The majority of teachers reported that were informed about health, prevention or treatment of diseases (78.3%) and the main source of information was the Internet (90%).

Regarding the demographic characteristics and the variables knowledge, attitude and behaviour, the following statistically significant differences after the intervention were found:

i) Between primary and secondary education teachers, on their behaviour in school safety (p-value = 0.006 and t = 2,796) and hygiene (p-value = 0,006 and t = 2,762), in favor of primary school teachers.

ii) Between school and non-school directors, on their behaviour in school safety (p-value = 0.000 and t=-4.209) and hygiene (p-value =0.000 and t= -3.720), in favor of school directors.

iii) Between teachers with and without children on their behaviour in school safety (p-value = 0.002 and t = -3,112) and hygiene (p-value = 0.010 and t = -2.600), in favor of teachers with children.

(iv)Between teachers with and without previous education in school safety and health, on their behaviour in school safety (p-value = 0.010 and t = -2.587) and hygiene (p-value = 0.045 and t=-2.023), in favor of teachers who have participated in a school safety and health education programme in the past.

v) Between teachers with and without previous education in First Aid, on their behaviour in school safety (p-value =0.039 and t= -2.084), in favor of teachers who previously participated in a First Aid education programme in the past.

Teachers' knowledge, attitudes and behaviour before and after the programme

Table 2 shows the mean values, standard deviations (SD) and statistical significance (t-test) of scores in knowledge, attitudes and behaviour in school safety and hygiene before and after the intervention. Regarding the attitudes in school safety and hygiene, there were no statistically significant differences before and after the online programme.

Table2. Mean values, standard deviations and statistical significance (t-test) of scores of knowledge, attitudes and behaviour in school safety and hygiene before (N1 = 267) and after the intervention (N2 = 203)

Subscales total scores	Measurements	Mean ($\bar{x}$) (Min-max)	Std. Deviation (SD)	Sig. (2-tailed)
Knowledge in school safety	pre-test	16, 86 (1-27)	4,753	,000
	post-test	23,13 (16-29)	2,871	
Knowledge in school hygiene	pre-test	17,02 (2-25)	4,143	,000
	post-test	20,86 (15-25)	2,573	
Attitudes in school safety and hygiene	pre-test	84,03 (61-103)	7,102	,071
	post-test	85,25 (63-105)	7,380	
Behaviour in school safety	pre-test	36,78 (0-44)	7,201	,001
	post-test	38,71 (11-44)	6,350	
Behaviour in school hygiene	pre-test	34,04 (0-44)	7,479	,001
	post-test	36,38 (10-44)	7,191	

Results of the degree of difficulty and satisfaction of the educational intervention (training programme and online educational material) after the intervention

Figures 1 and 2 show the degree of difficulty of the online educational intervention (*1: none, 2: little, 3: medium, 4: high* and *5: very high degree of difficulty*).

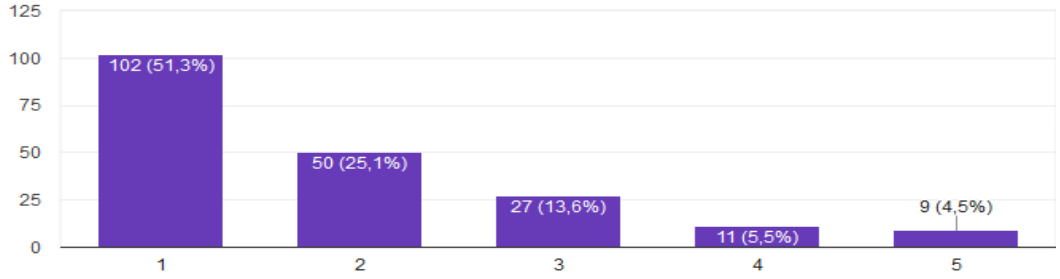

Figure 1. Degree of difficulty in understanding the training programme

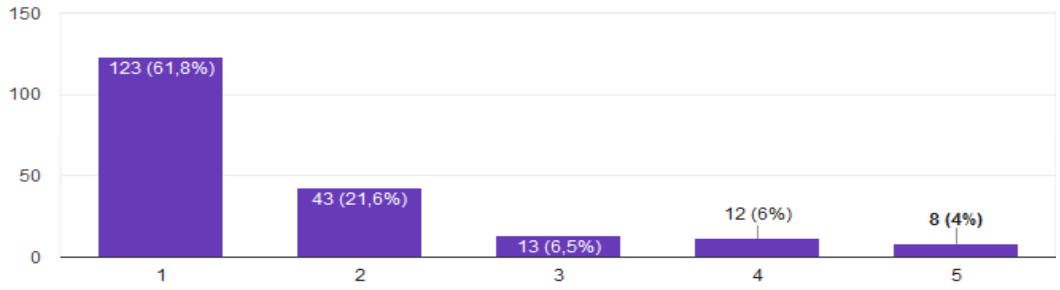

Figure 2. Degree of difficulty in understanding the online educational material (notes)

Figures 3 and 4, show the degree of teachers' satisfaction of the online educational programme (*1: not at all, 2: a little, 3: medium, 4: very* and *5: extremely satisfied).*

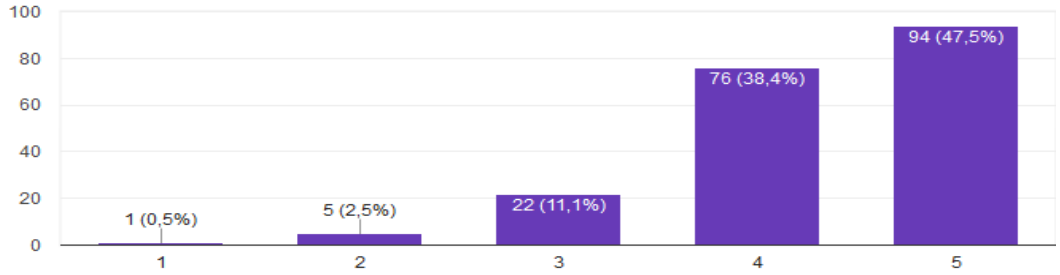

Figure 3. Degree of teachers' satisfaction of the educational programme and material regarding to their knowledge in school safety and hygiene

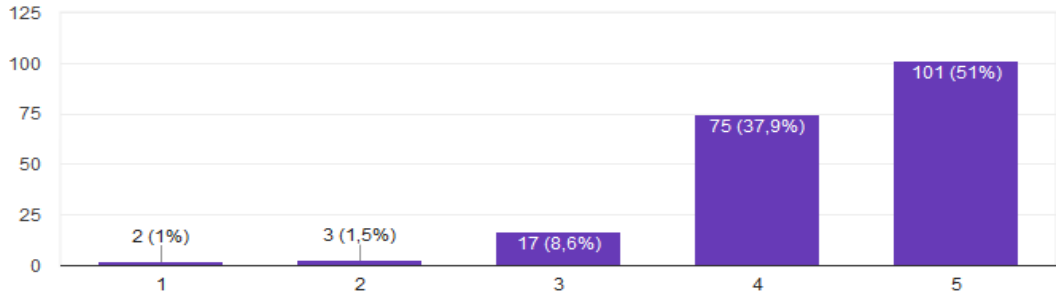

Figure 4. Degree of teachers' satisfaction of the educational programme and material regarding to their attitudes and behaviour in school safety and hygiene

Figure 5 shows the degree of teachers' motivation in the development of a future health education programme in school safety and hygiene with their students (*1: none, 2: little, 3: medium, 4: high* and *5: very high degree of motivation*).

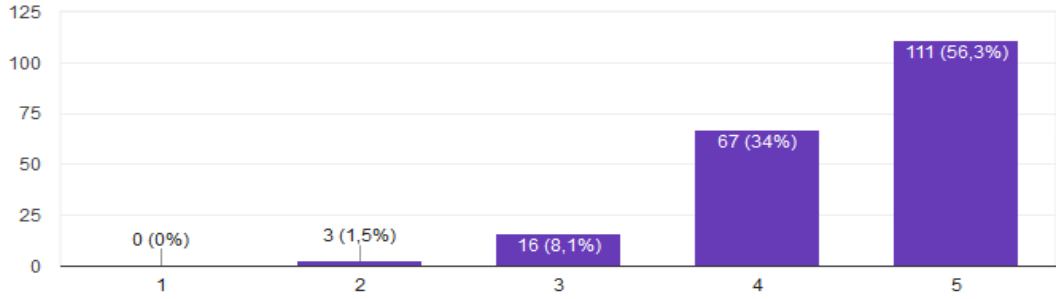

Figure 5. Degree of teachers' motivation in the development of a future education programme in school safety and hygiene

Discussion

The aim of this study was to investigate the effectiveness of an e-learning health education programme in school safety and hygiene. As mentioned in the methodology, the reliability test of the questionnaire used in the present study, was comparable of the findings reported by Syrou (2014). This proves the questionnaire as a reliable tool to be used in future similar studies.

Regarding the dependent variables of the study, after the distance learning programme, there was a statistical significance increase on knowledge in school safety and hygiene. This finding supports the effectiveness of the intervention and is consistent with the findings of other similar quasi-experimental studies with or without control groups (Veskouki, 1999; Frederick et al., 2000; Barrett, 2001; Veskouki, 2002; Engeland et al., 2002; Bhatia et al., 2010; Alexandropoulou, 2010; Bildik et al., 2011; Syrou & Sourtzi, 2015). Furthermore, in a similar quasi-experimental study implemented to teachers in school safety and hygiene, with the same research tool and the same training programme (conventional), a significant increase of knowledge before and after the programme, similar to those of the distance learning programme was found (Syrou, 2014; Syrou & Sourtzi, 2015).

After the online programme, it was found that attitudes in school safety and hygiene improved, although at not a statistically significant degree, which means that the teachers adopted more positive perceptions of their ability to detect and modify the factors undermining the health and safety of students. Similar are the results of another quasi-experimental study (Engeland, 2002) about First Aid, in which positive changes in self-efficacy and attitudes in the intervention group after the intervention were observed. This finding is also similar to the results of study of Syrou (2014), in which the teachers, after an educational programme (conventional), became more aware of school safety and hygiene, their view about the risks at schools for accidents and communicable diseases was strengthened and it was realized that they were responsible for the development of safe and healthy educational conditions (Syrou, 2014).

The slight positive, but not statistically significant change in the attitude score, is likely to be due to the fact, that the teachers- as also members of the EEPEK wishing to undertake lifelong learning- were previously sensitized on school safety and hygiene-regarding the results before the intervention. This probably means that they considered safety and hygiene issues to be important in schools and according to a recent research about attitude strength "*several studies have shown that important attitudes are unusually resistant to change*" (Howe & Krosnick, 2017).

After the distance learning programme, it was found a statistically significant increase in the mean values of behaviour scores in school safety and hygiene. This means that after the intervention teachers said they would improve their behaviour and that they would be more active than before in reducing the risk factors for accidents and communicable diseases in

the school environment.These findings are further supporting the positive outcome of the online health education programme and agree with the results of other similar studies in school safety and hygiene, which report an improvement of skills (Beşkuk, 1999; Frederik et al., 2000; Engeland et al., 2002; Santana et al., 2009; Bright et al., 2010; Bhatia et al., 2010; Bildik et al., 2011; Ramos et al., 2011) after the implementation of a health education programme in the school population. Statistically significant increase in mean values of behaviour scores in school safety and hygiene was also found in a similar study, with the same research tool and conventional training programme, which was also confirmed by the findings of the observation of the risk factors for accidents and infectious diseases in schools of the same study (Syrou, 2014).

The effectiveness of the distance education programme in school safety and hygiene, which is similar to that of the conventional training programme (Syrou, 2014; Syrou & Sourtzi, 2015), may also be consistent with the way it is designed and implemented by the trainer (first author). Specifically, at the beginning of the online programme, the trainer informed the participants of their responsibilities and the aims of the programme. Despite its asynchronous way of teaching – she tried to cover the physical distance by updating daily from their common communication platform for any questions and concerns and by discussing or answering them as soon as possible either through the platform or e-mail. This facilitated the learning process and ensured continuous two-way communication with the teachers (DeBorurgh, 2003; Schlosser & Simonson, 2006; Gagli et al., 2010; Frangoulis, 2011; Darra & Babas, 2015).

It is also important that the majority of teachers have indicated that the training programme has motivated them to design and implement a health education programme in school safety and hygiene in the future with their students and that there was no difficulty in understanding the training programme and its learning material. The degree of difficulty corresponds to the results of a similar quasi-experimental study (Syrou, 2014, Syrou & Sourtzi, 2015). Moreover, the majority of teachers were extremely satisfied of the online programme regarding to their knowledge, attitudes and behaviour-finding that is also similar to Syrou's study (2014). Furthermore, the results in a case study by Karaman et al (2013) about satisfaction of nursing students of an online training programme (programme and course structure, course materials, technology, support services) showed that the participants were mostly satisfied (Karaman et al., 2013). Also satisfied were students who participated in a distance education programme in medical informatics, in a study by Hersh et al (2001).

The above findings are according to the two proposed quality indicators for evaluating educational processes and learning outcomes of educational programmes, respectively: "acquiring knowledge, cultivating skills, adopting positive attitudes and behaviour of participants compare to the problem studied" and "applicability and exploitation the acquired knowledge, skills, attitudes and behaviours in similar situations " (Frangoulis, 2011). From the above mentioned, similarities have been observed, both in the improvement of scores on knowledge, attitudes and behaviour in school safety and hygiene and in the understanding and satisfaction of the distance programme of this study and Syrou's convention study (2014). This finding is consistent with the results of two empirical studies (Marcellus et al., 2001), which were used to compare lessons taught in the traditional way to students and equivalent courses, which were implemented online. The findings, without generalizing (Paraskevas, 2008), showed that there were not statistically significant differences to the educational results between the two groups of participants- online and conventional - and that the trainees could be equally efficient at an online and a conventional educational environment, regardless of the educational style adopted (Markellos et al., 2001).

The above findings are consistent with those of systematic review and post-analysis of the impact of an online and a conventional distance learning programme on the knowledge, skills and satisfaction of nurses and nursing students (Lahti et al., 2013) and of students in general (Allen et al., 2013). The results demonstrated that there were not statistically significant differences on knowledge, skills and satisfaction among nurses and nursing students (Lahti et al., 2013), nor a clear decline in educational effectiveness, when using distance education technology (Allen et al., 2013), comparing the performance of students in distance education versus traditional classes.

Finally, it is worth mentioning about the Moodle platform used in the distance programme of this study, that in a study evaluating nine open source e-learning platforms stressing adaptation issues, the platform Moodle outperformed all other platforms and obtained the best rating in the adaptation category (communication tools-learning objects-management of user data - usability-adaptation) (Graf & List, 2005).

Limitations

This study has some limitations, associated with its design. Due to the way the programme was implemented (distance education), it was not possible to use a teachers' control group to compare the results. Also, for reasons of anonymity, it was not possible to make comparisons between the same teachers in pairs before and after the programme. Moreover, although the sample was panhellenic, it was not random and representative and therefore it is difficult to generalize the results. However, we believe that the study is indicative of the overall situation in primary and secondary schools throughout Greece and its results can be used as indicators for comparative evaluation of similar situations.

Conclusions

Before the intervention, there was a lack of teachers' knowledge in school safety and hygiene. It was also found positive attitudes and behaviour but they needed further improvement. After the intervention, the participants increased their knowledge and improved their attitudes and behaviour in school safety and hygiene. In addition, the majority of teachers reported no difficulty and great satisfaction of the online training programme and the educational material. The majority also reported that they would be extremely implementing a health education programme in school safety and hygiene with their students in the future.

It is worth mentioning that the increase in the mean values of scores of knowledge, attitudes and behaviour in school safety and hygiene were also observed, when the same programme was implemented conventionally to teachers in a similar study with the same questionnaire and learning material in the past.

All the above mentioned, confirm the positive outcome of the distance learning programme and present it as an alternative training method way of training for saving resources and time. It is recommended the planning, implementation and evaluation of online health education programmes in school safety and hygiene from healthcare professionals to teachers, in order to inform, raise awareness and mobilize the school population to create safe and healthy conditions.

Acknowledgements

We warmly thank all participating teachers and especially the President and the Vice-President of the EEPEK, Dr. Dimitrios Kolokotronis and Mr Dimitrios Liovas, who gave us the opportunity to develop our programme and for their cooperation during this programme.

References

Allen, M., Mabry, E., Mattrey, M., Bourhis, J., Titsworth, S., Burrell, N. (2006). Evaluating the Effectiveness of Distance Learning: A Comparison Using Meta-Analysis. *Journal of Communication*, 54, 402–420.

Alexandropoulou, M. (2010). *Assessing the effectiveness of a First Aid Health care program in special education schools*. Doctoral thesis. Department of Nursing, National and Kapodistrian University of Athens, Athens.

Barrett, JC. (2001). Teaching Teachers About School Health Emergencies. *The Journal of School Nursing,* 17, 316-322.

Bergeson, T. (2004). *Infectious Disease Control Guide for School Staff*. Retrieved March 6, 2013, from:http://www.k12.wa.us/healthservices/pubdocs/infectiousdiseasecontrolguide3-11-04.pdf.

Veskouki, G. (2002). Assessing the level of knowledge to provide First Aid to high school students. *Nursing*, 41, 451-463.

Veskouki, G. (1999). *First Aid and Health Education*. Doctoral thesis. Department of Nursing, National and Kapodistrian University of Athens, Athens.

Bhatia, V., Puri, S., Mangat, C., Kaur, A. (2010). An intervention study to strengthen first aid care in schools of Chandigarh, India. *The Internet Journal of Family Practice*, 8, 1-6.

Bildik, F., Kilicaslan, I., Dogru, C., Keles, A., Demircani, A. (2011). The Need for First Aid Awareness among Candidate Teachers. *J Emerg Med*, 11, 166-170.

Centres for Disease Control and Prevention (CDC), (2013). *Adolescent and School Health Infectious Diseases at School*. Retrieved August 6, 2013, from http://www.cdc.gov/healthyyouth/infectious/index.htm.

Collis, B. (1996). *Tele learning in a Digital World-The Future of Distance Learning*. London: International Thomson Computer Press.

Galanakis, E. (2009). Infections in kindergarten/playground, school, health care facilities: Gastrointestinal and other infectious infections. *Proceedings of the 12th Conference of Pediatric Infections- Pediatric Infections Issues,* 21-28. February, 21, 2009. Thessaloniki.

Yagli, S., Yaglis, G., Koutsouba, M. (2010). Autonomy in Learning in the Distance Learning. *Open Education*, 6, 92-105.

Giosos, I., Mavroidis, I., Koutsouba, M. (2008). Distance Learning Research: Review and Prospects. *Open Education-The Journal for Open and Distance Education and Education Technology*, 4, 49-60.

Darra, M. & Babas, N. (2015). Efficiency factors for distance learning: Empirical research. *Pedagogical Streams in the Aegean*, 8, 1-17. Retrieved August 16, 2017, from http://www.pre.aegean.gr/revmata/issue%208/2.9%20%%%%%%%%%%%%%%CF% 81% CE% B1.pdf.

DeBorurgh, AG. (2003). Predictors of student satisfaction in distance-delivered graduate nursing courses: what matters most? *J. Prof. Nurs*, 19, 149–163.

DiBartola, LM., Miller, MK., Turley, CL. (2001). Do learning style and learning environment affect learning outcomes? *J Allied Health*, 30, 112–5.

Di Scala, C., Gallagher, SS., Schneps, SE. (1997). Causes and outcomes of pediatric injuries occurring at school. *J Sch Health*, 67, 384–9.

Engeland, A., Roysamb, E., Smedslund, G., Sogaard, AJ. (2002). Effects of first-aid training in junior high schools. *Injury Control and Safety Promotion*, 9, 99–106.

European Commission (2000). *E-Learning-Designing Tomorrow's Education*. Brussels: (2000) 318 Final, COM.

Frangoulis, I. (2011). Design and development of quality indicators to assess the effectiveness of continuing vocational training programs. Retrieved June 5, 2018, from: https://edu4adults.wordpress.com/2011/01/05/%CF%83%CF%87%CE%B5%CE%B4%CE%B9 %CE%B1%CF%83%CE%BC%CF%8C%CF%82-

%CE%B4%CE%B5%CE%B9%CE%BA%CF%84%CF%8E%CE%BD-%CF%80%CE%BF%CE%B9%CF%8C%CF%84%CE%B7%CF%84%CE%B1%CF%82-%CE%B3%CE%B9%CE%B1-%CF%84%CE%B7%CE%BD/.

Frederick, K., Bixby, E., Orzel, MN., Stewart-Brown, S., Willett, K. (2000). An evaluation of the effectiveness of the Injury Minimization Programme for Schools (IMPS). *Inj Prev*, 6, 92-5.

Fincham, D. (2013). Introducing Online Learning in Higher Education: An Evaluation. *Creative Education*, 9, 540-548.

Graf, S., List, B. (2005). An evaluation of open source e-learning platforms stressing adaptation issues. Retrieved March 8, 2011, from https://moodle.org/other/icalt2005.pdf

Harrington, D. (2014). Teaching Statistics: A Comparison of Traditional Classroom and Programmed Instruction/Distance Learning Approaches. *Journal of Social Work Education*, 35, 343-352.

Hersh, WR., Junium, K., Mailhot, M., Tidmarsh, P. (2001). Implementation and Evaluation of a Medical Informatics Distance Education Program. *Journal of the American Medical Informatics Association*, 8, 570–584.

Howe, LC. & Krosnick, JA. (2017). Attitude Strength. *Annual Review of Psychology*, 68, 327–51. Retrieved September, 6, 2018, from https://pprg.stanford.edu/wp-content/uploads/2017-Attitude-Strength-Howe-Krosnick.pdf.

Jourdan, D., McNamara, PM., Simar, C., Geary, T., Pommier, J. (2010). Factors influencing the contribution of staff to health education in schools. *HEALTH EDUCATION RESEARCH*, 25, 519–530.

Junkins, EP., Knight, SJ., Lightfoot, AC., Cazier, CF., Dean, MJ., Corneli, HM. (1999). Epidemiology of School Injuries in Utah: A Population-Based Study. Journal of School Health*, 69, 409-412.*

Karaman, S., Kucuk, S., Aydemir, M. (2013). Evaluation of an online continuing education program from the perspective of new graduate nurses. *Nurse Education Today*, 34, 836–841.

Katsarou, E, Delouli, M. (2008). *Training and Evaluation in the field of Education*. *Pedagogical Institute*. Athens, 49-50. Retrieved June 5, 2018, from http://www.pi-schools.gr/programs/epim_stelexoi/epim_yliko/book5.pdf.

Keerey, B., Isakson, J. (2001). *The Power of the Internet for Learning: Moving from Promise to Practice*. Washington DC: Report of the Web-based Training Educational Commission.

Laflamme, L., Menckel, E., Aldenberg, E. (1998). School-injury determinants and characteristics: Developing an investigation instrument from a literature review. *Accid. Anal. and Prev*., 30, 481–495.

Lahti, M., Hätönen, H., Välimäki, M. (2014). Impact of e-learning on nurses' and student nurses' knowledge, skills, and satisfaction: A systematic review and meta-analysis. *Int J Nurs Stud.,* 51, 136-49.

Leasure, AR., Davis, L., Thievon, SL. (2000). Comparison of student outcomes and preferences in a traditional vs. World Wide Web-based baccalaureate nursing research course. *J Nurs Ed.* 39, 149–54.

Center for the Control and Prevention of Child Accidents (KEPPA) (2007). *Child Accidents: Numerical Components Based on the Statistical Data Portal*. Retrieved August, 16, 2012 from http://www.keppa.gr/.

Kerrey, B., Isakson, J. (2000). The Power of the Internet for Learning: Moving from Promise to Practice. *Report of the Web-based Training Educational Commission*. Washington DC. THE WEB-BASED EDUCATION COMMISSION. Retrieved August, 16, 2017, from https://www2.ed.gov/offices/AC/WBEC/FinalReport/Preface.pdf.

Lightfoot, J. & Bines, W. (2000). Working to keep school children healthy: The complementary roles of school staff and school nurses. *J Public Health Med.,* 22, 74-80.

Maitra, AK. & Sweeney, G. (1996). Are schools safer for children than public places? *J Accid Emerg Med*, 13, 196–7.

Markellos, K., Markellou, P., Rigou, M., Syrmachese, S., Tsakalidis, A. (2001). Education from Distance Against Traditional Education, Is There a Winner? *Proceedings of the 1st Panhellenic Conference in Open and Distance Education*. Hellenic Open University, May, 25-27, 2001. Patra.

Papadakis, S., Velissarios, A., Fragoulis, I. (2003). The training and further education of teachers in the information society, using the methods of open and distance learning. Proceedings of the 2nd Panhellenic Conference for Open and Distance Learning, 558-571, Greek Open University, March, 28-30, 2003. Patra.

Petridou, E. (2011). Prevention & treatment of physical injuries and accidents at school: Simple advice for students, parents and teachers. Retrieved July 11, 2011, from: http://www.keppa.gr/.

Ramos, M., Schrader, R., Trujillo, R., Blea, M., Greenberg, C. (2011). School Nurse Inspections Improve Handwashing Supplies. *J Sch Health.*, 81, 355–358.

Santana, N., Almeida, R., Ferreira, J., Almeida, P. (2009). Microbiological quality and safety of meals served to children and adoption of good manufacturing practices in public school catering in Brazil. *Food Control,* 20, 255-261.

Sosnowska, S. & Kostka, T. (2003). Epidemiology of school accidents during a six school-year period in one region in Poland. *Eur J Epidemiol.*, 18, 977-82.

Syrou, N. &Sourtzi, P. (2015). Development, implementation and evaluation of a health education program in school hygiene and safety by a school nurse. *Prime*, 8, 105-117.

Syrou N. (2014). *Development, implementation and evaluation of a program to modify risk factors for health and safety in schools*. Doctoral thesis. Department of Nursing, National and Kapodistrian University of Athens, Athens.

Syrou, N. & Sourtzi, P. (2012a). Risk assessment for accidents in primary schools in the prefecture of Trikala. *Summaries of Announcements of the 39th Panhellenic Nursing Congress of ESNE*, May, 15-18, 2012. Volos.

Syrou N & Sourtzi P. (2012b). Risk assessment for infectious diseases in primary schools in the prefecture of Trikala. *Summaries of Announcements of the 11th Panhellenic Scientific Conference of Nursing Students "Caring for Man, Great and Perfect",* May, 25-27, 2012. Athens.

Tabancalı, E., Bektas, T. (2009). Student safety in primary schools: A sample of Büyükçekmece County. *Procedia Social and Behavioral Sciences*, 1, 281–284.

Xu, D. & Jaggars, SS. (2011). The Effectiveness of Distance Education Across Virginia's Community Colleges: Evidence from Introductory College-Level Math and English Courses. *Educational Evaluation and Policy Analysis*, 33, 360-377.