

## Introduction

- Since 2016, the Wallonia-Brussels Federation (FWB - French speaking part of Belgium) prepares the implementation of a substantial reform of its educational system.
- One of the axes of that project called 'Pact for Excellence in Education' (PEE) deals with a deeply modification of the core curriculum that will emphasize 8 domains.
- Among these domains, one directly involves physical education (PE): "Physical Activities, Wellbeing and Health".
- It means that there is a **need to redefine PE teachers' missions and priorities** as well as preparing them to implement **actions in health education**.

## Purposes

- The Ministry of Education mandated a group of experts (the "CAPBES") from the 12 French-speaking institutions involved in physical education teacher education (PETE) in order to **identify, design and share teaching resources** respecting the principles advocated by the PEE and aiming to promote physical activity, wellbeing and health.



Figure 1: Logo of the "CAPBES".

- The aim of this presentation is to give an overview of some data collected up until now.

## Methods

- The specificity of the approach is based on the collaboration between teacher educators and practitioners at each step of the project, in line with the collaborative didactic engineering model (figure 2).



Figure 2: The collaborative didactic engineering model (Goigoux, 2012; Sénéchal, 2016).

- The selection of a sample of good practices implemented in FWB and/or other countries (Bonni et al., 2018) was based on evidence or field practice.
- In addition, the group of experts had to test several projects in order to **validate them in the specific context of the FWB' schools**.
- 6 original projects inspired by the international literature were set up by several CAPBES teams.
- Each project was analysed on the basis of an analysis grid – common to the different consortiums of the PEE.

## Results

- The 6 evaluated projects are titled:
  1. "Development of the playground"
  2. "Nutriathlon"
  3. "Oblovov: move, play, create!"
  4. "PAPS" (Physical Activity Pauses at School)
  5. "Dare to save at school".
  6. "Playground layout"

Project	Purpose	Validation type	Approaches	Subjects	Results
1. Development of the playground	Measure the level of physical activity through a living environment. Evaluate the impact of a device on both with educational actors (teachers, teacher in physical education, management) whose goal is to meet the objectives targeted by the teaching team (management of social reports, level of physical activity).	Longitudinal study	Mixed methodology: • Qualitative • Quantitative	Samples of 20 students per school, mixed and equal (8 schools)	📄
2. Nutriathlon	Bring each participant to improve the quality of their diet by increasing and diversifying the consumption of fruits, vegetables and dairy products.	Longitudinal study	Quantitative	72 students (41 girls and 31 boys)	📄
3. Oblovov: move, play, create!	To propose an original educational method aimed at combating physical inactivity in adolescents and testing it with at least 1,000 young citizens aged 13 to 18 years old. Help young people to adopt healthy behaviors (diet, health behaviors), promote autonomy through negotiation and decision making (management of emotions), involve the young person's entourage (parents, family, school, associations) in its efforts to combat a sedentary lifestyle.	Quasi-experimental study	Mixed methodology: • Qualitative • Quantitative	Students: 178 Teachers: 5 Teaching staff: 8 Directors: 4	📄
4. PAPS (Physical Activity Pauses at School)	Allow students to meet their need for physical exertion in the classroom. Promote physical activity. Reduce periods of inactivity. Improve attention, concentration and focus on students' tests following this break in learning.	Case study	Mixed methodology: • Qualitative • Quantitative	20 teachers of primary schools	📄
5. Dare to save at school	Analyze the impact of a first aid cycle, taught in physical education classes, on the theoretical knowledge and practical skills of students in secondary 6, secondary 1, and primary 5,6.	Quasi-experimental study	Quantitative	5-6 secondary: 155 students, 6 teachers. Secondary 1: 112 students, 5 teachers. 5-6 primary: 188 students, 5 teachers.	📄
6. Playground layout	Studying the behavior of children in the playground before and after setting up a teaching device.	Quasi-experimental study	Quantitative	Harvi site: 3 teachers and 48 students. Marlemé site: experimental courtyard (8 teachers and 130 students), witness court (12 children and 28 parents)	📄

Figure 3: Analysis grid of the 6 evaluated projects (main criteria) completed.

## Conclusion

- The projects are expected to be shared on an educational digital platform, named "e-classe", managed by the educational authorities.

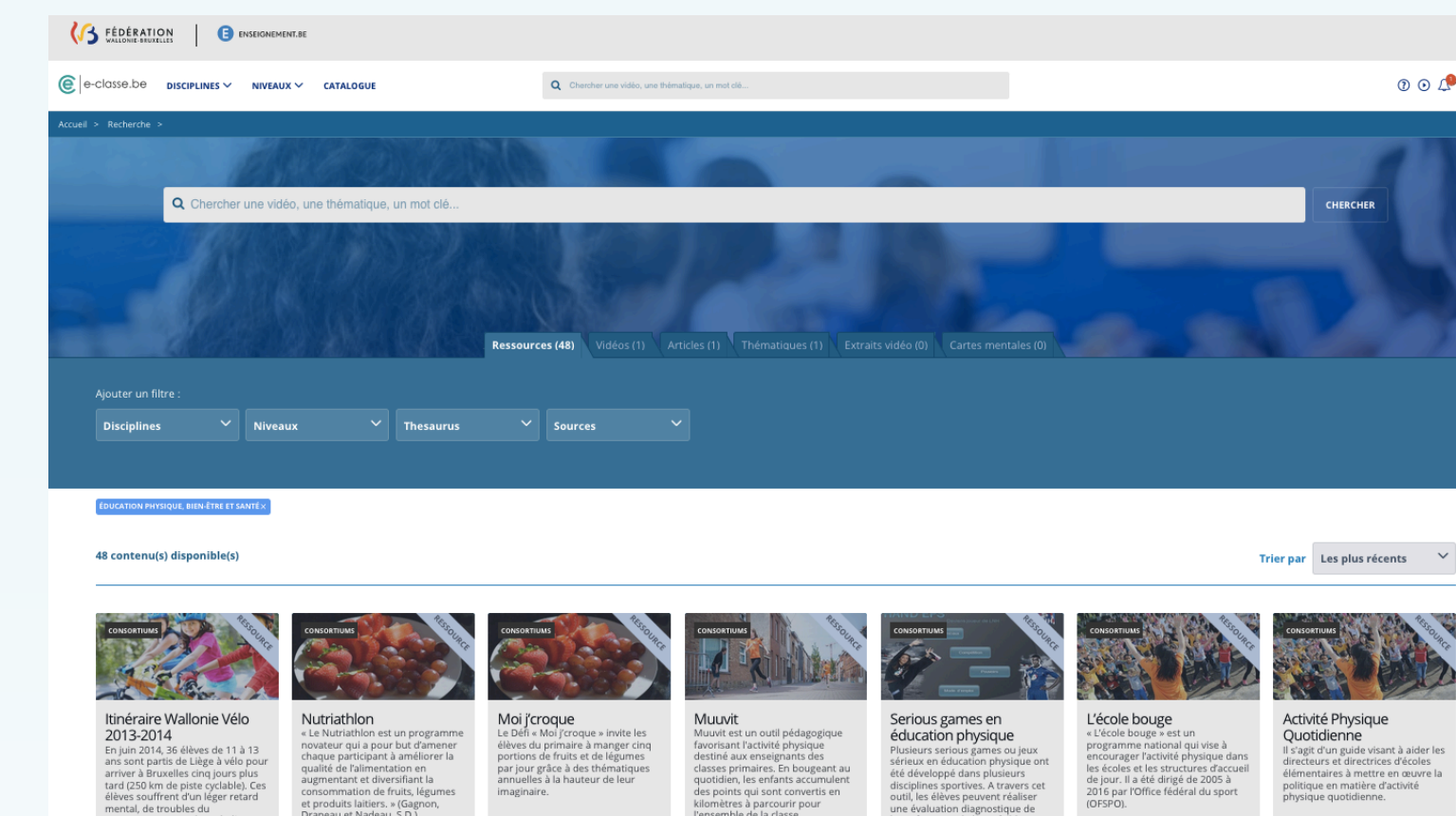


Figure 4: Illustration of the educational platform "e-classe".

## References

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- Sénéchal, K. (2016). *Expérimentation et validation de séquences didactiques produites selon une ingénierie didactique collaborative : L'enseignement de la discussion et de l'exposé critique au secondaire*. Thèse de doctorat, Université Laval, Québec.

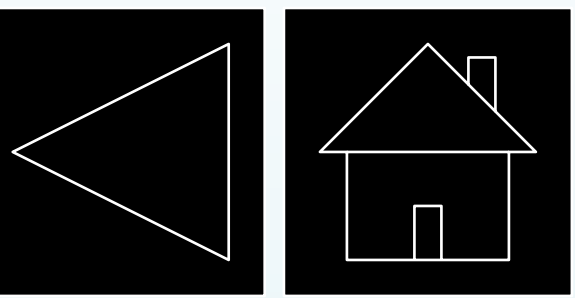
## Institutions involved





**Identification and validation of good practices promoting physical activity, wellbeing and health  
through a collaborative didactic engineering approach**

Jérémy Bonni, Jean-Philippe Dupont, Benoit Vercruysse, Sylvie Herreman & Marc Cloes  
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*Figure 1: Logo of the Consortium "Physical Activities, Well-Being and Health".*



# Identification and validation of good practices promoting physical activity, wellbeing and health through a collaborative didactic engineering approach

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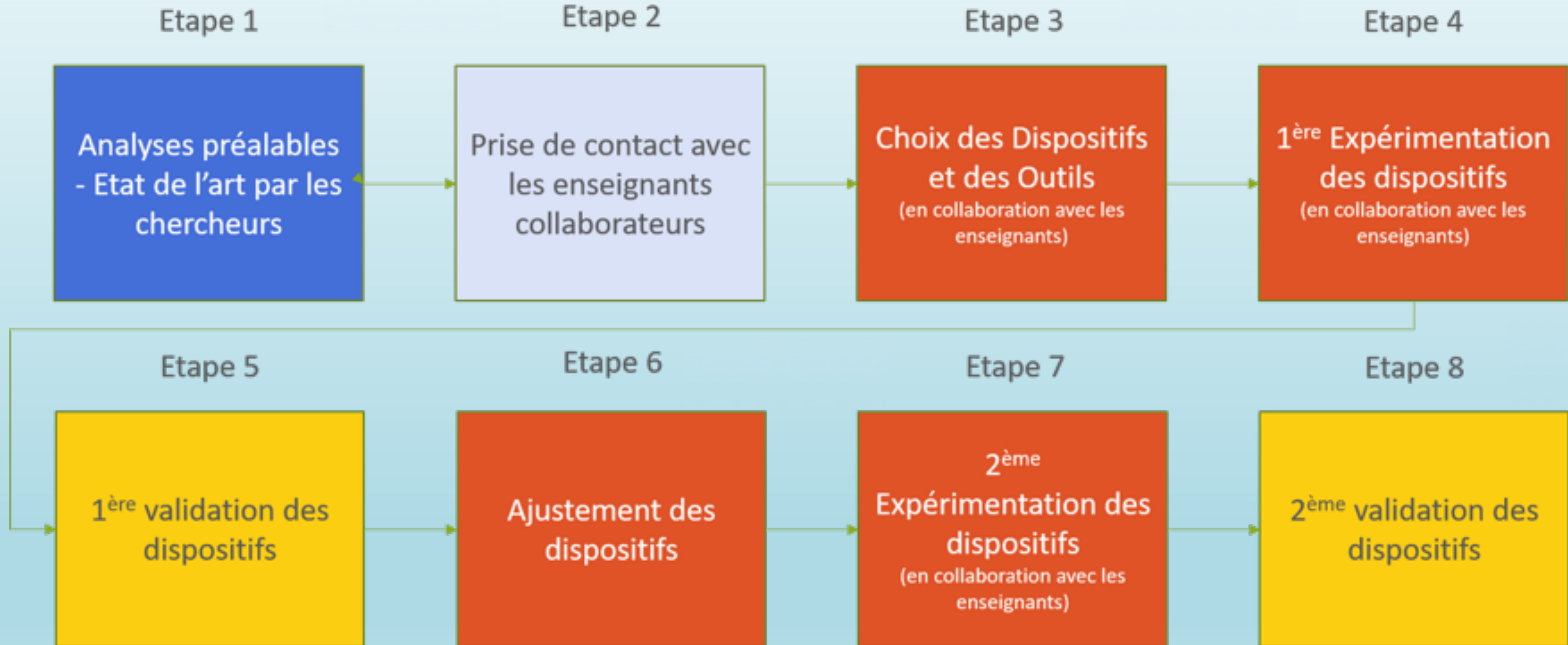
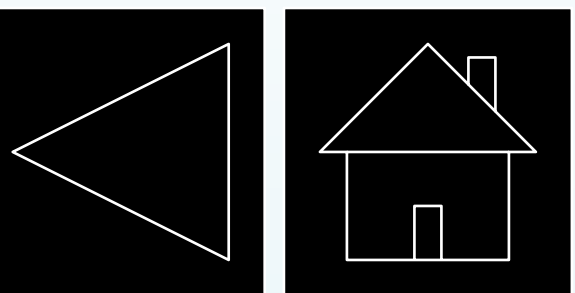
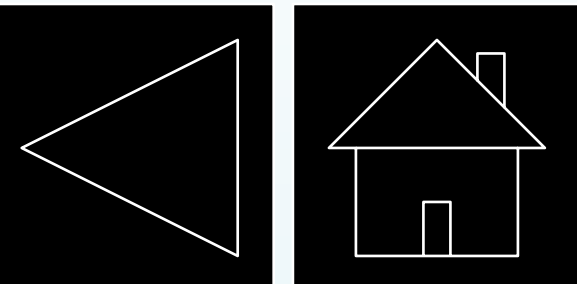


Figure 2: The collaborative didactic engineering model (Goigoux, 2012; Sénéchal, 2016).

















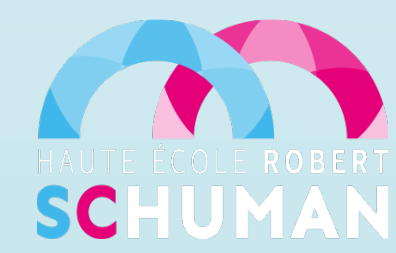
	Purposes	Validation type	Approaches	Subjects	Results
<b>1. Development of the playground</b> 	<ul style="list-style-type: none"> <li>- Measure the level of physical activity through a living environment.</li> <li>- Evaluate the impact of a device co-built with educational actors (teachers, PE teachers, management) whose goal is to meet the objectives targeted by the teaching team (management of social reports, level of physical activity).</li> </ul>	Longitudinal study	<ul style="list-style-type: none"> <li>- Mixed methodology :               <ul style="list-style-type: none"> <li>• Qualitative</li> <li>• Quantitative</li> </ul> </li> </ul>	Samples of 20 students per school, mixed and equal (8 schools)	
<b>2. Nutriathlon</b> 	<ul style="list-style-type: none"> <li>- Bring each participant to improve the quality of their diet by increasing and diversifying the consumption of fruits, vegetables and dairy products.</li> </ul>	Longitudinal study	Quantitative	72 students (41 girls and 31 boys)	
<b>3. Oblomov: move, play, create!</b> 	<ul style="list-style-type: none"> <li>- To propose an original educational method aimed at combating physical inactivity in adolescents and testing it with at least 1,000 young Europeans aged 11 to 13 years old.</li> <li>- Help young people to adopt healthy behaviors (diet, health behaviors), promote autonomy through expression and decision-making (management of emotions), involve the young person's entourage (parents, family, school, associations) in its efforts to combat a sedentary lifestyle.</li> </ul>	Quasi-experimental study	<ul style="list-style-type: none"> <li>- Mixed methodology :               <ul style="list-style-type: none"> <li>• Qualitative</li> <li>• Quantitative</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>- Students: 178</li> <li>- Teachers: 5</li> <li>- Teaching staff: 8</li> <li>- Directors: 4</li> </ul>	
<b>4. PAPS (Physical Activity Pauses at School)</b> 	<ul style="list-style-type: none"> <li>- Allow students to meet their need for physical exertion in the classroom.</li> <li>- Promote physical activity.</li> <li>- Reduce periods of inactivity.</li> <li>- Improve attention, concentration and focus on students' tasks following this break in learning.</li> </ul>	Case study	<ul style="list-style-type: none"> <li>- Mixed methodology :               <ul style="list-style-type: none"> <li>• Qualitative</li> <li>• Quantitative</li> </ul> </li> </ul>	20 teachers of primary schools	
<b>5. Dare to save at school</b> 	<ul style="list-style-type: none"> <li>- Analyze the impact of a first aid cycle, taught in physical education classes, on the theoretical knowledge and practical skills of students in secondary 5-6, secondary III, and primary 5-6.</li> </ul>	Quasi-experimental study	Quantitative	<ul style="list-style-type: none"> <li>- 5-6 secondary: 155 students, 6 teachers.</li> <li>- Secondary III: 112 students, 5 teachers.</li> <li>- 5-6 primary: 186 students, 5 teachers.</li> </ul>	
<b>6. Playground layout</b> 	<ul style="list-style-type: none"> <li>- Studying the behavior of children in the playground before and after setting up a teaching device.</li> </ul>	Quasi-experimental study	Quantitative	<ul style="list-style-type: none"> <li>- Havré site: 3 teachers and 48 students</li> <li>- Morlanwelz site: experimental courtyard (9 teachers and 196 students); witness court (12 children and 284 pupils)</li> </ul>	

Figure 3: Analysis grid of the 6 evaluated projects (main criteria) completed.





	Results
<b>1. <i>Development of the playground</i></b>	The preliminary results show that the variables are related to the type of material but also to the implementation of the device "Active Court ».

*Figure 3.1: Focus on results from project "Development of the playground".*



## Results

### 2. Nutriathlon

1) Effective participation: we observe that 51% of the students claim to have participated throughout the project.

2) Student satisfaction: 40% of the students said they were not interested in the challenge while 36% indicated they were. 24% did not answer the question. The different aspects assessed in the challenge were the health aspect of these (31%), the awareness that it brings (20%), the fun induced (15%), the method used (10%), the social aspect (9%) and finally the accessibility of the challenge (5%). 10% of participants refrained from answering.

3) Feasibility of the implementation of this type of device: the implementation of the device has encountered some difficulties concerning the involvement of parents and physical education teachers of the partner school. The low involvement of parents could have been a major factor in the student's motivation. We noted that most students participated in the challenge without their family (94%). It should also be mentioned that only one parent attended the adult information session. According to K. Chamberland, parents are a factor of success through encouragement as well as the proposal of fruits and vegetables or healthy picnics. Regarding the teachers, we noticed a lack of enthusiasm. Despite the request of the participants, the teachers weren't willed to dedicate more than one hour of their course to this project. It is difficult for us to know the reasons for this refusal. We assume that the teacher did not see the any benefit he can derive from this type of project, the latter taking up space.

4) Eating habits: 25% of the students say they have changed their eating habits. The consumption of fruits and vegetables in week 1 was 4.7 portions on average per day (weekdays). This result is higher than those obtained in a pre-test by Chamberland (2016) in Quebec, where young people reported eating an average of 3.5 portions per day. In contrast, in the Canadian study, students were able to increase this consumption of fruits and vegetables over the weeks to reach an average peak of 6.4 servings per day. In our research, we did not observe a significant increase in fruit and vegetable consumption. Regarding the consumption of dairy products, Chamberland (2016) observed that Quebecers consumed an average of 1.6 servings of dairy products per day. In our case, we observed that our students consumed 1.67 servings of dairy products in the first week. This consumption increased significantly in week 2 with an average of 2.05 servings per day. It then decreased in the third week to return to an average consumption of 1.97 servings in the last week. In comparison, Canadians have managed to average 3.5 servings per day at the end of the experiment (Chamberland, 2016). In terms of meat and fish consumption, we observe that in the first week, students consumed an average of 1.27 servings of meat and fish per day. This consumption increased to 1.35 servings in the second week and decreased to 0.98 servings per week at the end of the experiment. Peak consumption were observed in the last week with 1.51 servings on average per day. Finally, drinking water and tea at the beginning of the experiment were 0.52 and 0.33 portions per day on average. In the course of the project, these amounts decreased progressively, reaching 0.47 and 0.16 portions per day on average during the third week. Only in the last week we observed a significant increase in consumption with 0.61 and 0.37 portions per day. In our project, we also asked students to mention their sports practices. We observed that the students practiced 0.37 times of sport per day (during the week) and this practice increased in the second week to 0,51 times of sport per day. At the end of the experiment, we found the initial score wit 0.4 times per day (during the week).

Figure 3.2.: Focus on results from project “Nutriathlon”.



## Results

### 3. *Oblomov: move, play, create!*

Teachers did not use this type of pedagogical approach with their students (health, use of HIIT, expression, use of the video tool) but seem open to the experimentation of this cycle. The cycle was relatively appreciated by all teachers. All seem to adopt this new pedagogical approach, with success. However, some reluctance persist. The theatrical nature, which may frighten most teachers at the beginning of the cycle, has proved to be a welcoming aspect. Even though some teachers are not yet quite comfortable with theatricality, they are rather supportive of this concept and are not averse to change their habits. The health messages had a considerable impact on the students but also on the teachers, who became aware of the importance of these messages but also of their role in promoting a healthy and active lifestyle for their students. The video productions produced by the students are enthusiastically adopted by teachers and management. The four directors and the majority of the incumbents hope that teachers in physical education will continue to implement activities using the principles of open scenario. With regard to teachers in physical education, all are motivated to propose again activities respecting the principles of the Oblomov approach. The Oblomov cycle allowed students to acquire theoretical knowledge of health. Students, especially girls, also perceived their level of physical activity to be increased following the introduction of the cycle. Most students have made concrete, simple and accessible adaptations that will contribute to a healthy lifestyle. In contrast, eating habits, emotional intelligence, and emotion management have not improved.

*Figure 3.3 : Focus on results from project “Oblomov: move, play, create!”.*



## Results

### 4. PAPS (School Physical Activity Breaks)

20 teachers participated in the training; 14 of them answered the initial questionnaire; 3/14 did not participate in this project (reason given: lack of time to implement this new device in their class). 11/14 replied to the final questionnaire. Of these 11 teachers, for whom pre- and post-test data were available to us: 7 teach in basic education: 2 in primary and 5 in kindergarten, 4 in specialized primary education (T1 to T8). Overall: the teachers interviewed feel able to set up PAPS ( $\bar{x} = 3,2 / 4$ ), even if the implementation of these does not seem easy at first ( $s = 2,1$ ). They generally evoke the constraint of the class-space as a brake ( $\bar{x} = 2,8$ ). Concerning the students, these teachers have a particular interest for PAPS at home ( $\bar{x} = 3,8$ ), while identifying positive effects on their attention ( $\bar{x} = 2,8$ ) and their motor skills ( $\bar{x} = 2,7$ ). There is a potential bias for the insertion of PAPS: the school levels concerned (maternal and primary). In nursery schools, children are naturally led to be more active throughout the day (special teaching situations, in the form of free workshops). Such breaks in physical activity would not seem so relevant for this level. This is particularly observable in view of the lack of participation of kindergarten teachers.

*Figure 3.4: Focus on results from project "PAPS".*



## Results

### 5. *Dare to save at school*

Secondary 5-6 study: from T0 to T2, significant improvements in knowledge of the RCP + DEA protocol were observed (from  $7 \pm 3.4 / 20$  to  $16 \pm 2.4 / 20$ ,  $p < 0.001$ ) The mean score from the scorecard was  $16 \pm 1.7 / 20$  at T1 and remained fairly constant at T2 ( $15.3 \pm 1.8 / 20$ ). The first aid cycle has improved students' knowledge, skills and confidence. Teachers in physical education felt valued and able to contribute autonomously to this major public health challenge. Secondary III study: a highly significant improvement in theoretical knowledge between T0 and T2 was measured (from  $5.11 / 20$  to  $11.62 / 20$ ,  $p < .001$ ). ). The mean score obtained from the evaluation grid was  $9.77 / 20$  in T1 and slightly increased in T2 ( $10.31 / 20$ ) significantly ( $p = 0.04$ ). Students' confidence in their ability to help a victim of cardiac arrest increased steadily throughout the project. A growing interest of students in the cycle and its introduction in physical education classes has been observed. The first aid cycle was well received by the teachers and their colleagues, by the school management and by very receptive students. Primary 5-6 study: highly significant improvements in first aid knowledge among students were observed between T0 and T1 ( $4.8 \pm 3.69$  to  $11.75 \pm 3.6 / 20$ ,  $p < .001$ ). This average then decreased very significantly between T1 and T2 ( $11.09 \pm 3.4 / 20$  in T2). The mean score at the practical assessment was  $17.08 \pm 1.82 / 20$  in T1, before decreasing highly significantly ( $p < 0.001$ ) and reaching  $15.53 \pm 2.16 / 20$  in T2. Theoretical knowledge, practical skills, as well as student confidence have been improved following the first aid cycle. Physical education teachers were satisfied with the cycle that was proposed and judged the training to be appropriate.

*Figure 3.5: Focus on results from project “Dare to save at school”.*



## Results

### 6. *Playground layout*

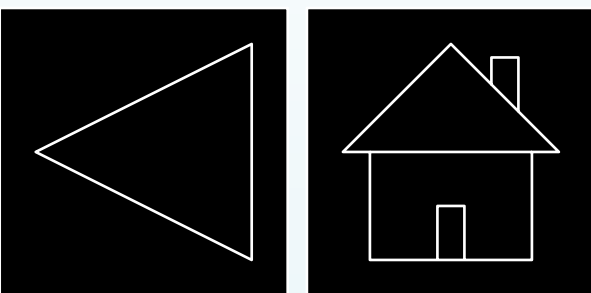
STEP 1 - All the teachers said that they appreciated the system put in place but they also encountered difficulties during the supervision of the court. No teacher has had control of the rules of the games in the trunk or how to use the equipment. Opinions are divided concerning the presence of conflicts in the yard following the presence of the trunk of games. The teachers have also suggested ways of improvement that have been taken into account for the adaptation of the device on the Morlanwelz site. STEP 2 - The average satisfaction level of pre-development teachers is 5,75 / 10. All teachers report that children seem to have fun in the yard and point out different behaviors in boys and girls. The entire team is also subject to conflicts, mainly due to non-respect or ignorance of the rules of play. The children identified their favourite activities. STEP 3 - Before the intervention, in the experimental yard (6,33m<sup>2</sup> surface available / child), the children are active on average 336,23 seconds (s = 91.76) of which 189,91 seconds in displacement (s = 71.78). While in the control yard (6.31m<sup>2</sup> of available space / child), the children are active on average 351.93 seconds (SD = 99.) Of which 206.06 seconds in displacement (s = 81,26). Data collected after the intervention is being processed. STEP 4 - A total of 149 parents responded to the questionnaire (75 girls and 74 boys). Of these, 29 are in the first year (19,5 %), 22 in the second year (14,8%), 27 in the third year (18,1%), 26 in the fourth year (17,5%), 14 in Grade 5 (9,4%) and 31 in Grade 6 (20,8%). At the end of the analysis of the questionnaire and based on the activity time at home, three groups of children were formed: few (92 children), moderately (28 children) and very active (31 children). Data provide information about the child's living environment, eating behaviors, sleep and family.

*Figure 3.6: Focus on results from project “Playground layout”.*



# Identification and validation of good practices promoting physical activity, wellbeing and health through a collaborative didactic engineering approach

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The screenshot displays the 'e-classe.be' website interface. At the top, there are logos for 'FÉDÉRATION WALLONIE-BRUXELLES' and 'ENSEIGNEMENT.BE'. Below these, the 'e-classe.be' logo is followed by navigation menus for 'DISCIPLINES', 'NIVEAUX', and 'CATALOGUE'. A search bar is present with the placeholder text 'Chercher une vidéo, une thématique, un mot clé...'. The main content area features a large search bar with the same placeholder text and a 'CHERCHER' button. Below the search bar, there are filters for 'Ressources (48)', 'Vidéos (1)', 'Articles (1)', 'Thématiques (1)', 'Extraits vidéo (0)', and 'Cartes mentales (0)'. Further down, there are filter options for 'Disciplines', 'Niveaux', 'Thesaurus', and 'Sources'. The main content area is titled 'ÉDUCATION PHYSIQUE, BIEN-ÊTRE ET SANTÉ' and shows '48 contenu(s) disponible(s)'. A 'Trier par' dropdown menu is set to 'Les plus récents'. The resources are displayed in a grid format, each with a thumbnail image and a brief description:

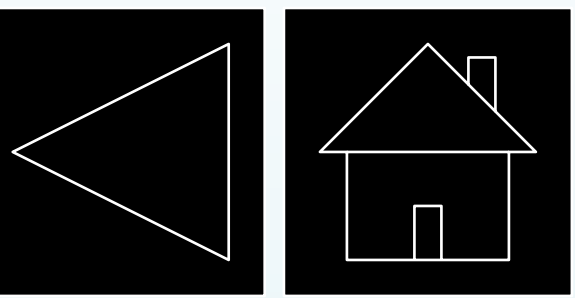
- Itinéraire Wallonie Vélo 2013-2014**: En juin 2014, 36 élèves de 11 à 13 ans sont partis de Liège à vélo pour arriver à Bruxelles cinq jours plus tard (250 km de piste cyclable). Ces élèves souffrent d'un léger retard mental, de troubles du comportement ou de maladies.
- Nutriathlon**: « Le Nutriathlon est un programme novateur qui a pour but d'amener chaque participant à améliorer la qualité de l'alimentation en augmentant et diversifiant la consommation de fruits, légumes et produits laitiers. » (Gagnon, Drapeau et Nadeau, S.D.)
- Moi j'croque**: Le Défi « Moi j'croque » invite les élèves du primaire à manger cinq portions de fruits et de légumes par jour grâce à des thématiques annuelles à la hauteur de leur imaginaire.
- Muuvit**: Muuvit est un outil pédagogique favorisant l'activité physique destiné aux enseignants des classes primaires. En bougeant au quotidien, les enfants accumulent des points qui sont convertis en kilomètres à parcourir pour l'ensemble de la classe.
- Serious games en éducation physique**: Plusieurs serious games ou jeux sérieux en éducation physique ont été développés dans plusieurs disciplines sportives. A travers cet outil, les élèves peuvent réaliser une évaluation diagnostique de leurs forces et de leurs faiblesses.
- L'école bouge**: « L'école bouge » est un programme national qui vise à encourager l'activité physique dans les écoles et les structures d'accueil de jour. Il a été dirigé de 2005 à 2016 par l'Office fédéral du sport (OFSP).
- Activité Physique Quotidienne**: Il s'agit d'un guide visant à aider les directeurs et directrices d'écoles élémentaires à mettre en œuvre la politique en matière d'activité physique quotidienne.

Figure 4: Illustration of the educational platform "e-classe".



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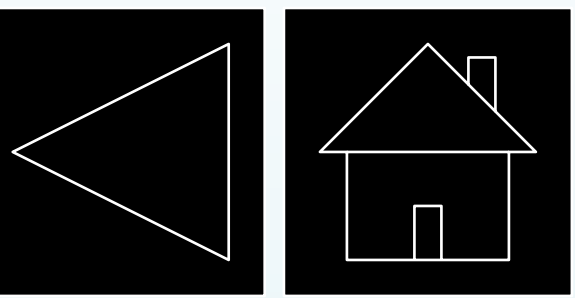


**Representatives : Pr. Marc Cloes & Jérémy Bonni**



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**Haute Ecole Leonard De Vinci**

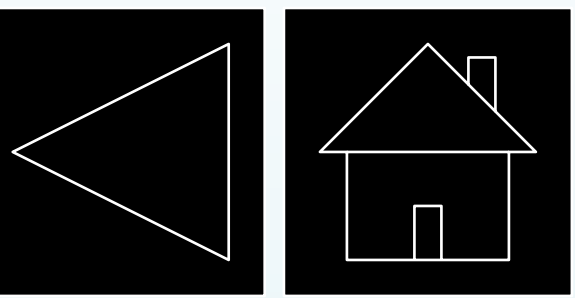


**Representatives : Pr. Jean-Philippe Dupont & Xavier Flamme**



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**Haute Ecole Robert Schuman**

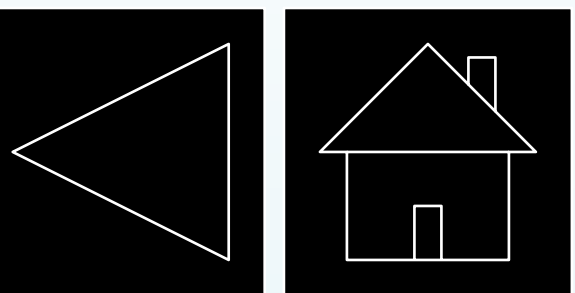


**Representatives : Pr. Benoit Vercruysse, Nicolas Bodard & Amélie Brau**



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**Haute Ecole Condorcet**

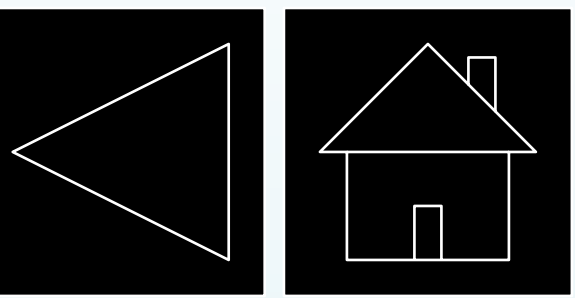


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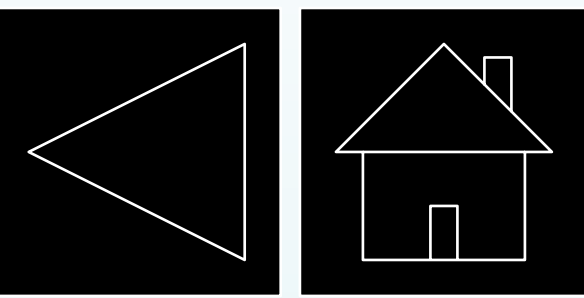


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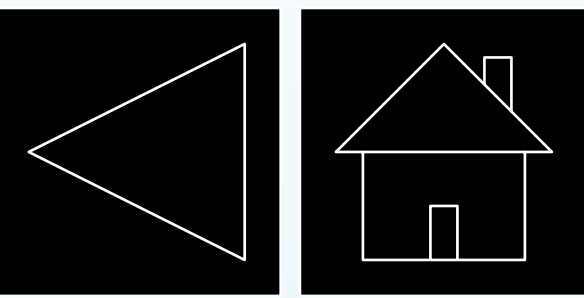
**Haute Ecole de la Province de Liège**



**Representative : Annick Lapierre**



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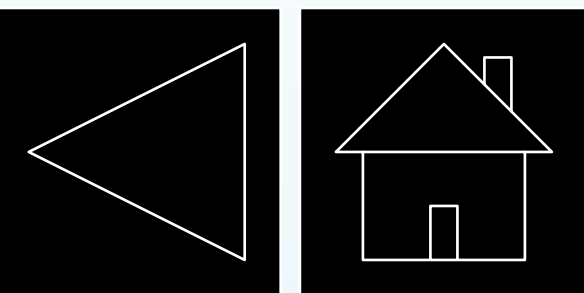
**Haute Ecole Libre Mosane**



**Representatives : Véronique Drosson & Isabelle Magnée**



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**Haute Ecole Charlemagne**

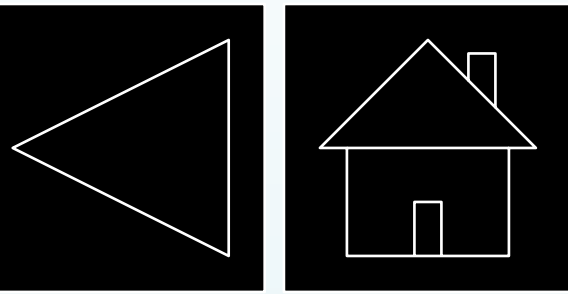


**Representative : Nicolas Wintgens**



***Identification and validation of good practices promoting physical activity, wellbeing and health  
through a collaborative didactic engineering approach***

Jérémy Bonni, Jean-Philippe Dupont, Benoit Vercruysse, Sylvie Herreman & Marc Cloes  
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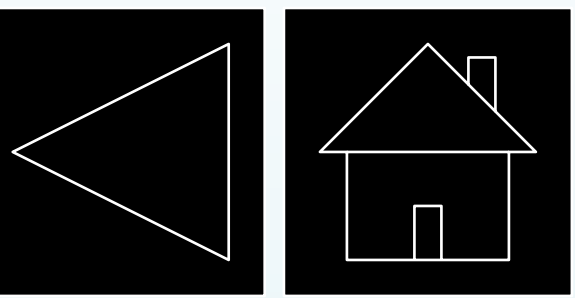
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**Haute Ecole Liège-Namur-Luxembourg (HENALLUX)**

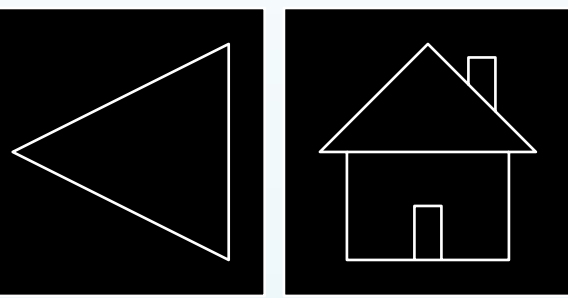


**Representative : Valérie Mees**



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**Haute Ecole Bruxelles-Brabant (HE2B – Nivelles)**

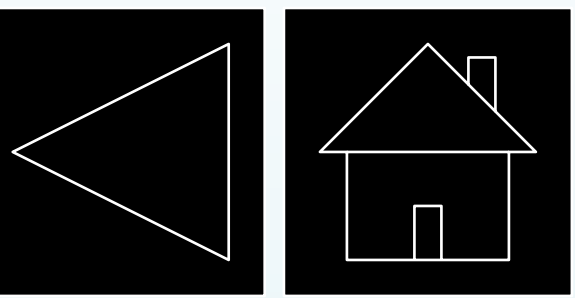
**HE2B**  
**NIVELLES**

**Representative : Fabrice Remacle**



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**Haute Ecole Francisco Ferrer**



**Representative : Céline Dandois**