

Holistic Energy Audit Bedfordshire Schools Improvement Partnership

Introduction

For many years BSIP has worked with schools in and outside of Bedfordshire to help design ways in which we can involve young people in the improvement of their education. We strongly believe that students are experts in their own learning and strive to put student involvement in school improvement at the heart of all we do. Each of our student voice initiatives provide young people with the opportunity not only to be heard, but to have an impact, whether it is within their individual schools, or in the wider community.

The Holistic Energy project gave us the opportunity to use our experience of engaging with young people to help them focus on the effect of physical activity on their learning, to improve understanding between students and teachers and to give the students a real input into changing their own learning environment by generating ideas for changing the school timetable.

Methodology

Our key principles for this project were to remain completely **flexible** so that the process could be as organic and creative as possible. We wanted to make the consultation days **experiential** so that students and teachers could appreciate the effect of different activities on their own and each others energy levels and to encourage **communication** between students and teachers by getting them to work together for at least some parts of the consultation day. The active nature of the day was important as we wanted to model a very physical day so participants could experience kinaesthetically how a more active day might make them feel.

The consultation days were divided into 3 sessions.

- Appreciation,
- Inspiration
- Creation.

Observations of the participants in terms of their opinions and learning were recorded throughout the day. We also collected the artwork created, Stroop test results and snowball evaluation sheets.

Appreciation.

The aims of this session were for students and teachers together to gain an appreciation of how they themselves and each other feel at different times of the day. To find out what they think works well and what doesn't in terms of their learning. When they feel their best and worst. When they are more likely to feel happy to sit down and work. How they feel first thing in the morning, last thing etc.

We started with an activity, which looked at where participants felt their energy levels were at different times of the day and also got them moving about the room. This was followed by the 'string web' focus group activity to explore further how and why and got them thinking about what influenced their energy levels at different times of the day.

The second part of this appreciation session was an opportunity for SHU to feedback the results of the physical audit. Throughout the presentation the participants were asked to predict what the results might look like before seeing the graphs and then to

comment on the reasons for the accuracy or otherwise of their predications. All comments and suggestions were recorded.

Inspiration

The aim of this session was for students and teachers to explore different ways of changing their energy levels with activity and the effect it has on their learning. The girls in groups with their teachers were asked to complete a 'Stroop test' as a measure of their mental vitality and flexibility (JR Stroop 1935). The Stroop test has been used to test the mental flexibility of climbers on the 1999 NOVA expedition to Everest. In this case the expectation was that mental flexibility would decrease with the lower oxygen levels at altitude in our case we were hoping to demonstrate an increase in mental flexibility with after physical activity.

In the test the participant is shown a card on which names of colours are printed in different coloured inks. The participant is asked to name out loud the colour of the ink and not read the word itself. The time taken to name a set of colours is recorded before and after the chosen activity to see what effect the activity has on the participant's mental flexibility and therefore readiness to learn.

Example Stroop test.

RED	GREEN	RED
BLUE	YELLOW	GREEN
GREEN	BLUE	RED
YELLOW	BLUE	GREEN

"John Ridley Stroop first reported this effect in his Ph.D, thesis published in 1935. Current research on the Stroop effect emphasizes the interface that automatic processing of words has on the more mentally 'effortful' task of just naming the colours. The task of making an appropriate response – when given two conflicting signals—has tentatively been located in part of the brain called the anterior cingulate. This is a region that lies between the right and left halves of the frontal portion of the brain. It is involved in a wide range of thought processes and emotional responses"

<http://www.snre.umich.edu/eplab/demos/stroopdesc.html>

The groups were asked to think about different activities that they thought might improve their ability to learn and experiment with them using the stoop test to gauge improvement. This activity was used to give the participants an indication of changes they can make to their mental state for themselves using different types of physical activity and not as a strictly scientific test although we did retain the results.

Creation

Building on the issues explored in the appreciation session and the useful activities identified in the inspiration session the participants were asked to explore the changes they would like to make to the timetable. The students did this in the form of an art activity and the teachers as a facilitated group discussion.

As a short activity on the day we were asked to get the students to invent a new sport. In the secondary schools we introduced a short drama activity in groups where the girls were asked to first discuss and then mime a new sport. In the primary school we did this as part of a graffiti wall activity.

Evaluation.

We did a brief but active paper evaluation session at the end of the day (Snowball) where we asked participants to comment on their learning throughout the day and to leave them positive and energised.

After the re-designed week.

At the end of the week of timetable change we went into the schools again and ran an action review session to explore the differences the changes have made. Students were asked to identify the best lessons of the week in terms of their learning and we looked at the physical activities and other timetable changes before and during the lesson to try and identify where they may have been helpful. Due to the different nature of the schools and their requirements and the filming requirements of the other partners in the project we approached this in different ways in each of the schools. In Charles Edward Brookes the girls were asked to complete a short questionnaire as part of a 20 minute focus group session, DKH had a drama session with the whole year group both girls and boys whilst the girls directly involved in the project were filmed as a discussion group. At HGA we had two longer focus group sessions with smaller groups of girls.

RESULTS

Results of the consultation days

Obviously the results of the consultation days were different in each of the schools due to the different age groups and cultures of each of the schools. Dog Kennel Hill is a primary school and the girls in the project are taught in mixed classes. Harris Girls Academy is a single sex sports college and Charles Edward Brookes, also single sex, has the challenge of being a split site school.

Perceived energy levels throughout the day.

All students and teachers at the start of the day reported energy levels as low. This corresponds with low activity levels at this point in the day. However teachers at CEB perceive that the girls energy is high at the beginning of the day reporting a 'Buzz' as the girls meet to catch up with the gossip from the day before.

After the first lesson energy levels at all three schools had risen to medium even though the accelerometer readings dropped. Suggesting the teachers are working hard to engage the pupils which subsequently raises energy levels. Primary school teachers reported that this is one of the most productive sessions of the day. Secondary school teachers suggest that the most productive lessons in terms of learning are later in the morning after first break after a burst of activity or, for some girls, the first time they had eaten.

After lunch at DKH and CEB both students and teachers report energy levels high. At HGA the girls felt their energy levels were low after lunch as they were physically tired after the organised activities at lunchtime. However we found that the girls were easier to settle after lunch and did some of their most creative thinking at this time.

The teachers too had noticed an improvement in behaviour since the introduction of the new lunchtime regime.

PE lessons

At CEB the lack of outside space in which to do sport is a challenge. The accelerometer readings from the first week showed only a short peak of activity in the middle of the lesson, girls spend time in their PE lesson waiting for a turn. The girls at primary school enjoyed their PE lessons and the sports they learn in them. The girls would however like to do more dance and have PE first session of the day to raise their energy levels. HGA reported that when PE was first lesson of the day they felt their energy went up to a high level.

Inventing new Sports

The secondary schools both elected to invent sports that involved combining two different activities e.g. dancing and karate or clapping and basketball. The primary school children were keen to mix a sport with a more mentally active game and invented games such as Maths Football or Quiz catch.

Links between activity and concentration.

Students at all schools and teachers at DKH and CEB had experienced the link between activity and learning/concentration and could appreciate the value of physical or mental exercises. Both teachers and pupils were interested in where they could add activity into the day, either in lessons or between lessons. We observed that student and teachers awareness of their energy levels and the activities they could use to change them was raised during the day.

"I learn better when I have a break and practice dance moves using my arms" HGA
"I learnt how to be more stimulated and how different techniques can help you concentrate" CEB

The activities chosen by the groups varied from singing, relaxation/meditation, concentration games and hard physical activity such as racing round the playground or jumping on the spot. Interestingly the girls at CEB, where we had use of the playground for the consultation day, found that if they ran hard and then did the Stroop test whilst they were still out of breath or too hot, the time taken to do the test would increase but if they waited a minute until breathing was back to normal the time would decrease.

The primary school students had lots of suggestions of games that could be used to raise energy levels in the classroom some that they knew already and some that they made up.

Changes made by the schools for the re-jigged timetable week.

Each school was sent a short summary report of the results of the consultation days (see appendix 2) listing suggestions for changes to the timetable resulting from ideas from students and teachers and our observations.

The staff at each of the schools used these suggestions to design very different weeks at each of the schools.

Results from the re-modelled week focus groups.

Energy throughout the day

The girls at CEB and pupils at DKH found that their energy levels were much more balanced throughout the day. The majority of students felt their energy was medium in most lessons with fewer students with very low or very high energy levels than in the original timetable. Students at both schools had found the claming activities (yoga/tai chi) after lunch helpful. The girls at HGA suggested that their energy was low after lunch because they had been very active doing organised activities. Teachers however found that the girls were calmer and more willing to settle to work than before the introduction of these lunchtime activities.

Girls at DKH said that they had been much more involved in playground activities. The boys had been encouraged to let them join in more by passing the ball to them etc.

Breakfast club

The breakfast club at CEB had been the biggest success of the week. It had motivated them to get to school on time and the girls had enjoyed eating together. When asked to give tips to be passed on to other schools a third of the girls suggested that eating a good breakfast helped to raise energy first thing in the morning.

Lesson alarm

At CEB they had used the facility to change the lesson change alarm to a voice command to remind the girls to power walk between lessons. The girls thought this was very good but felt that if the alarm went back to bleeps they would forget to power walk.

Extra Activities

At CEB Cheerleading and gospel singing were the most popular activities. Tai chi was not rated highly. The girls were asked to name the best lesson of the week i.e. the one in which they felt they had learnt the most. Nearly a third of the best lessons had been preceded by a tai chi session.

At DKH the girls had enjoyed both the yoga and the aerobics activities but aerobics had been the most popular. The both of the lessons mentioned as the best lessons this week had been preceded by an aerobics session. However the girls agreed that the yoga session had helped them to settle to their reading time after lunch.

Active learning activities

At DKH both girls and boys were asked to express their view on the best lessons of the week in the form of a drama activity. Although there was no overall consensus a the majority of the groups said that Maths was one of the lessons they enjoyed and that the new activities they had been doing in Maths had made maths a lot more interesting.

At HGA the girls seemed to particularly look forward to lessons where “you know there is going to be an argument”. From their descriptions and what they could tell us about what they had learnt, we felt that they had been fully engaged in these lessons. Some of the other best lessons had involved drama activities and role-play. One RS lesson in particular on wealth and poverty had been particularly memorable.

“We did drama, acting out. Miss L. She’s active man!”

“In English we did acting out a poem”

Energy raisers.

Other things that the students had found raised their energy were: Anticipation, Debate, Energetic and enthusiastic teachers, working with different people and music.

CONCLUSIONS AND RECOMMENDATIONS.

- 1) Organised activities appear to be more tiring than free choice activities as two schools needed calming activities after lunch but HGA with their organised lunchtime activities did not.
- 2) Energy levels appeared to follow activity throughout the day before the redesigned week and students felt that they learnt best when they were at 'medium'. In the re-designed week the girls rated their energy more consistently as medium throughout the day suggesting that keeping activity levels up helps them to stay in the best frame of mind for learning. The students at DKH and CGA found that calming activities such as yoga after lunch helped them to focus in the next lesson.
- 3) Early morning activities such as the breakfast club and basketball club were popular. The girls felt more motivated to get to school on time and were ready to work in their first lesson. The students also seemed to prefer to have their PE lessons in the mornings.
- 4) There were different perceptions of teachers and students about activity in lessons and energy levels of the girls throughout the day particularly in the secondary schools. The girls felt that they spent much of their time in lessons sitting still but teachers had been incorporating active learning activities. Further research could be done to compare the overall movement in an ordinary lesson with and 'active learning' one perhaps using Student Researchers as observers.
- 5) Inspirational teachers raised energy levels in their students. The anticipation of a good lesson with an energetic teacher was enough to promote enthusiasm for learning in their students.
- 6) Keeping focus in lessons was more difficult where teacher and student energy levels were at variance. It was valuable, on the consultation days for teachers and students to work together and appreciate their differences. The pupils at DKH in particular were keen to make suggestions that would help their teachers as well as themselves.
- 7) Because activity levels vary between seasons it would be better for a school to have the consultation day and re-designed week in the same school term. Several girls suggested that they had been less active in the redesigned week because it had been cold and they did not want to go outside or that the evenings are dark, they have to go straight home and cannot stay after school to do sport.

References:

1, Stroop, J.R. (1935) Studies of interference in serial verbal reactions. Journal of Experimental Psychology, 18, 643-662 <http://psychclassics.yorku.ca/Stroop/>

2, Rosenbaum G. Test your brain

<http://www.pbs.org/wgbh/nova/everest/exposure/braintest.html>

Appendix 1

Resources

1. Holistic Energy consultation day activities

- Starters
- Energy over the day
- String thing
- Stroop test
- Snowball

2. Classroom activities

- Active games
- Active history ideas

Appendix 2

Suggestions for timetable change.