School Wellness Programming through SWITCH
(School Wellness Integration Targeting Child Health)

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SWITCH Research Team

**Faculty**

*Iowa State University*
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- Douglas A. Gentile, Ph.D. (Screen Time Behavior)
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**Former Graduate Students**

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**Current Extension 4H Leaders**

- Laura Liechty
- Ann Torbert

**Current Post Doc – Project Manager**

- Gabby McLoughlin
Outline

• Evolution of Switch to SWITCH

• SWITCH Implementation Framework

• Evaluation of SWITCH Implementation Framework
  • Multi-level model for evaluation of intact system changes
  • Evaluation of ‘School Readiness’ for change
School Training Designed to Operationalize and Activate School Wellness Programming
Background on Original Switch Program

• Evidence-based obesity prevention study focused on helping kids to “Switch what they Do, View and Chew”

Switch UP to 60 minutes or more of physical activity a day.
Switch DOWN to 2 hours or less of screen time (TV, internet, video games etc.) a day.
Switch UP to 5 or more servings of fruits and vegetables a day.

Research article
Evaluation of a multiple ecological level child obesity prevention program: Switch® what you Do, View, and Chew
Douglas A Gentile*, 1, 2, Greg Welk 3, Joey C Eisenmann 4, Rachel A Reimer 5, David A Walsh 2, Daniel W Russell 6, Randi Callahan 2, Monica Walsh 2, Sarah Strickland 2 and Katie Fritz 2

Open Access
Background on Original Switch

- Run through a non-profit agency (National Institute on Media in the family)
- Resource intensive and expensive ($60/kid)
- Focus on behavioral tracking / incentives
- Program rights and trademarks transferred to ISU when the non-profit re-organized
Key Needs for Dissemination

• Partnership with YMCA to facilitate implementation

• Web platform to provide a more cost effective solution
Summary of Pilot Studies (2012-2015)

- Online programming can be used to replace more intensive print-based programming
- Highly engaged schools were more successful in influencing parent/child recruitment and participation in the Switch program
Evolution of Switch to SWITCH
An Implementation Science Perspective
Transition to Dissemination Model

• Switch is currently being refined for broader dissemination with a focus on capacity-building for school wellness
  • **Investigators:**
    • Welk, Gentile, Lanningham-Foster, Chen, Vazou (ISU)
    • Dzewaltowski, Rosenkranz (KSU)
  • **Funding:**
    • USDA NIFA Grant (015-68001-23242)

• The omnibus hypothesis is that the SWITCH program can be enhanced, and be more readily sustained, when school-based modules (and training) are provided to more directly engage school personnel in the coordination of the project.
SWITCH Logic Model

**Baseline Measures**
- FNPA Survey
- YAP Survey
- SWEP Survey

**Process Measures**
- 'Switches'
- Trackers
- Checkpoints

**Mediators**
- Interactions
- Correlates *
- Interactions

**Outcome Measures**
- FNPA Survey (Change)
- YAP Survey (Change)
- SWEP Survey (Change)

**School Hub**
- 'Quality Elements'
- Web Portal
- Social Media
- Email

**School Environment**
- Web Portal
- Meetings
- Email

**Child Engagement**
- Teacher/Child Interaction

**Parent Engagement**
- 'Best Practices'
- Parent/Child Interaction

**Home Environment**
- Web Portal
- Social Media
- Email

**Enabling**
- Do → PA Time
- View ↓ Sed Time
- Chew ↑ F & V

**Reduced Risk of Obesity**

**SWITCH Team**

**State 4H Team**

**Moderators**
- Home SES
- Org Readiness
- School SES
SWITCH Implementation Framework

**SWITCH Expert Team**
- Develop SWITCH Modules
- Develop Web Content
- Hold Annual Conference
- Support Extension Network

**SWITCH 4H Extension & Outreach Training Hub**
- Resource Materials
- Training Webinars
- Email and Phone Support
- Checkpoint sessions

**Online Training**

**Evidence-Based Knowledge and Skills**

**Adaptations/Innovations From the Field**

**Participatory Intervention Development Process**

**Web Interface**

**Community of Practice**

**SWITCH Implementation Teams**
- Establish School Wellness Goals
- Manage SWITCH Web Platform
- Adapt Program to Local Needs
- Empower SWITCH 4H Club

**Implementation Objectives**
- Healthy Environments
- Healthy Opportunities

**School Wellness Capacity**
- Enhanced Programming
- School Wellness Integration
- Youth agency and advocacy
- Parent Engagement

**Implementation in School (Monitoring / Behavior Change)**
- Promote Physical Activity
- Promote F&V Consumption
- Minimize Sedentary Time

**Behavior Setting Implementation Objectives**
- Healthy Environments
- Healthy Opportunities

**SWITCH 4H Extension & Outreach Training Hub**
- Resource Materials
- Training Webinars
- Email and Phone Support
- Checkpoint sessions

Adapted From Dzewaltowski et al. (2010); Dzewaltowski (2014)
SWITCH Website
(www.iowaswitch.org)

Content Management System for schools
- Coordinator Level
- Teacher Level
- Parent / Child Level
SWITCH Community of Practice

“a group of people who share a common concern or a passion for something they do and learn how to do it better as they interact regularly” (Wenger, 1998)
Characterizing the SWITCH Intervention

• SWITCH can be characterized as a “structural intervention” since it focuses on changing factors within physical environments (e.g. schools and homes) and social environments (e.g. teachers/child and parent/child) rather than trying to directly target and influence children [Blankenship, 2006]).

• As a structural intervention, SWITCH can also be considered a “complex intervention” since the intervention (i.e. training / support) involves interaction with the setting (i.e. schools) during the implementation (Hawe, 2009; Saunders, 2012).
Key Principles for Implementation

• Connect staff to target healthy place development
• Facilitate connection and autonomy within groups
• Build group skills related to strategic planning
• Facilitate positive group interactions and norms
• Build capacity and promote sustained quality improvement approaches to wellness
IMPLEMENTATION FRAMEWORK
Training and Implementation Cycle

- **Phase I – Preparation**
  - Group Training Sessions

- **Phase II – Implementation**
  - Checkpoint 1: February
  - Checkpoint 2: March
  - Checkpoint 3: April
  - Checkpoint 4: May

- **Phase III - Evaluation**
SWITCH – Preparation Phase

- Training on SWITCH website
- Guided Program Planning  
  - Audit Tools
  - Goal Setting
- Generalized Guidelines
  - ‘Quality Elements’ (overall strategies)
  - ‘Best Practices’ (setting specific)
School Wellness Environment Profile Audit Tool (SWEP)

- Evaluating school environment, policies and practices
- Helping schools learn how to target and impact school settings
Youth Behavior Audit Tool (Youth Activity Profile)

• Evaluating youth behaviors (Do, View, Chew)

• Feedback and goal setting for youth

• Feedback and goal setting for schools
SWITCH – Implementation Phase

Monthly Checkpoint Meetings

- Fostering and supporting system change within schools *(Motivational Interviewing)*

- Emphasis placed on continuous quality improvement
**Checkpoint Survey**

**Facilitate Checkpoint Discussions**

**Provide process data on implementation**

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**SWITCH Program Check-In**

The SWITCH program helps schools to use an iterative “Plan-Do-Check” model. Schools create a school-wide “plan,” implement this plan, and “check” to see if it is working. This helps to recognize and make changes to plans that are not succeeding. It also creates a way to recognize and appreciate successes. Schools report this process throughout SWITCH. Use this form to check-in with classroom and PE teachers, and the school staff to evaluate the degree of implementation of SWITCH in your school.

Email your completed form to switch@tatesota.edu.

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**SWITCH Community of Practice**

Please indicate how often each of the SWITCH posters were used during the first 3 weeks of SWITCH:

<table>
<thead>
<tr>
<th>Posters Used</th>
<th>Frequency</th>
</tr>
</thead>
</table>
| Physical Education Teacher / Gym  
Teacher 1 TITLE | 1-2 Weeks | Every Week |
| Food Service Representative / Cafeteria  
Teacher 2 TITLE | 1-2 Weeks | Every Week |

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**SWITCH 4-H Youth Team Programming**

Please visit with the Adult Mentor for the 4-H Youth Team to respond to these questions about the 4-H Youth Team Programming during the first 3 weeks of SWITCH:

- How often did the team meet as a group?
- How often did the team utilize the SWITCH 4-H Youth Curriculum?
- Did the team carry out or see if they were planning to conduct a SWITCH-related project?

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-2 Weeks</td>
<td>Yes</td>
</tr>
</tbody>
</table>
Explanation of Checkpoint Survey to Schools

The SWITCH program is based on “continuous quality improvement” models that encourage incremental evaluation and strategizing. Use this form each month to check-in with classroom teachers, the PE teacher, and food service personnel to evaluate the status of SWITCH in your school. The process of evaluating change is as important as the product so use the form to understand where things are working well and where improvements may be needed. The form will be used to facilitate discussions during sequential “Checkpoint” calls.
SWITCH – Evaluation Phase

Schools / students repeat SWEP & YAP assessments

- DO: Physical Activity
- View: Sedentary Behavior
- Chew: Fruit and Vegetable Consumption

- Aggregate results shared with school to help them learn evaluation methods
Schematic of Three Phases of Implementation

<table>
<thead>
<tr>
<th>Checkpoint 1</th>
<th>Checkpoint 2</th>
<th>Checkpoint 3</th>
<th>Checkpoint 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phase I</td>
<td>Phase II</td>
<td>Phase III</td>
<td></td>
</tr>
<tr>
<td>Preparation</td>
<td>School Implementation</td>
<td>Evaluation</td>
<td></td>
</tr>
</tbody>
</table>
Evaluation of System Implementation
(Feasibility Study: n = 8 schools)

2017 EVALUATION PROJECT
Concepts in SWITCH Evaluation

- School needs to be viewed as a ‘system’
- A response can then be modeled as the outcome of a complex set of interactions within the school
- Multi-level models enable factors to be evaluated within an intact system
  - Children nested within classrooms (classroom effect)
  - Classrooms nested within schools (school effect)
  - Schools nested within counties / regions. (extension effect)
- Variability within system is evaluated and not controlled as a “covariate”
Sample SWITCH Implementation Questions

- Does system change operate differently in schools based on size or geography?
- Does school environment moderate successful implementation of SWITCH?
- Does school engagement influence student engagement in SWITCH?
- Does student engagement mediate behavior change at the individual level?
- Does parent engagement influence school, class or individual outcomes?
- Does Extension support influence school outcomes?
Sample Analyses

• Does *Implementation* of SWITCH Influence Youth Outcomes as coded on the Youth Activity Profile?
  • Do (physical activity – minutes of MVPA per day
  • View – minutes of sedentary time per day
  • Chew – overall nutrition indicator (mean of items)
Indicator of **School Implementation**: (School-Level Tracking on Web System)
School Implementation Effect - NS

- Schools with high implementation significantly increased minutes (mean change ± SE = 7.27 ± 0.99 ; \( p = .0022 \)) in MVPA from baseline to follow-up.

- Schools with low implementation significantly increased minutes (mean change ± SE = 2.58 ± 1.43 ; \( p = 0.042 \)) in MVPA from baseline to follow-up.

School, class, and individual implementation were operationalized as (%tracking by school, class, and individual)
Class Implementation Effect - NS

Class
• YAP DO scores were not significantly different from baseline to follow-up by class implementation.

Changes in MVPA by Class Implementation

Minutes of MVPA

Baseline          Followup

Class high

Class low

School, class, and individual implementation were operationalized as (%tracking by school, class, and individual)
Individual Implementation Effect – Significant

• Children with **high** tracking significantly increased minutes (mean change = 7.76, 95% CI = 5.57-9.95; \( p < .0001 \)) in MVPA from baseline to follow-up.

• Children with low tracking did not have significantly different scores (mean change = 2.097, 95% CI = 0.45-4.65; \( p = 0.11 \)) from baseline to follow-up.

School, class, and individual implementation were operationalized as (%tracking by school, class, and individual)
Conclusions

• Evaluation supported the viability of the implementation model
  • All schools were able to run programming on their own

• Results support ability to capture data through the online system and through school administered assessments
  • Schools collected audit data through SWEP and YAP tools

• Preliminary analyses support the utility of the analyses for examining the nature of changes in the school system
Implementation Evaluation (n = 25 schools)  
(Dissertation Research – Dr. Joey Lee)

2018 EVALUATION PROJECT
Preliminary analyses – Focus on Organizational Readiness to Change
Organizational Capacity’ and ‘Provider Characteristics’ are consistently reported as ‘school wellness implementation barriers’ (Lau, Wandersman, & Pate, 2016; Naylor et al., 2010; Durlak & DuPre, 2008).

Organizational Readiness for Change (Readiness) conceptual framework evaluates system capacity / preparedness for implementing change (Holt et al., 2010; Weiner, 2009):

- Organizational Structural – physical environment, support
- Organizational Psychological – uniformed commitment, collaboration, supportive climate, resolve to succeed
- Individual Structural – knowledge, skills, abilities
- Individual Psychological – motivation, commitment, believe need exists
Methods: Assessing Readiness

- Readiness items developed using Holt et al. (2010) guidelines
  - Organizational Structural – physical environment, support (SWEP)
  - Organizational Psychological – uniformed commitment, collaboration, supportive climate, resolve to succeed
  - Individual Structural – knowledge, skills, abilities
  - Individual Psychological – motivation, commitment, believe need exists

Means constructed for each of the constructs

- Readiness score calculated by averaging means of four constructs
SWITCH Logic Model

**Moderators**
- Home SES
- Org Readiness
- School SES

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**Outcome Measures**
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- YAP Survey (Change)
- SWEP Survey (Change)

SWITCH Team

State 4H Team

SWITCH

Webinars & CoP Support

Local 4H Support

SWITCH

Helping Children to switch what they Do, View and Chew

Home Environment

Parent Engagement ‘Best Practices’

Child Engagement

School Hub ‘Quality Elements’

School Environment

Reduced Risk of Obesity

Do ↑ PA Time

View ↓ Sed Time

Chew ↑ F & V

Web Portal

Social Media

Email

Home

Environment

Parent/Child Interaction

Enabling

Enabling

Web Portal

Meetings

Email

Web Portal

Meeting

Email

Reduced Risk of Obesity

Home SES

Org Readiness

School SES
Schools that report higher degrees of Readiness would implement SWITCH to a higher degree than schools that report lower degrees of Readiness.

- Greater adherence to Quality Elements (Checkpoint)
- Greater student engagement (Tracker Rates)
- Greater gains in outcomes (Youth Activity Profile)
### 2018 School Sample (n = 25)

School demographic characteristics and descriptive statistics for implementation and readiness tools.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean (Standard Deviation)</th>
<th>Range (Minimum – Maximum)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enrollment</td>
<td>291.2 (109.8)</td>
<td>106 – 521</td>
</tr>
<tr>
<td>Percent White</td>
<td>85.4% (14.7%)</td>
<td>33.0% - 96.0%</td>
</tr>
<tr>
<td>Percent Male</td>
<td>51.7% (3.8%)</td>
<td>42.4% - 56.5%</td>
</tr>
<tr>
<td>Percent Free and Reduce Priced Lunch</td>
<td>43.1% (12.5%)</td>
<td>26.6% - 70.8%</td>
</tr>
<tr>
<td>Checkpoint Score (0 – 2)</td>
<td>0.92 (0.27)</td>
<td>0.47 - 1.35</td>
</tr>
<tr>
<td>Tracker Rate</td>
<td>37.9% (24.5%)</td>
<td>0% - 86.8%</td>
</tr>
<tr>
<td>Readiness (1 – 4)</td>
<td>2.16 (0.35)</td>
<td>1.57 - 3.01</td>
</tr>
</tbody>
</table>

Study included 21 of the 25 SWITCH schools
Three Private Schools not included
One school without Checkpoint Survey data
Results: Model 1 – Checkpoint Survey, 2-Way ANOVA

Readiness main effect: \( p = 0.07 \); Effect size: \( \eta^2 = 0.18 \) (large)

Interaction: \( p = 0.19 \); Effect size: \( \eta^2 = 0.10 \) (medium)
Results: Model 2 – Tracker Rates, 2-Way ANOVA

Readiness main effect: $p = 0.05$; Effect size: $\eta^2_p = 0.20$ (large)

Interaction: $p = 0.88$; Effect size: $\eta^2_p = 0.001$

Bar chart showing:
- Low SES: Low Readiness (26.6%) vs. High Readiness (46.5%)
- High SES: Low Readiness (30.9%) vs. High Readiness (53.9%)
Results: Model 3 - Change in MVPA, 2-Way ANOVA

Readiness main effect: $p = 0.31$
Results: Overall **Change** in Readiness from Pre-to-Post SWITCH.

Change in School Capacity for Wellness in SWITCH.
Results: Change in Minutes of MVPA by School

Change in Minutes of Activity in SWITCH.

- Activity at Baseline
- Change in Activity
Conclusions

- School Readiness was associated with initial uptake and implementation of school wellness initiatives
  - Higher rates of implementation
  - Higher rates of tracking
  - Larger gains in youth outcomes

- Effects were larger among low SES schools (greater room for improvement)

- Evaluation needs to include indicators of school environment and readiness to change to better understand impact on schools
More Acknowledgements!

- Special thanks to many graduate students
  - Joey Lee – ISU (Project Manager)
  - Laura Liechty – ISUEO (4H Youth Specialist)

- Welcome to new Post-Doc Coordinator
  - Gabby McLoughlin
Partners in Dissemination

IOWA STATE UNIVERSITY
Extension and Outreach

SWITCH
Collaboration and Coordination with 4H

- Statewide Dissemination through 4H

Laura Liechty  Ann Torbert
Thanks!

Much more to come with SWITCH