



**HFES**  
Systems That Work for **Humans**

2021

# HFES INTERNATIONAL SYMPOSIUM

on Human Factors and  
Ergonomics in Health Care

## Mindful hand hygiene and self-guided training using a Mobile Phone App

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# Problem Statement

- **Importance of Hand Hygiene (HH)**
  - Infection management (protect staff/patients)
  - Personal Protective Equipment (PPE) use
- **HH training**
  - HCW need accessible and user-friendly training for safe doffing/donning PPE - includes HH practice
  - Address error rate (hand hygiene & PPE Donning/Doffing)
- **Human Factors**
  - Lived experience of PPE (COVID) – burnout, fear, stress, anxiety
  - Need for self care for Health Care Workers (resilience, preventative approach)
  - Need to enable compassionate care
  - Benefits of mindfulness

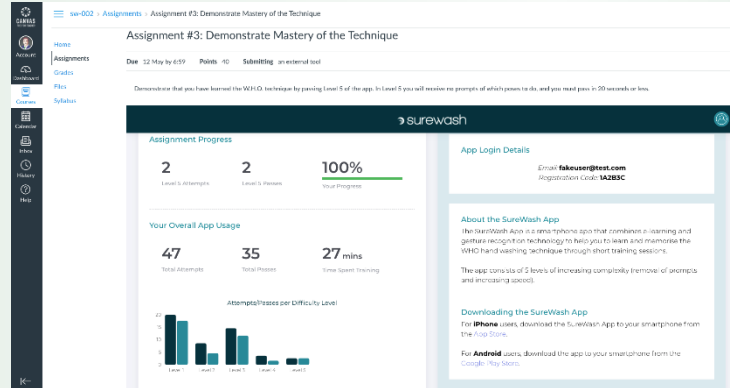


# Technology Opportunities & Research Objective

## 1. Extend existing technology

- Hospital virtual learning environment (VLE)
- Augmented Reality Kiosk (training in PPE donning/doffing)
- Augmented Reality Phone App (training in HH)

## 2. Proof of concept (requirements for App - training mindfulness integrated with HH, link to overall PPE training)



Grades for John Smith

Course: SureWash Hand Hygiene C | Due date: 12 May 6:59 PM | Show all details

| Name  | Due               | Status        | Score                | Out of |
|---|-------------------|---------------|----------------------|--------|
| Assignment #1: Read Through the SureWash Lesson     | 2 May by 6:59 PM  | 5             | 5                    | 10     |
| Assignment #2: Introduction Assessment              | 4 May by 6:59 PM  | 15            | 15                   | 15     |
| Assignment #3: Demonstrate Mastery of the Technique | 12 May by 6:59 PM | 40            | 40                   | 10     |
| Assignment #4: Demonstrate Knowledge                | 19 May by 6:59 PM | 30            | 30                   | 10     |
| Assignment #5: Additional Knowledge                 | 21 May by 6:59 PM | 5             | 5                    | 10     |
| <b>Assignments</b>                                  |                   | <b>88.34%</b> | <b>75.00 / 85.00</b> |        |
| <b>Total</b>  |                   | <b>88.34%</b> | <b>75.00 / 85.00</b> |        |

**Notes:**

- Calculated based only on graded assignments.
- You cannot see your grades based on what if scores or that you know how grades will be affected by upcoming or submitted assignments. You can see scores for an assignment that already includes a score, or an assignment that has not yet been graded.



# Self Care & Mindfulness

- **Staying in good physical and mental health, is essential for HCW during the COVID-19 pandemic and beyond**
- **Wellness as a protective factor for safe performance (PPE Donning/Doffing).**
- Resilience to “prepare for”, “recover from” and “adapt to” stressful or traumatic situations and events.
- Brief mindfulness interventions success in impacting HCW stress, anxiety, and resilience in a positive manner (Gilmartin et al 2017).
- Preventative approach



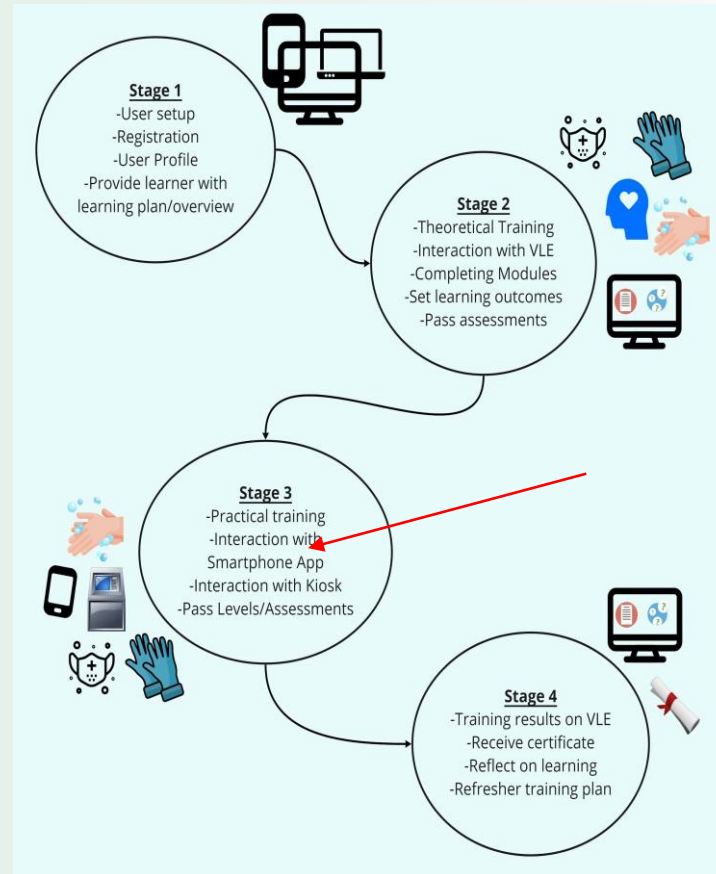
# Methods

## Human Factors Action Research, 3 Clinical Sites

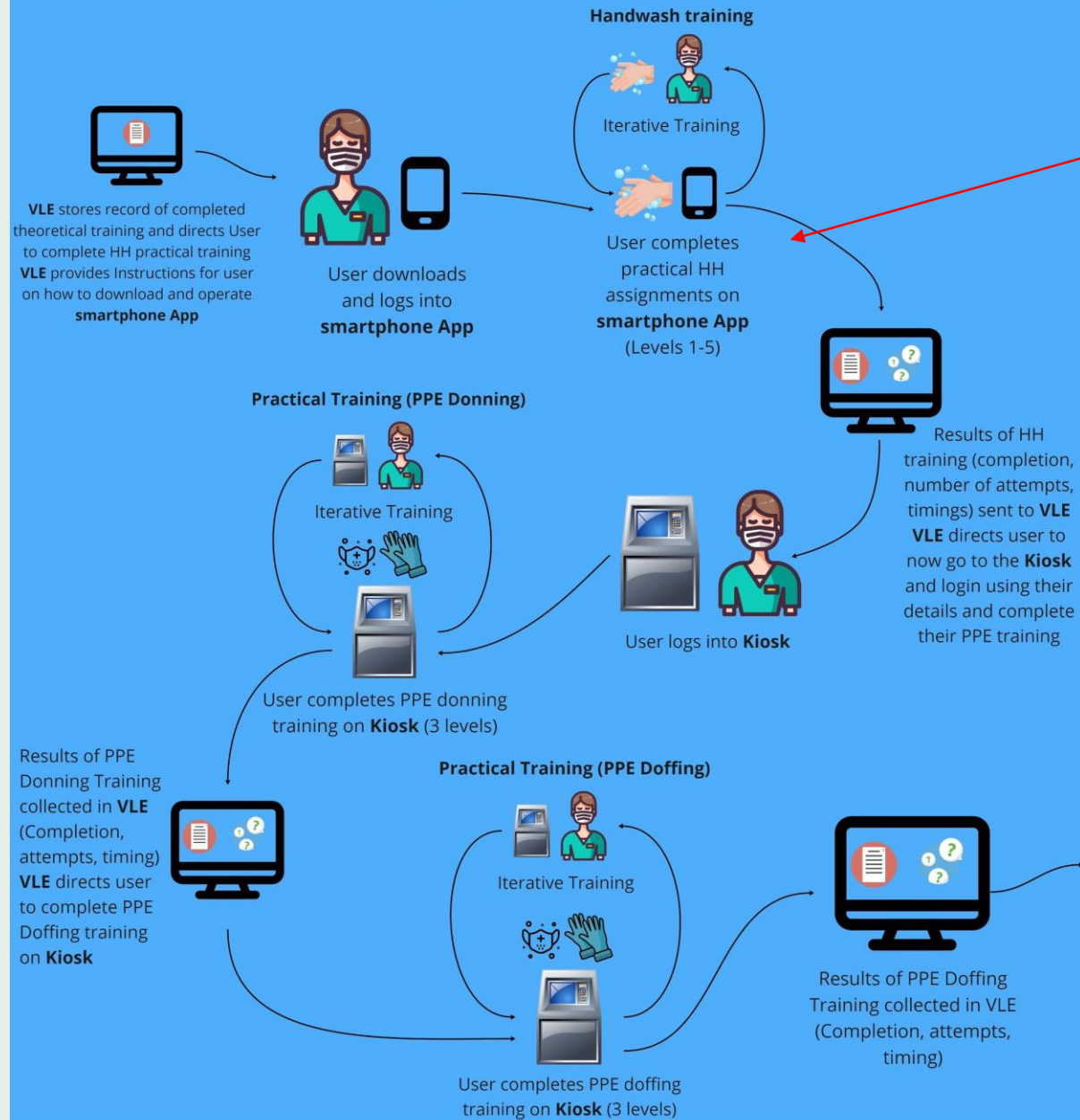
| #                        | Method   | Total Participants | Bon Secours | Beaumont | Tallaght | Other |
|--------------------------|--|--------------------|-------------|----------|----------|-------|
| 1                        | Problem space interviews 1 (PPE Practice, Lived Experience & Learner Journey Interviews)                           | 5                  | 0           | 3        | 0        | 2     |
| 2                        | Problem space interviews 2   | 91                 | 20          | 23       | 46       | 2     |
| 3                        | Scoping mindfulness technique  | 3                  | 3           | 0        | 0        | 0     |
| 4                        | Co-design 1: evaluation of learner journey, overall PPE training approach and acceptability of mindfulness via App | 23                 | 14          | 9        | 0        | 0     |
| 5                        | Co-design 2: evaluation of mindful HH technique (via poster) and implementation requirements                       | 42                 | 2           | 11       | 17       | 12    |
| 6                        | Co/design3: evaluation of Mindful HH and Prototype (Phone App)   | 10                 | 10          | 0        | 0        | 0     |
| Total Participants = 174 |  |                    |             |          |          |       |



# Learner Journey

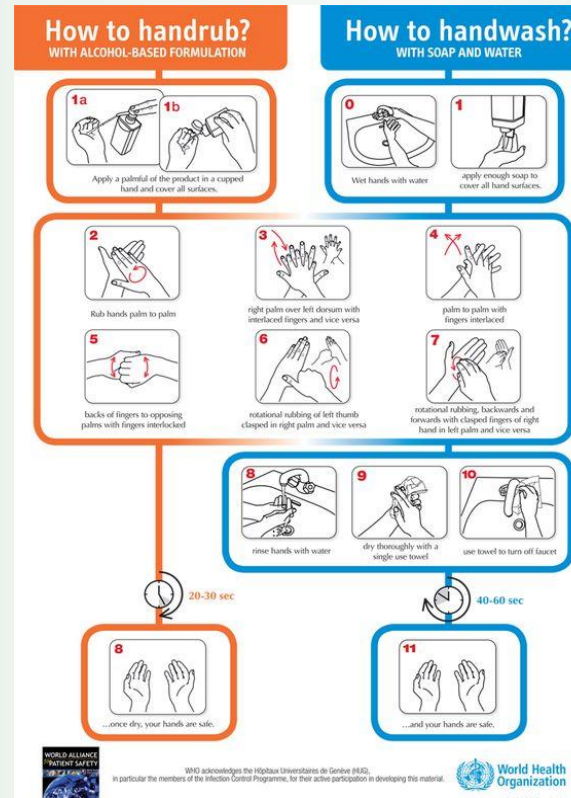


### Stage 3: Practical Training



# Mindful Hand Hygiene Approach

- Mindfulness is part of an overall training piece addressing **self-care**
- Storytelling: emphasis on compassion for self and for patient
- Differences between mindful hand washing and hand hygiene
- Integration with WHO steps
- **STOP**
- PPE Constraints & breathing (focus on sensations in hands/fingers)
- Integration of approach with other opportunities (1) golden moments, (2) 5 moments for HH and (3) HH as part of PPE donning/doffing



### Mindful Hand Hygiene (Gel)

**Before You Begin**

**STOP**

- S** Stop
- T** Take a Breath
- O** Observe and Acknowledge what is Here Right Now (feelings & emotions)
- P** Proceed with the task of Hand Hygiene, taking this 20-30 seconds to step away from autopilot and allow for a moment of self-care and self-awareness

**Practicing Mindful Hand Hygiene**

The Mind may wander – that's ok... that is what minds do. Noticing the mind wandering is the moment of mindfulness.

**Mindfulness to Accompany WHO Step**

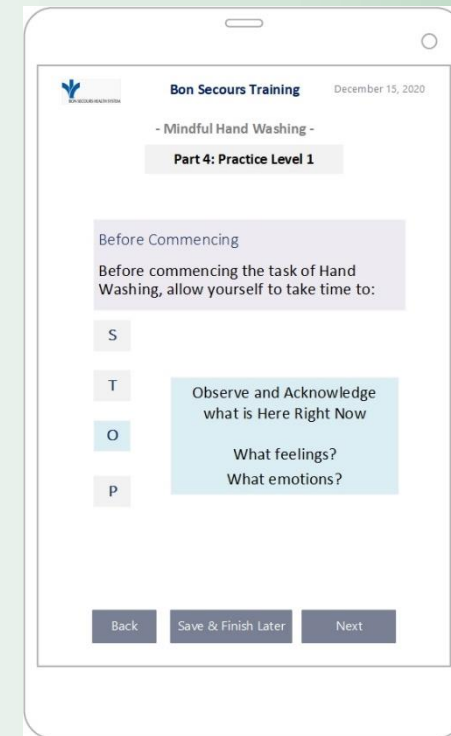
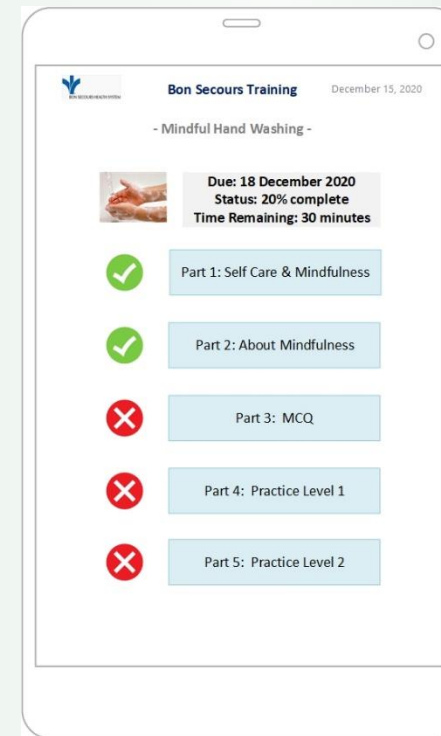
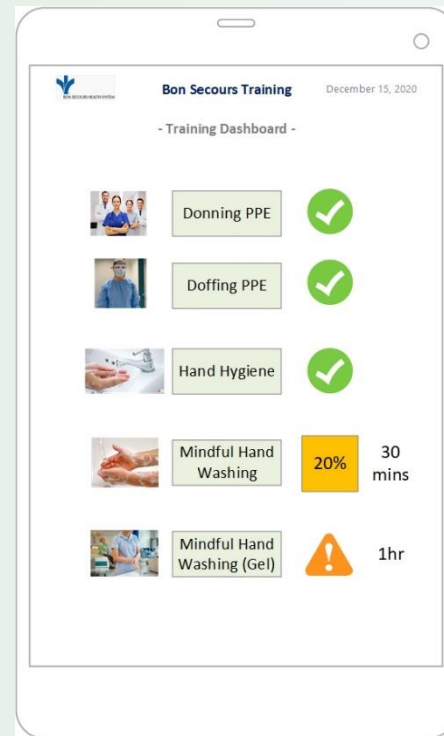
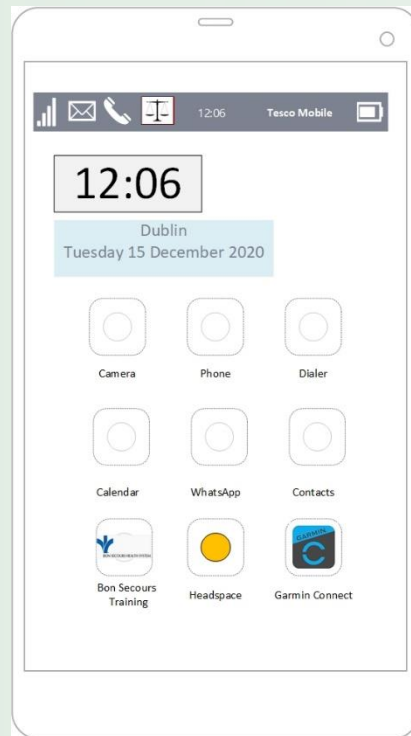
|    |   |
|----|---|
| 1A | Noticing the feel and texture of the gel as it touches the Palms.   |
| 1B | Bringing awareness to the feeling of the Palms as they touch one another.   |
| 2  | Noticing the sensation in the Fingers as they intertwine.   |
| 3  | Bringing awareness to the feeling of the intertwined fingers.   |
| 4  | Allowing the awareness come to the Clapsed Hands, rotating from side to side  |
| 5  | Feeling the touch of the Hands and the Thumbs together  |
| 6  | Noticing the feeling in the Fingers and Palms as they rub against each other  |
| 7  | Allowing the awareness return to the body as a whole. Feel your Feet rooted to the floor. Noticing what is Here Right Now |
| 8  |   |

This approach has been developed in the SFI funded PPE Safe project - collaboration with the nursing team at Bon Secours Hospital, Cork and researchers at the School of Psychology, Trinity College Dublin. For more information: [Mindful@handhygiene.org](mailto:Mindful@handhygiene.org)

**LEARNOVATE**



# Mindful HH Training Using Phone App



# Implementation

- **Organisational commitment to worker wellness, staff safety and patient safety**
- One of many training interventions for safe PPE & self-care
- HCW learner journey: level of information to be appropriate for full range of users (i.e., from novices and experts)
- Proven impact of mindfulness in other healthcare settings to be included in training
- Link to GRACE approach (Halifax, 2014) – “In protecting myself, I protect the patient”
- Trainees should be able to control the pace of learning
- Access for HCW with older phones
- Part of induction programme for all new staff
- Provision of APP for free (no cost to HCW)



# Feedback from HCW

“It's a good idea to find some time for own wellbeing.”



“Great to prepare for my journey home”

“Great idea- to let all your stress go out.”

“I will be more focused it will refresh my mind”

# Conclusions

- **Initial validation – more to do**
- **Link to overall PPE training – and HH training using both App & Kiosk**
- **Mindfulness is important for HCW – preventative approach, COVID context**
- Opportunity self-care and protection (staff and patient safety)
- Using the WHO HH technique in combination with the mindfulness exercise - bringing attention to the moment
- Acceptability of approach
- Positive feedback –training in mindful HH using Mobile Phone App
- Learner journey and implementation – self care, worker wellness, patient safety
- Further research: mobile phone App design & Implementation



# Acknowledgements

- **Project Partners**
- Personal Protective Equipment (PPE) Safe, Sponsored by **Irish Government funded by Science Foundation Ireland**
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Trinity College Dublin  
Coláiste na Tríonóide, Baile Átha Cliath  
The University of Dublin



**LEARNOVATE**  
Leading Learning Innovation



BON SECOURS  
HEALTH SYSTEM



**BEAUMONT  
HOSPITAL**






# References:

- Gilmartin H, Goyal A, Hamati MC, et al. Brief Mindfulness Practices for Healthcare Providers - A Systematic Literature Review. The American Journal of Medicine. 2017 Oct;130 (10):1219.e1-1219.e17. DOI: 10.1016/j.amjmed.2017.05.041.
- **Halifax, J (2014)** G.R.A.C.E. for nurses: Cultivating compassion in nurse/patient interactions Journal of Nursing Education and Practice, 2014, Vol. 4, No. 1, pg 121-128.

# Further Information

- <https://www.tcd.ie/cihs/projects/mindfulhandhygiene.php>
- <https://surewash.com/>
- [cahilljo@tcd.ie](mailto:cahilljo@tcd.ie)


### Mindful Hand Hygiene (Gel)












**Before You Begin**

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