

Stories at the Dentist

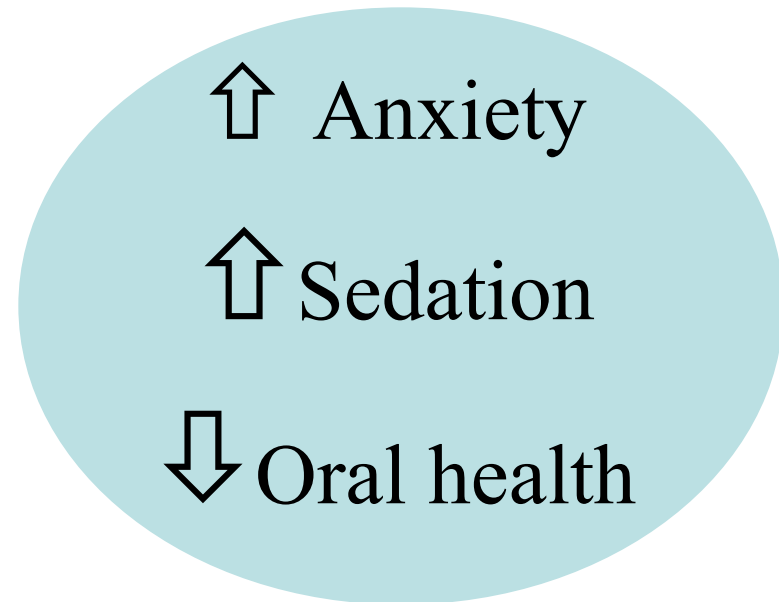
A new tool to support communication between dentist and patients with intellectual and communication disabilities

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School of Computing
University of Dundee

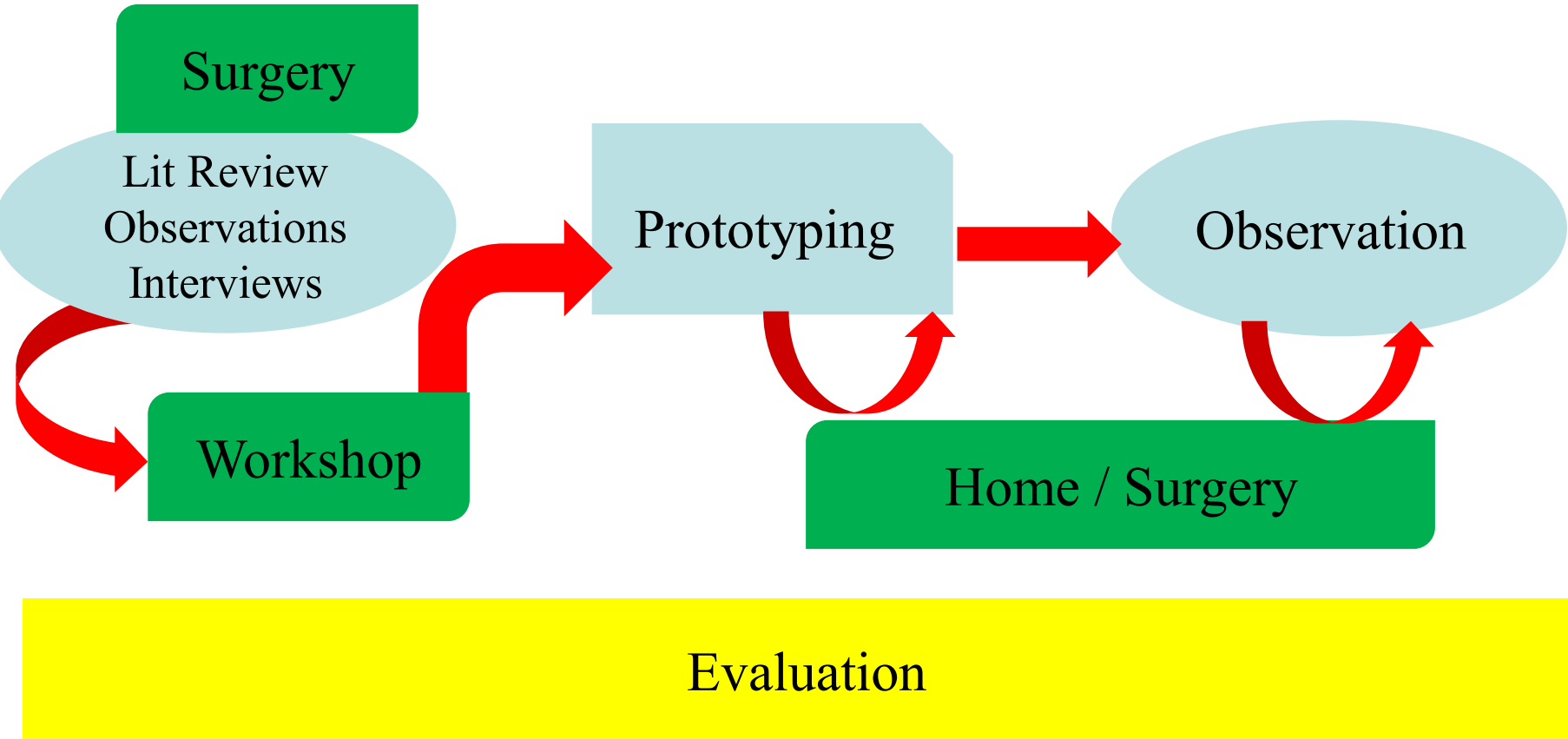
<http://aac.computing.dundee.ac.uk/>
r.black, a.waller@dundee.ac.uk

Patients with communication difficulties: Challenges at the Dentist?

- Inability to easily ask questions and understand explanations
- Strange environment
- Patient in pain
- Previous bad experience

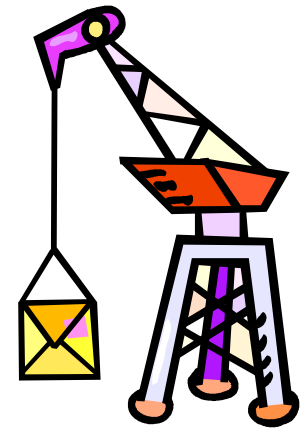


Stories at the Dentist – Action Research

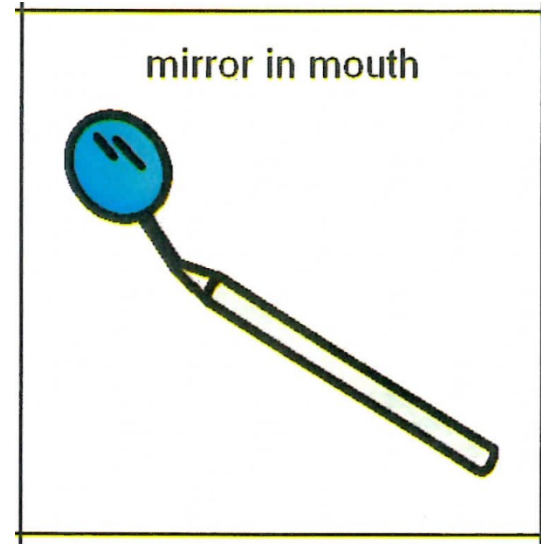
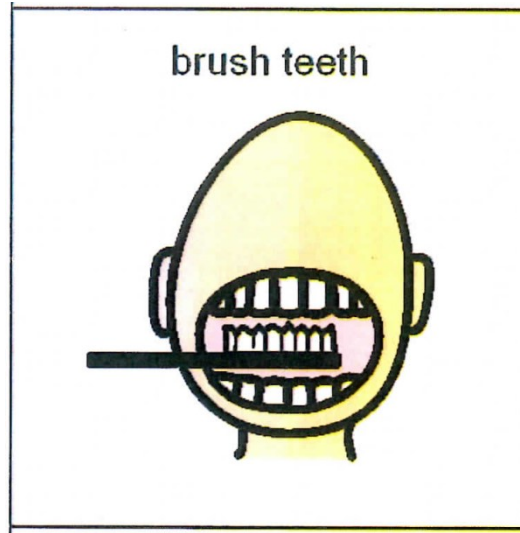
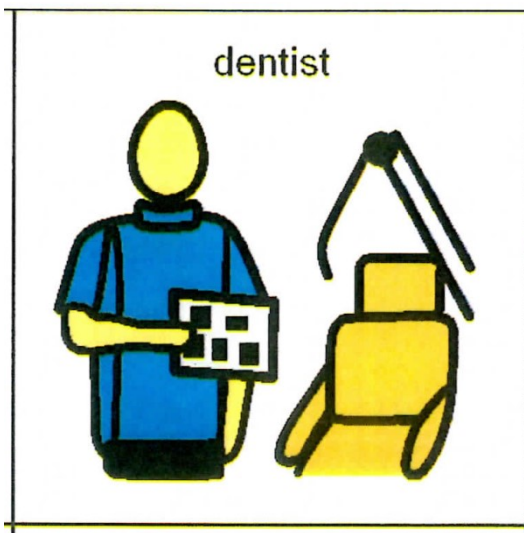


Observations / Literature / Good Practice:

- Anxiety leads to challenging behaviour
- Difficulty in anticipation / imagination / inability to express anxiety
- Need for **transactional support**
 - Communication
 - Preparation



Existing Transactional Support: AAC Symbols – topic related



Existing Transactional Support: Signs, e.g. Makaton - emotion



happy



cross



scared



sad



OK



horrible



worried



excited

Existing Transactional Support: Preparation - Social Stories

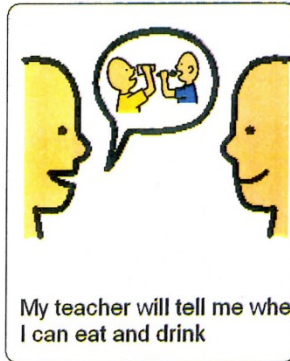
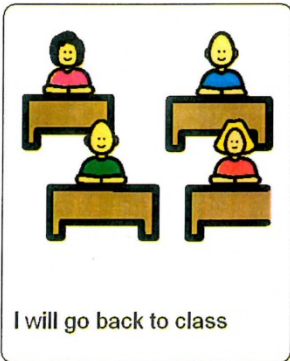
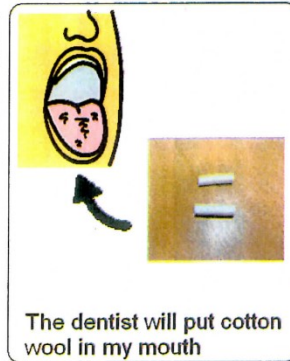
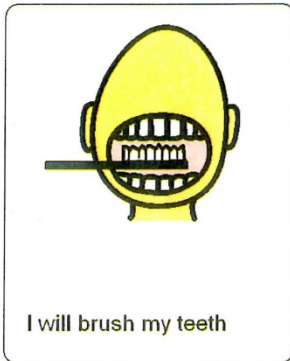
A Social Story can be a written or visual guide describing various social interactions, situations, behaviours, skills or concepts and were introduced and described by Gray and Garand (1993).

Social Stories

Issues in practice

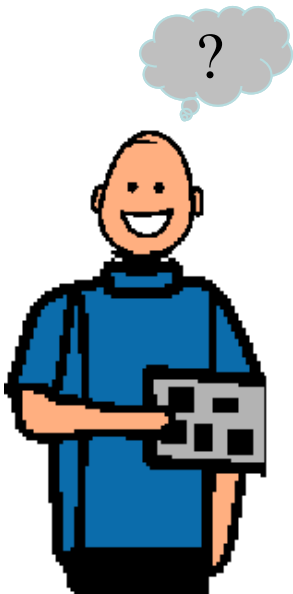
Focus on general procedural event sequence

- Lack personalisation
- Lack user input
- Lack emotional regulation
- Static and one-way in nature



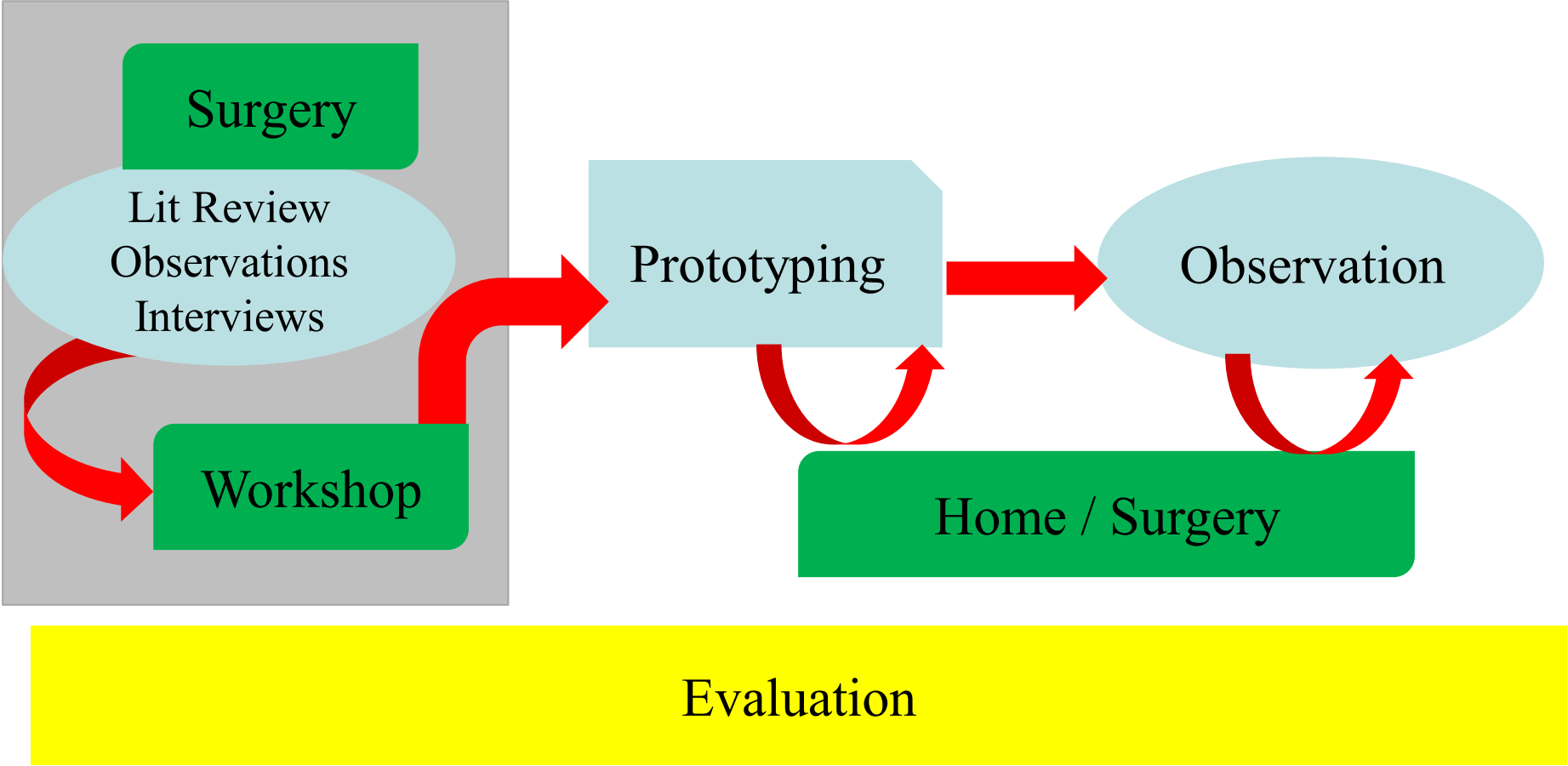
Workshop: What the dentists said...

- How much does my patient understand?
- How am I going to communicate with my patient?
- How co-operative is my patient likely to be for examination/ treatment?
- How can I better prepare my patient?
- Where is this information?



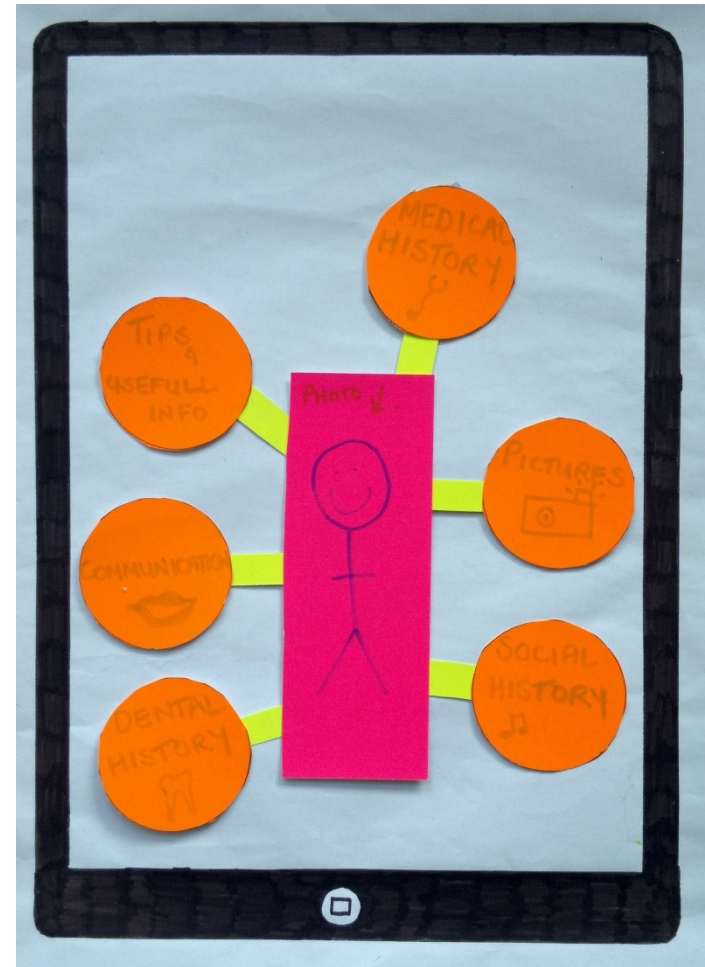
Our aim is to develop a computer based communication system to support people with intellectual or communication disabilities to understand dental procedures with the aim of reducing anxiety for both patients and clinicians, and to enable patients to be more involved in the decision making process.

Stories at the Dentist – Action Research



Iterative Prototyping

1. Paper prototyping



JOHN DOE

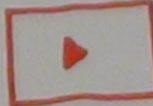
NEXT APPOINTMENT

12/4/13
TEETH CLEAN
HYGIENIST

19/4/13
EXAM
DENTIST

COMMUNICATION TIPS

- _____



- _____

- _____



PATIENT INTERFACE

PROCEDURE
EXPLANATIONS

COMMUNICATIONS
BOARD

JOHN DOE

NEXT APPOINTMENT

12/6/13
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PATIENT INTERFACE

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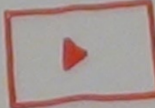
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PATIENT INTERFACE

PROCEDURE
EXPLANATIONS

EXAM

TEETH CLEAN

FILLING

COMMUNICATIONS
BOARD

JOHN DOE

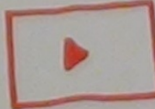
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EXAM
DENTIST

COMMUNICATION TIPS

- =====



- =====

- =====



PATIENT INTERFACE

PROCEDURE EXPLANATIONS

EXAM

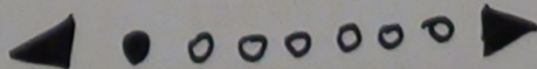
TEETH CLEAN

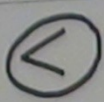
FILLING

COMMUNICATION BOARD

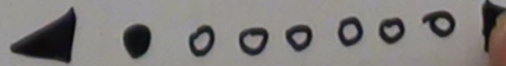


BACK TO PROFILE

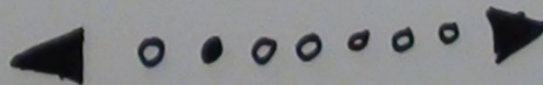




BACK TO PROFILE



⬅️ BACK TO PROFILE

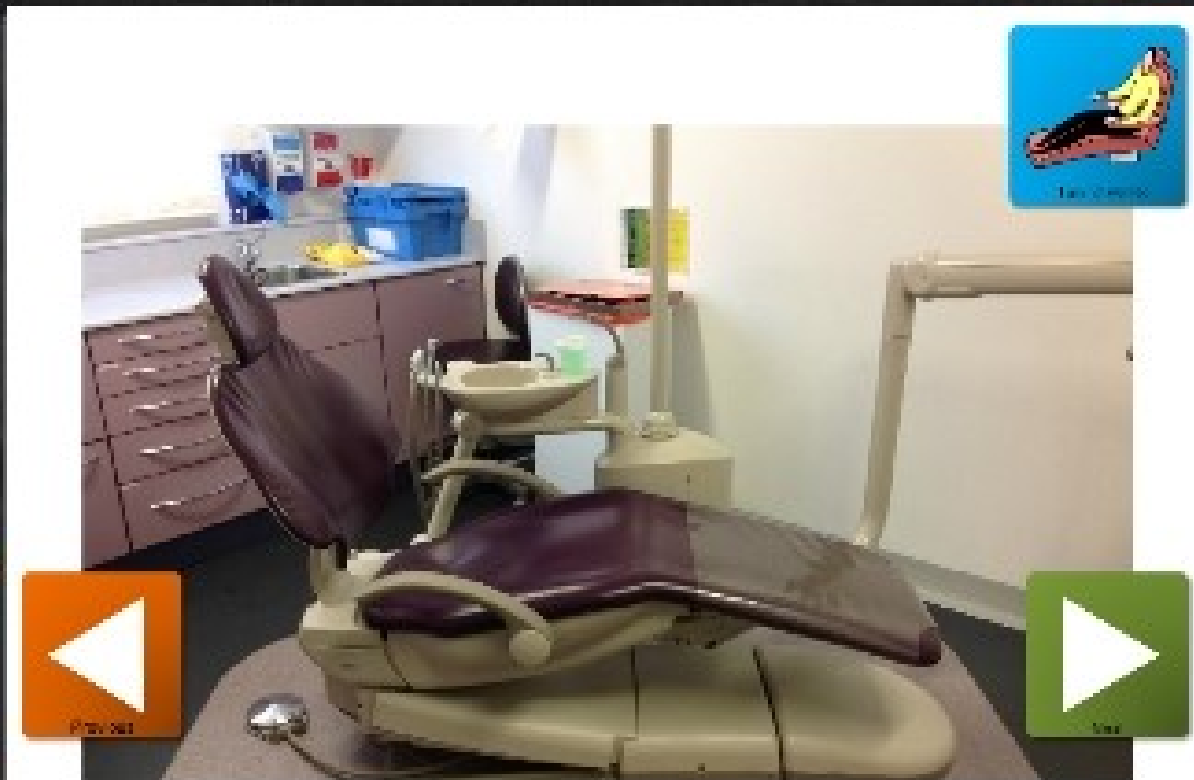


Iterative Prototyping

1. Paper prototyping
2. PowerPoint Prototyping
 - Based on Input from Dentists
 - Back to the Dentists for Feedback

Iterative Prototyping

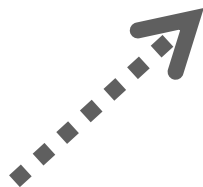
1. Paper prototyping
2. PowerPoint Prototyping
 - Based on Input from Dentists
 - Back to the Dentists for Feedback
3. Coded prototyping



I will sit in the dental chair. I will tell Gillian if I am taking any new medicines or if I have had to go to my doctor or the hospital since my last dental appointment. This will help Gillian to know if any of my dental treatment needs to be different. I can tell Gillian how my teeth have been since my last visit too.

Stories at the Dentist Workflow

Dentist
creates
story





I am not worried



Previous



Next

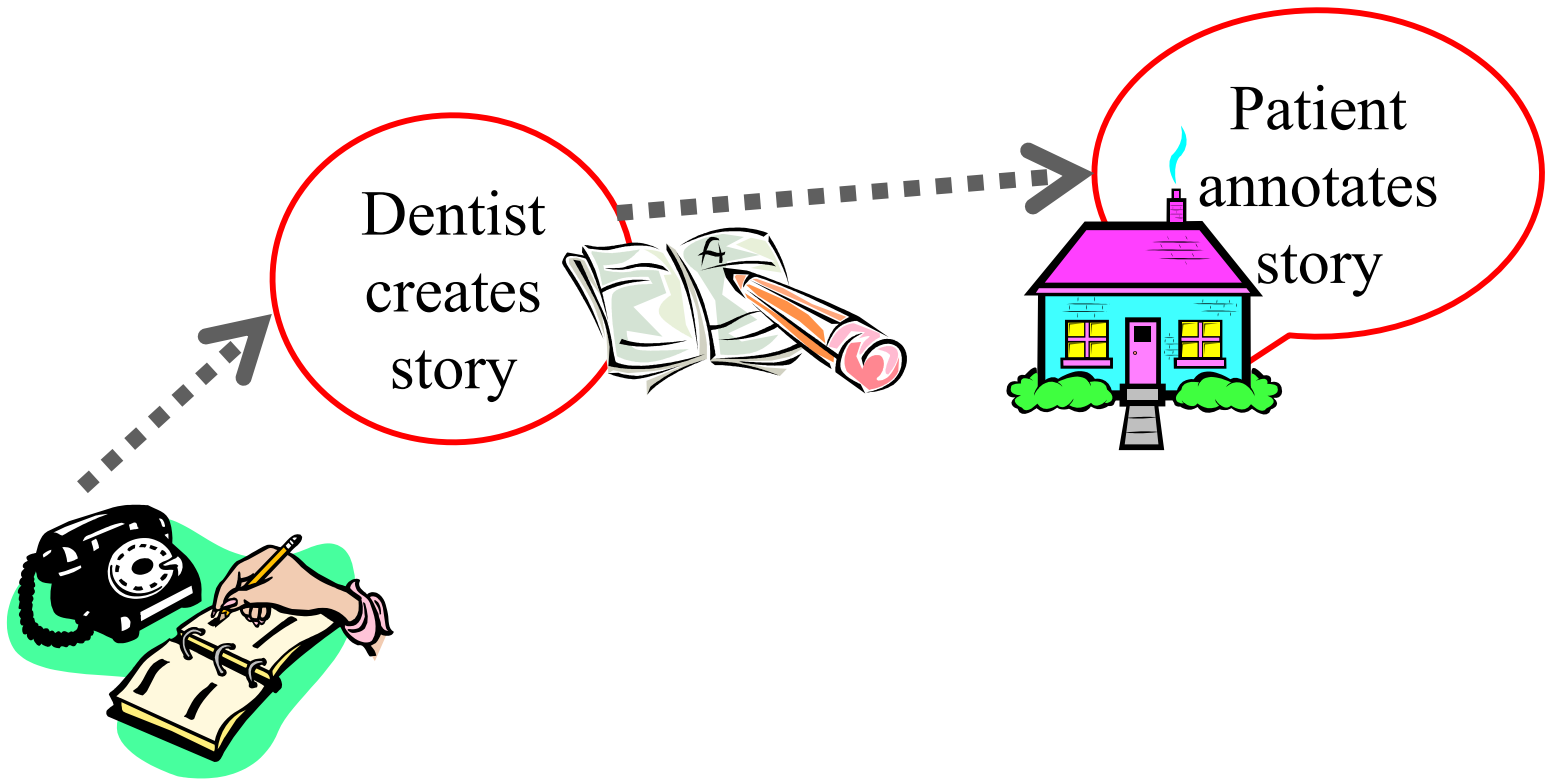
I will go to the desk so that the dentist will know I have arrived.



Sometimes Lesley dries my teeth with air or checks them with a probe to make sure they are healthy. This may feel tickly.

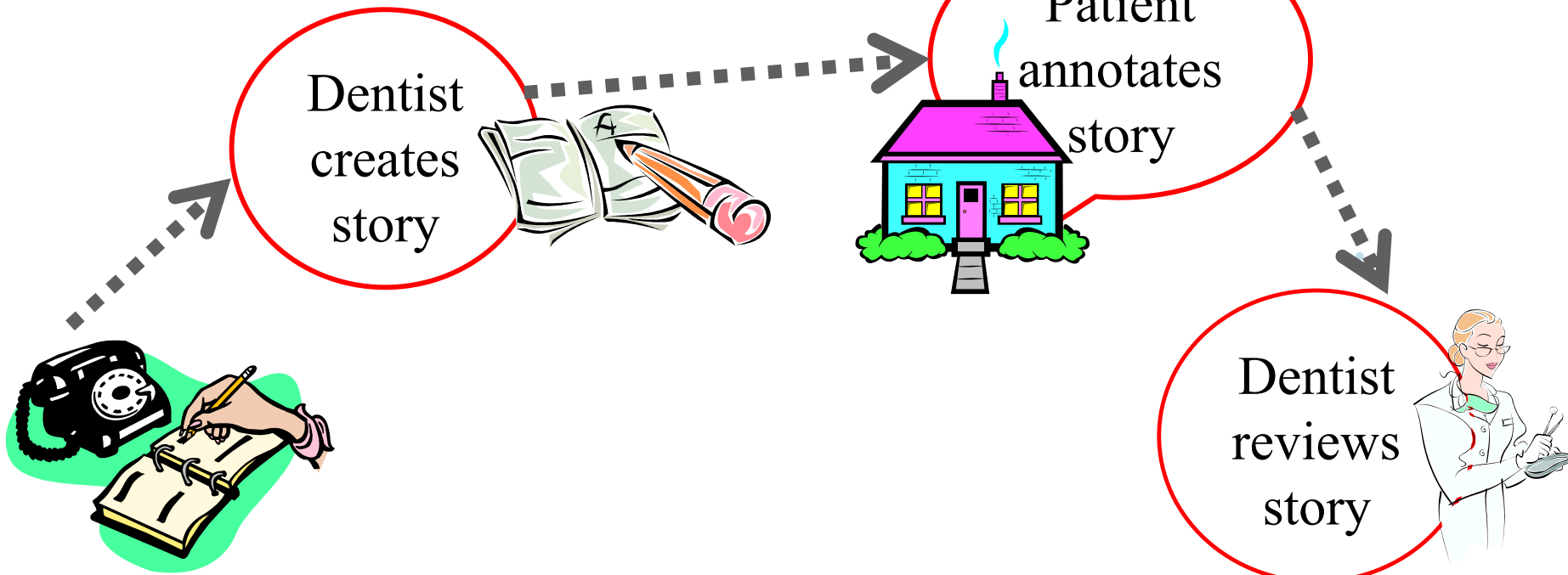


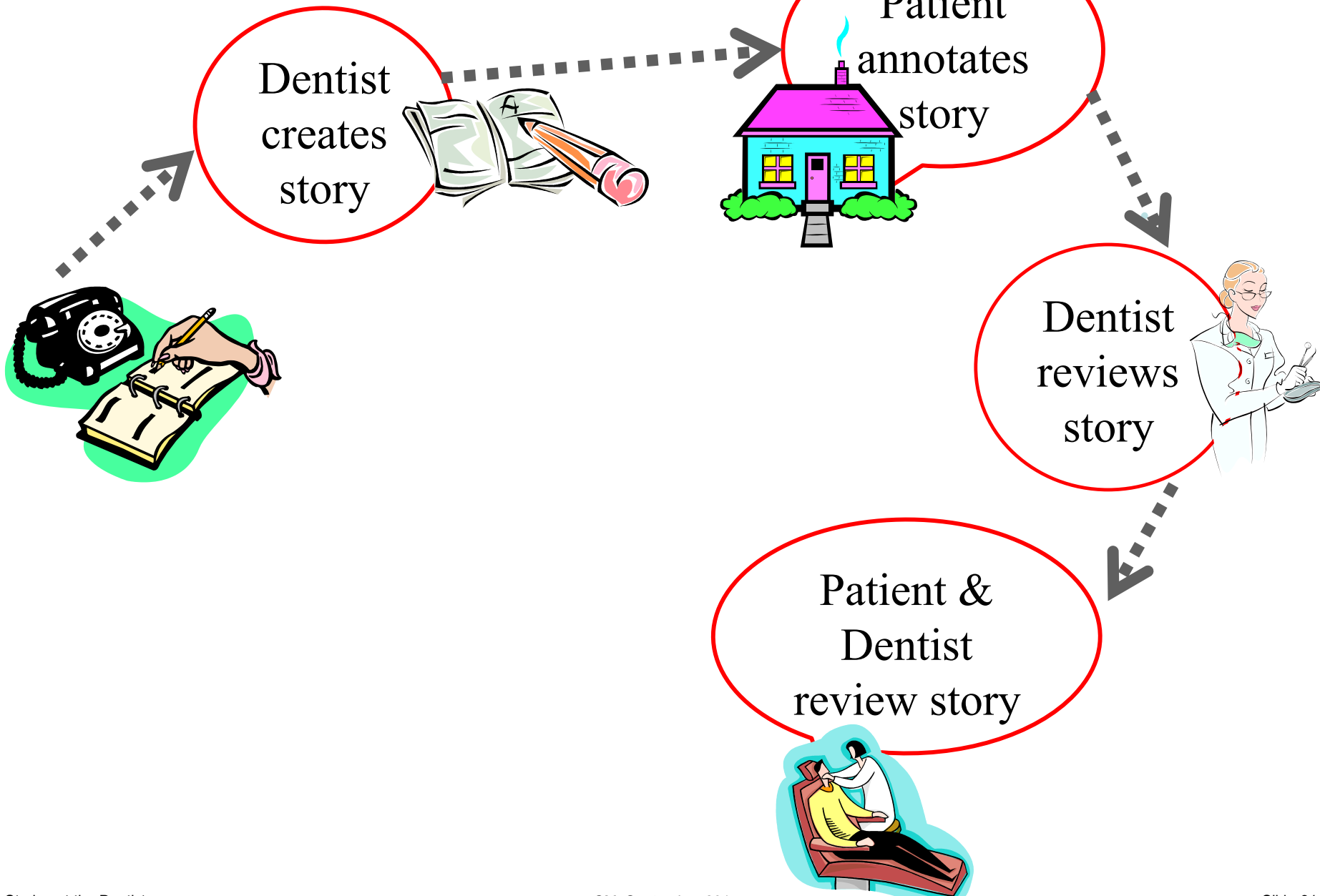
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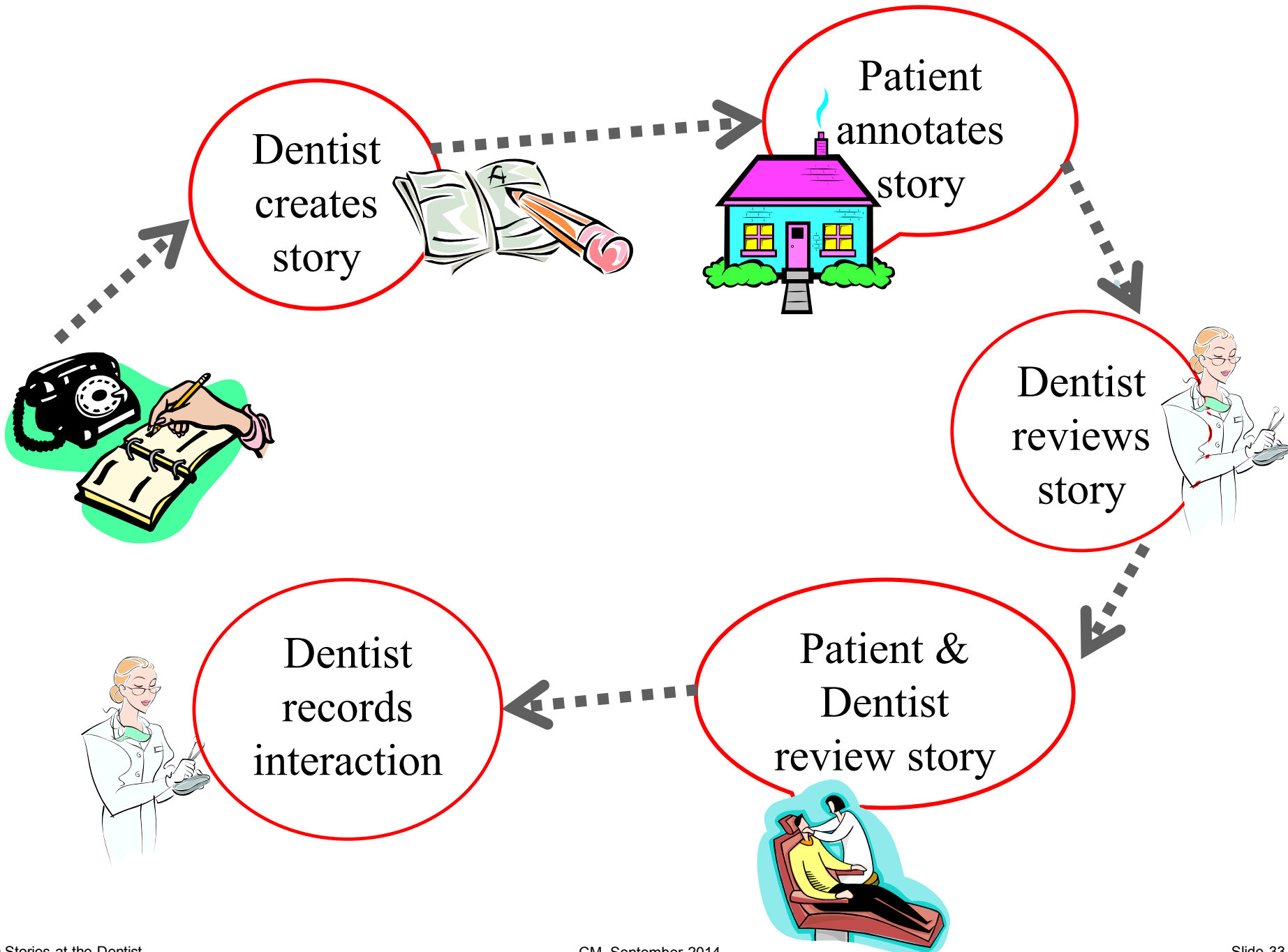


I will open my mouth wide and keep it open until Lesley has checked my teeth. This helps Lesley to check all of my teeth and gums.









Dentist creates story

Patient annotates story

Dentist reviews story

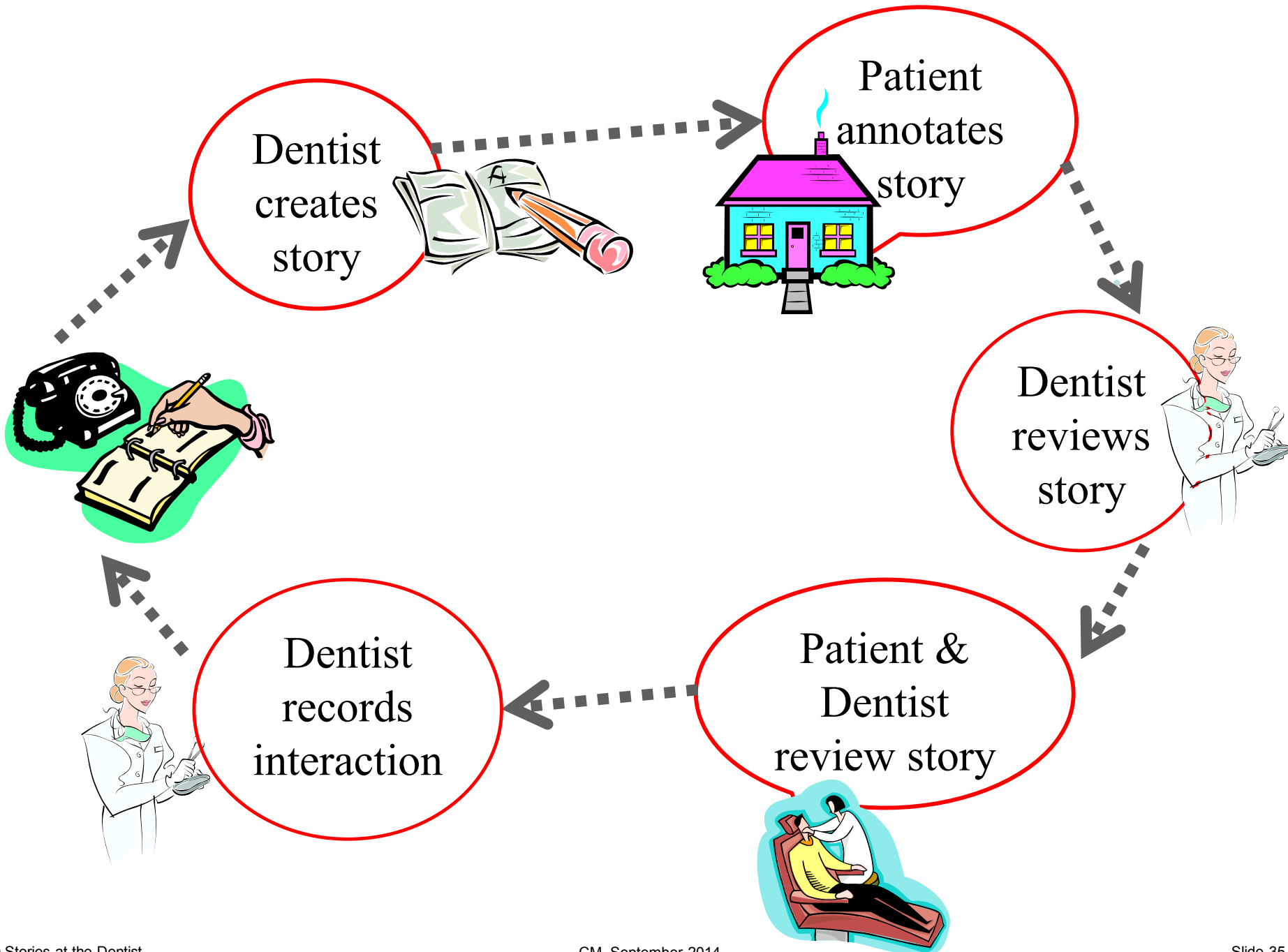
Patient & Dentist review story

Dentist records interaction

Hierarchy of Dental Procedures

- Sitting in Dental Chair: Upright
- Supine
- Toothbrushing in the Dental Surgery
- Dental Examination: Mirror
- Probe
- 3-in-1 Syringe
- Cotton Woll Rolls in Mouth
- Fluoride Varnish
- Polish with Slow Speed Handpiece
- Scale: Hand Instruments
- Ultrasonic
- Fissure Sealant Restoration
- Radiographs: Intraoral
- Extraoral

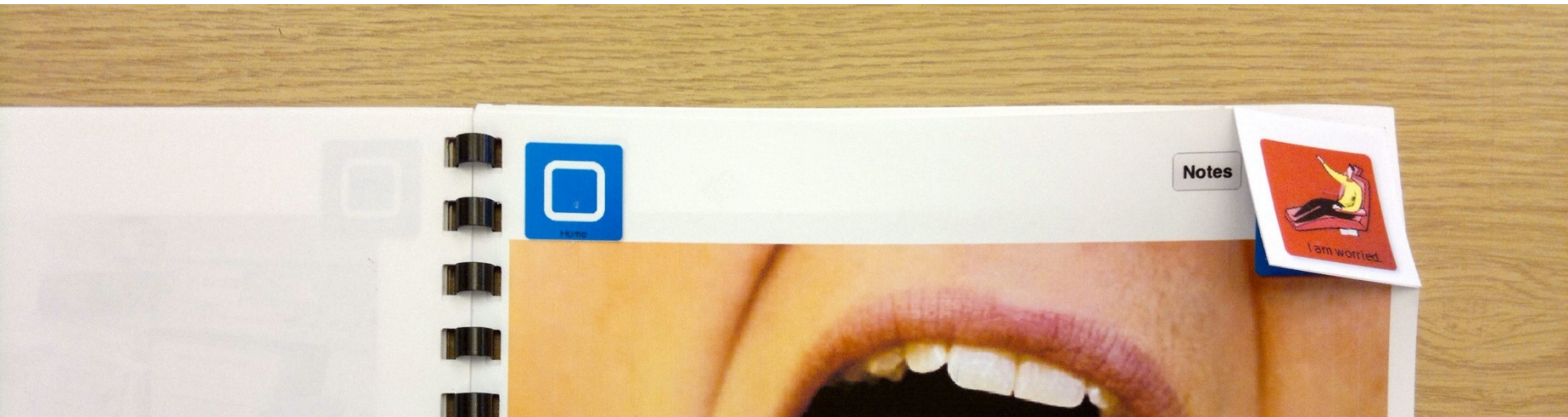
- Simple Conservational Treatment:
 - No Prep Required
 - Prep with Slow Speed HP
 - Prep with High Speed HP
- Local Anaesthetic:
 - Topical Anaesthetic
 - Infiltration Anaesthetic
 - Block Anaesthetic
- Rubber Dam
- Mouth Props
- Impressions
- Simple Extraction
- Relative Analgesia
- Intravenous Sedation



Evaluation – Pilot Study

Formative Evaluation

- 3 patient/dentist dyads
- Dentist is member of research team
- Feedback fed back into app appearance







[redacted] does not like the word
'Surgery' - he once had a bad
experience while undergoing hospital
surgery so does not like relating
anything to the word 'surgery'.

would like to use the word
dentist instead. →

Notes



I am not worried



Previous



Next

I will go to the desk so that the dentist will know I have arrived.

Summative Evaluation

- 8 Patient/Dentist dyads
- Dentists not part of development team
- Evaluation of interaction between dentist and patient using video and conversation analysis techniques

Summative Evaluation

- Video Interaction Guidance
 - Micro-moments
 - Reviewed with dentists
- Verona Coding
 - Video analysis
 - Communication opening up or closing down

Outcomes

- Proof of concept
 - Potential to embed good practice
 - Potential for improved communication channel
 - Increases participation of actors
 - Potential for richer ‘non-medical’ information
- Limitations
 - Horizontal prototype
 - Story authoring – PhD (Aurora Constantin)
 - Focus of images

Next steps...

- Further development of robust fully functional app
- Development of protocol for a randomised control trial

Acknowledgements

ALL OUR PARTICIPANTS and their families.
The Research Team (and Alice Wright, Dorothy Currie)



Rolf Black



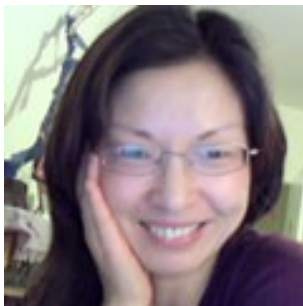
Dr Lesley Scott



Daniel Herron



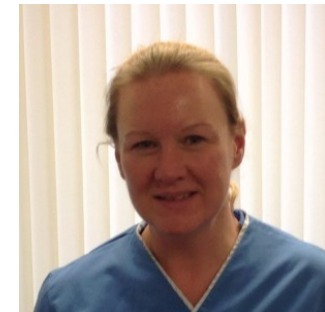
Dr Rachel Menzies



Dr Yuefang Zhou



Dr Sandra Quinn



Dr Gillian Elliot



Questions?

