

Educational Software Design for Mobile Technologies

Research and Development
of a literacy app

Michelle Somerton, PhD.

**Author iTunes app Billy Possum's Interactive
Comprehension**



**NAZARBAYEV
UNIVERSITY
Graduate School
of Education**

Apps and mobile technologies are becoming a part of many children's lives at home and in school.

Therefore, it is important to choose apps that will support the development of learning.

As part of my research, I discovered that many apps lacked specific design elements appropriate for them to be classed as 'educational.'

I found some frameworks and recommendations that I want to show you. In addition, some of the recommendations from my own research.

Today I want to cover some of these key considerations.



The First Framework Examined.

- Tutor For drill or practice
- Explore Students assess information they access and make decisions regarding their use.
- Tool Functions such as word processing
- Communicate The exchange of information such as email/twitter
- Collaboration Reflecting the theory that knowledge is socially constructed.

The Second Framework Examined.

- Feedback, scaffolding, practice tasks, clear instructions
- Collaborative interaction patterns
- Highly digitized speech and graphic images
- Interactive tasks requiring an active response
- Consistent intervals of time for each learning task
- Encouragement, reinforcement, and modelling
- Age appropriateness of content and how it is presented.

- Draper Rodriguez, C., & Cumming, T. (2012). Kyle Tomson, iPad Builder Applications: Language Builder, Question Builder, Sentence Builder and Story Builder, \$7.99 to \$9.99, (iPod and iPad Applications). *J Autism Dev Disord*, 42(12), 2767-2769. doi: 10.1007/s10803-012-1539-3

In 2013 I came across the research work of Harry Walker who was finalising his doctoral dissertation with the creation of a rubric for assessing educational apps for mobile technologies.

The following slide shows the rubric that was developed as part of his research involving work with Subject Matter Experts in teaching and IT.

I will briefly outline each criteria.

Evaluation Rubric for Mobile Applications (APPS)

Domain	4	3	2	1
Curriculum Connection	Targeted skill or concept is directly taught through the app	Skill(s) reinforced are related to the targeted skill or concept	Skill(s) reinforced are prerequisite or foundation skills for the targeted skill or concept	Skill(s) are not connected to the targeted skill or concept
Authenticity	Targeted skills are practiced in an authentic format/problem-based learning environment	Some aspects of the app are presented an authentic learning environment	Skills are practiced in a contrived game/simulation format	Skills are practiced in a rote or isolated fashion (e.g., flashcards)
Feedback	Feedback is specific resulting in improved performance; Data is available electronically to student and/or teacher	Feedback is specific and results in improved student performance (may include tutorial aids)	Feedback is limited to correctness of student responses & may allow for student to try again	No feedback is provided to the student
Differentiation	App offers complete flexibility to alter settings to meet student needs	App offers more than one degree of flexibility to adjust settings to meet student needs	App offers limited flexibility (e.g., few levels such as easy, medium, hard)	App offers no flexibility (settings cannot be altered)
User Friendliness	Students can launch and navigate within the app independently	Students need to have the teacher review how to use the app	Students need to have the teacher review how to use the app on more than one occasion	Students need constant teacher supervision in order to use the app
Motivation	Students are highly motivated to use the app and select it as their first choice from a selection of related apps	Students will use the app as directed by the teacher	Students view the app as "more schoolwork" and may be off-task when directed by the teacher to use the app	Students avoid the use of the app or complain when the app is assigned by the teacher
Student Performance	Students show outstanding improvements in performance as a result of using the app	Students show satisfactory improvements in performance as a result of using the app	Students show minimal improvements in performance as a result of using the app	Students show no evidence of improved performance as a result of using the app

Critical Considerations

These considerations are from the research of Dr. Harry Walker – Johns Hopkins University (with permission).

- **Motivation and Engagement** – *students should be highly motivated to use the app.*
- **Curriculum Connection** – *a ‘genuine’ curriculum connection where the knowledge or targeted skill is taught through the app.*
- **Authenticity** – *the knowledge or targeted skills are practiced in an authentic format.*

- **Differentiation** – *flexibility to alter settings to meet students needs.*
- **User Friendliness** – *students can launch and navigate independently.*
- **Student Performance** – *students show improved performance as a result of using the app.*
- **Feedback** – *feedback within in the app is immediate and there is also a reporting function available to parent/teacher.*

Additional Considerations

These additional considerations are taken from my research.

I have provided some examples from my literacy app in the following slides.

- **Localisation**
- **Scaffolding**
- **Create**
- **Personalise**

Localisation

The app is culturally appropriate in language and graphics

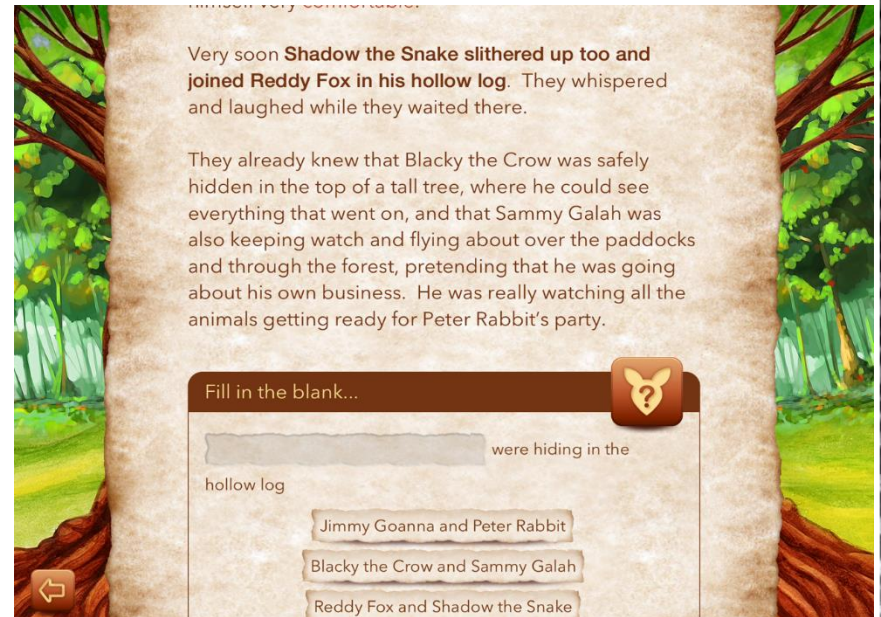
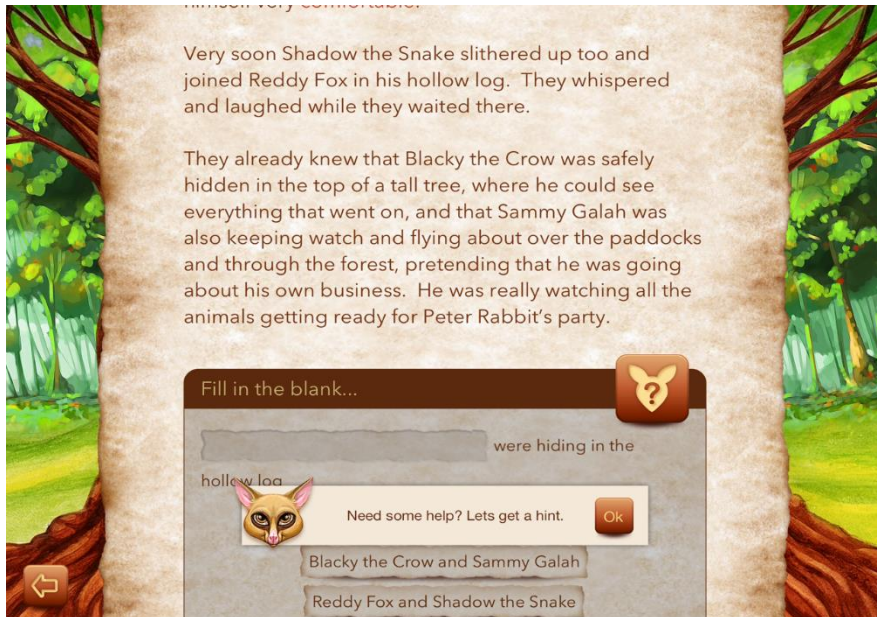


Scaffolding

The app supports the student achieve the correct answer in the same way (pedagogy) as a teacher.

When the student gets and incorrect answer, the software advises the student they need a clue. It then highlights the parts of text that support the correct response.

If the second response is incorrect, the app automatically shows the student the correct answer.



Creating and Personalising

The student can create and personalise their representations of the story without losing focus on the reading task.



Summary

Clear guidelines and frameworks based on evidence based practice need continual research and development.

Collaboration between educators, software designers, and researchers to create educationally appropriate software to fit 21st Century teaching and learning.

Research keeping pace with technology.

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