Avi Megiddo

EDCI 672: Case Study #3: Scott Allen –

Designing Learning Objects for Primary Learners

Our Nation and Society Project for SchoolsOnline Initiative

11/6/16
Stakeholders:

| Designers: | Scott Allen and his design team Jeff Parker, Penny Johnson, Tracey Ward |
| Client: | SchoolsOnline national initiative |
| SME: | Subject matter experts who are part of the Our Nation and Society Project steering committee, and SMEs who are part of the project’s Review Panel |
| Audience: | Teachers and individual student learners using SchoolsOnline resources, future Australian users |
| Other stakeholders: | Project Manager Gordon Anderson, The writing team (3 people), The development team from ScarletMedia, the rest of the |

Stakeholder Concerns:

*Designers:* They want to do their best to please the stakeholders by choosing the most engaging briefs and designing them to meet the project requirements, within the technical and time limitations (3 months).

*Client:* The SchoolsOnline steering committee would like to develop online resources that are constructivist, realistic, addressing values, sustainability and well-being, catering to ages K-12.

*SMEs:* The review panel SMEs need to ensure the learning object design specs are pedagogically sound, age-appropriate and at the right level of difficulty. Once they receive the specs from the designers, they will critique and return them to the design team who will modify accordingly. The steering committee SMEs will ensure all the above, with an emphasis on ensuring the design specs meet the project and pedagogical objectives. They, along with the rest of the steering committee, will give final signoff before the programming begins.

*Audience:* The teachers who will use this content would like it to be self-explanatory and a hit with their students. Other independent learners want these learning objects to be fun and engaging.

*Other stakeholders:* Gordon Anderson will be involved in all phases of the project. He needs to be manage timelines, communicate updates, resolve conflicts, motivate everyone, and be another pair of eyes on every stage of the writing, designing, reviewing and development. The writing team needs to interface well with the designers by fleshing out their design specs with creative and technical writing. The development team is concerned with bringing to life the vision expressed in each learning object spec. They need to create engaging characters, scenes, sounds, etc. for each learner age group. They will be making Flash objects meeting other technical requirements, within the file size limits.
ID Challenges

A lot of the analysis has been done for them (they know the audience, they know the learning constraints, and the delivery and timeline specs are outside of their control. The reason they have been hired is to design learning objects for the topics in the project brief which are based on constructivist pedagogy. They are not starting from scratch however; they have been asked to evaluate learning object design briefs and select the best among them for the project. Evaluation: They need to evaluate the design briefs written by the writing team and choose which to develop further into learning objects. They must evaluate them based on engagement, adaptability to other age groups, constructivist pedagogical potential. Design: Scott Allen and his team need to design learning objects which adhere to the principles requested by the steering committee in the Our Nation and Society Project Brief (p. 231). They must, among other needs, be engaging, cater to multiple age groups, have constructivist pedagogical merit, and meet the project objectives and scope (p. 24). There are 3 phases of design. First, they need to modify and flesh out the 2-3 page initial briefs provided by the writers. When the writers pass those back with revisions, Scott and his team must complete full design specs to be reviewed and developed. Those will be reviewed by SMEs and school education experts, and sent back to the designers for one final round of revisions. The development phase of the project would not be completed Scott’s team, as it involves review, programming and testing.

Case-specific Constraints (in order of importance)

1. 3 months to complete the project – most important as it affects how and to what depth everything is done
2. Choose 15 of 32 briefs from which to create learning objects. – Requested by steering committee
3. Constructivist pedagogical approach – learn to learn, collaboration/negotiation among learners
4. Interface in a certain order with the writing team first, then the review panel and finally the steering committee. It is not a whole-team approach (see Appendix A for a visual of the workflow among the project teams, based on the organizational structure figure from p. 16). Dictates who to work with when
5. Create content for online, downloadable Flash objects, not web-based or cloud-based deliverables, so they have file size limits, online peer interaction may be impossible; problem for individual learners.
6. Each age group’s learning objects should have a healthy mix of topics from the content focus (history, geography, indigenous peoples, environmental studies, values and cultural studies, and civic life of regional and rural people – affects brief choice and requires adaptation of design specs to other ages
7. Cater to K-12 individuals and groups in Australia & adhere to national standards- limits design freedom

1 Unless otherwise noted, all references are from the Scott Allen case study, Bennett et. al., 2014
Priorities in order of importance

1) *The top 15* - The highest priority is narrowing down the 32 briefs to the 15 promising ones which will comprise the Our Nation and Society Project. This is first because it is currently a bottleneck given the workflow that SchoolsOnline proposed (a back-and-forth between the writers followed by a back-and-forth with the review panel). Nothing can happen before these top 15 are chosen. The design team needs to figure out an efficient and diplomatic way to accomplish this evaluation without using too much of the most important constraint, 3-month time limit.

2) *Timeline* - Sequentially this priority is first, but it is not the most important/biggest priority/challenge for the designers. The design team should create a timeline or Gantt chart for how they will accomplish everything in 3 months. They need to set rough deadlines for:

- Selecting their top 15 briefs
- Having the workshop with the writers, developers and project manager Gordon
- Getting the revisions and content back from the writers
- Completing the full design specs and sending to the reviewers
- Completing revisions and sending to steering committee

**Personal Experience**: Last semester I took 577, Evaluating Training Programs. That was my first experience with Gantt charts. Planning has always been a weakness of mine. I tend to be quite a spontaneous person. When it comes to planning my classes, I do that well. And now there is something else I think I do well, thanks to that class: planning and designing evaluations. Designing evaluations forced me to think about what might happen in a project or course, and what needs to happen weeks and months in advance to facilitate that. My final project involved creating Gantt charts; I find it to be a great thinking tool as it forces one to get into the details of sequence, task assignment, I have expressed similar views about Google Forms in one of our discussions. Scott, perhaps with Gordon, must zoom in on their 3-month limit, gather estimates from the writers and review panel (discussed later) and make a Gantt chart. I see these tools not just as ways to communicate thoughts, but also as tools to generate and organize those thoughts.
3) Constructivism for individual learners - The designers need to brainstorm general approaches to making the curriculum constructivist. The design team has quickly realized that the Mission to Mars brief seems behaviorist and that some of their first design thoughts were behaviorist as well. Jeff says something very important: “Focusing on right and wrong answers and limiting the learners’ choices isn’t consistent with the constructivist approach for which we’re aiming” (p. 21).

From the Reading: Keengwe et. al 2013 go in depth about constructivist pedagogy in elearning. With an emphasis on “thoughtful engagement” and with the goal of developing problem solving and critical thinking skills, students “should be able to independently explore an information space to obtain content, higher level concepts and learn how to learn” (Keengwe et. al, 2013, p. 889). This seems achievable; I can imagine both independent and multi-player games that facilitate these goals.

However, citing Sharp (2006), Keengwe et. al argue that, to be constructivist, the software needs to be able to encourage collaboration and cooperation, decision making, and compromise. The software needs to fuel mediation among learners, or between individual learners and virtual characters to allow for collaborative learning. As mentioned in the constraints section, the learning objects are online, but not web-based. This is an assumption, as it is not explicitly stated in the case study, but inferred from file size limits and the choice of Flash. They are probably downloadable files, with mostly client-side scripting. This is not a problem for small group audiences. However, this means we cannot design learning objects that involve individual students talking or typing to one another, synchronously or asynchronously. The design team will need to figure out ways to create interaction for individual learners which involves collaboration, cooperation and mediation with virtual characters.

4) Adaptations - Suppose there are 5 age groups (K-2, 3-5, 6-8, 9-10, 11-12). The designers need to decide how many age groups each learning object will suit. “SchoolsOnline is also quite keen for us to think about how a learning object can be adapted for different age groups” (p.21). Tracey suggests to “use the same structure and adapt the content or increase the complexity” (p.21). Prioritizing adaptability will make the 15 modules more robust, catering to multiple age groups, covering more content for each.
5) **Workshop** - This is their chance to have everyone together before they start using the workflow recommended by the steering committee, which would involve back and forth with writers and then a back and forth with the review panel.

**Solutions**

2) **Timeline** - To complete the timeline, Scott should ask Gordon to get an estimate from the writing team for how long it will take them to revise and create content for the selected briefs, as well as the Review Panel’s estimate of how long it will take them to review and give feedback on the 15 design specifications. This information will affect how days/weeks the writers have for their initial evaluation and 3 design phases. I would allot 3 days for to complete the evaluation form for all 32 modules. 10 a day seems reasonable. The design team needs to maximize design spec time.

3) **How to make learning objects constructivist for individual learners** - Based on the pedagogical goals, the designers need to create learning objects that “often involve student collaboration featuring social negotiation and cooperative learning structures”. This is easier to design for small groups of students who are in the same classroom. The software can prompt them for their opinions based on usernames, and then ask them to come to consensus. The software and teacher would ensure each student chimes in. Catering to individual learners is harder; the design team could consider virtual characters who act as supportive/antagonistic peers, and as mentors/guides/moderators of decision making. I imagine they would need to draw up some templates for statements of each kind and get voice talents to record them for the virtual characters to say. Statements such as “No, I don’t want to do that”; “That sounds like a good idea, but what do you think?”; “How can we compromise?”, “Let’s do what I suggested”, etc. Another idea would be to require older students to type desired actions/decisions using language that promotes collaboration/negotiation/etc., phrases for asking for opinion, polite disagreement and asking for advice (see **Appendix C**). The games would have negative consequences if they fail to use these.

---

2 Solution to Priority 1 is in the Final Recommendations section
4) Adaptability solutions - This problem will initially be addressed by each designer individually when they fill out the form. When they reconvene, instead of arguing about difficulty/appropriateness of content for an individual age group, the designers should discuss changes to be made to adapt content for other age groups to make it age-appropriate. Further, for scalability and efficiency of software development, it will be very useful for ScarletMedia to be able to make new Flash lessons by repurposing characters, backgrounds, voices, sounds, etc. This helps reduce file sizes as well. It is time consuming for every team to design and develop 15 custom learning objects without reusing any ideas, characters, etc. Moreover, there would be less content and fewer pedagogical goals addressed if each age group had only 3 learning objects tailored to them. SchoolsOnline encouraged them to simplify/extend modules in complexity for younger/older learners.

**Con:** There is a risk of forcing the adaptation of content. Learning objects extended/simplified for a certain age group may not be as engaging as content custom-made for that age group. Characters, voices, font sizes etc. created for kindergartners are unlikely to engage high school seniors and vice versa.

**Contingency Plan:** The safe route to avoid this is a happy medium between no adaptations (repurposing of content) and maximum adaptations (see Figure 1):

<table>
<thead>
<tr>
<th>Figure 1</th>
<th>Learning Object Adaptations and Repurposing</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age group</strong></td>
<td>no repurpose</td>
</tr>
<tr>
<td>K-2</td>
<td>1,2,3</td>
</tr>
<tr>
<td>3-5</td>
<td>4,5,6</td>
</tr>
<tr>
<td>6-8</td>
<td>7,8,9</td>
</tr>
<tr>
<td>9-10</td>
<td>10,11,12</td>
</tr>
<tr>
<td>11-12</td>
<td>13,14,15</td>
</tr>
</tbody>
</table>

In the target repurposing column, learning objects 5, 7, and 10 would have adaptations to accommodate three different age groups. **Most of the modules would be usable by two age groups,** and modules 1 and 2 would be just for K-2, and 14 and 15 just for high school upper grades.
5) Everyone seems to be for the workshop. The designers want to maximize this opportunity to “clarify expectations” (p.17) and resolve miscommunications. Scheduling the workshop after the designers complete their initial learning object selection will make the workshop more productive. I recommend asking project manager Gordon to lead the workshop. The designers can request that the agenda of the workshop include:

- ScarletMedia developers’ input on what is possible in terms online synchronous/asynchronous interaction among learners. The workflow dictated by the steering committee does not provide any other opportunity for the designers to work with the developers.
- ScarletMedia’s estimates for total minutes of audio that the project can contain. This will affect the number and duration of utterances by virtual characters.
- If necessary, invite the SMEs and school education experts from the review panel to help make the choice of the final 15 modules AND which ones should be adapted/repurposed for other age groups. The latter has major implications for the success of the project. Choosing the right learning objects to feature (signature learning objects) can make the project popular or mediocre.

**Final Recommendation**

Recall the highest priority: choosing the 15 learning objects to create from the 32 briefs, and deciding which to adapt for multiple ages groups. To save time, and ensure everyone’s voice is heard with less bias, I recommend asynchronous, anonymous ranking of all 32 briefs. They are 2-3 pages each, so it should be too time-consuming for each designer to read all of them, and complete a form for each. The form would ask responders to rank each brief based on engagement, alignment with pedagogical goals, and adaptability for other age groups. The form could include some open-ended questions, and the responses used as discussion starting points. This ranking/evaluating could be done with Google Forms, with each designer completing the form by an agreed upon deadline. This will force everyone to read every brief and consider it without judging too quickly. Please click [here](#) or see [Appendix B](#) for a sample of such a form. **Personal experience:** This program is my first experience with online learning. I am an introvert, and I have always found it hard to express my opinions in live classes and meetings. I think the
level of discussion in asynchronous environments is higher and more equitable/diplomatic which is why I recommend the using a Google Form prior to discussing the briefs.

**Cons:** The evaluation summary might not reveal much. It could turn out that each designer had different favorites and that wouldn’t allow much narrowing down. It would then take a lot of time to debate and argue and could lead to some drama among the designers. Similarly, they could disagree about which modules are adaptable, and how to adapt them. We saw glimpses of this in their brainstorming about the Mission to Mars brief.

**Contingency Plan:** One contingency plan is to have the writers, developers, Gordon, and the subject matter experts also fill out the evaluation form for the popular subset of briefs. We don’t want to take too much of their time, but we need their input. The SMEs more familiar with Australian curriculum standards, while the design team is not. A question could be added to the SME’s form, asking how well each brief addresses national curriculum standards. While the writing team members don’t have backgrounds in education (p. 16), they may have children to bounce ideas off of. The developers surely would feel more involved if their opinions were solicited, and may be empowered to take more ownership of development if they had a say in the learning object selection. After all, this is a fun project.

Suppose the design team narrowed it down to 20 from the original 32. they could have the writing team, SMEs and school education experts help them eliminate the last 5. They would read the briefs and fill out the forms, and depending on their availability and willingness to help, give their input on adaptability to other grade levels during the workshop. I think this could help with whole-team rapport. given there are members of the writing team whose briefs may not have been chosen, but this makes that less makes them less likely. Scott, Jeff, Penny and Tracey have all worked together before, and I believe that once they have their target 15, they will have healthy discussions about how to revise the briefs and flesh out content. I’m not too concerned about personality issues or experience, as Scott assembled this team himself and is happy with it. To avoid some chaos, they could assign each person 3-4 briefs to be the lead on, by taking turns picking the ones they are most passionate about.
References


Appendix A
Project Workflow through Design Team

The red arrows represent the workflow of SchoolsOnline’s Our Nation and Society Project as it relates to the design team. Gordon’s bubble is the green one, because he is the overall project manager. He is involved in all phases; everything goes through him.
Appendix B
Sample Learning Objective Evaluation Form (click to see complete form)
Appendix C
Phrases for promoting cooperation/negotiation

Asking for opinion / Checking for agreement:
_____, don’t you think so?
_____, don’t you think that’s true?
_____, right?
_____, huh?
_____, you know?
_____, [question tag: isn’t it / aren’t you / can’t you / won’t we / didn’t she / etc.]?

Disagreeing Politely:
Well, maybe....
I know what you mean, {but / so}.
That’s true, but on the other hand, ___.
I’m not sure about that....I mean, ___.
Yes, but ___.
Hmmm, I don’t know...___

Giving / Considering Advice:
Why don’t {we / you} ____?
I {suggest / recommend} ___ing ___.
My advice is to ___ / Just ___
How about ___ing ___?
If I were you, I would ___.
I think {we / you} should ___ / You’d better ___
{You / We} could ___ / You might want to ___.