Scrummy Agile Role-Play

RCB First Friday’s SOTL presentation
Kurt Schmitz
February 3, 2017

Role Play as Instructional method

- Most texts teach “about” project management, not “how to”.
- Agile PM can be difficult as it mixes two seemingly contradictory ideas: autonomy/flexibility and structured rituals.
- Role-Play is a participatory learning model demonstrated to improve learning outcomes (Vold et al. 2010).
- Role-Play been popular in clinical settings (healthcare: Nestle et al. 2011) and is gaining traction in STEM disciplines (Chen et al. 2011; Streicher et al. 2005).
- Many instructional simulations are computer mediated, whereas Agile PM philosophically emphasizes direct face-to-face interaction.
Agenda

• Role-Play description
  ◆ Preparation including Agile & Scrum background
  ◆ “Scrummy” Process description
  ◆ Student Roles
  ◆ Three or four iterations ~25 minutes each

• Study & results
  ◆ Pre & post questionnaire
  ◆ 3 cohorts so far (2 undergrad classes, 1 graduate class)
  ◆ Results

Role Play

• Background information (including some concepts covered in prior lectures).
• Lecture overview of the Agile Scrum process
• Rules for the “Scrummy Agile” role-play
• Role-Play in 3 iterations
Agile Manifesto

We are uncovering better ways of developing software by doing it and helping others do it. Through this work we have come to value:

- **Individuals and interactions** over processes and tools
- **Working software** over comprehensive documentation
- **Customer collaboration** over contract negotiation
- **Responding to change** over following a plan

That is, while there is value in the items on the right, we value the items on the left more.

Background Information: Agile SDLC
Role Play: Scrum Process

Role-Play: “Scrummy” Preparation

- Start up PowerPoint on your laptop computers
- Get some blank paper (notes and work in process) & pen/pencil
- This is a “role playing game”. Pretend you are the person assigned and act (fictitiously if needed) so that the game plays out smoothly.
Role-Play: “Scrummy” Project Charter

• **Vision**: GSU students can be the healthiest student population in the world.
• **Mission**: Teach all students how to measure blood pressure and know what a healthy range is and why this matters.
• **Benefits**: By equipping students to measure each other’s blood pressure and understand what this means, students will pursue a more healthy lifestyle, live 10% longer, make 30% more money and donate 10% more money to the GSU alumni association.

Role-Play: “Scrummy” Objectives

1. Create a PowerPoint presentation that can be delivered in 3-5 minutes.
2. Primary objective: PowerPoint “product” will be used by students to learn how to measure blood pressure.
3. Secondary objective: PowerPoint “product” will help students understand blood pressure and their health.
4. Deliver the “product” using the Agile process “Scrummy”.
Role-Play: “Scrummy” Process

- You will have a series of 30 minute “sprints” to deliver your solution. Each sprint will unfold in a predictable/repeatable set of timed increments:
  - **Sprint Planning**: 5 minutes to identify what will be accomplished by who in the current sprint. In general individuals should select their own tasks (there is no dictator running the project for Agile projects).
  - **Execution**: 10 minutes to do work (this may be individual or in sub-teams if multiple people are collaborating).
  - **Product Build**: 5 minutes to consolidate your slides.
  - **Delivery & Feedback**: 5 minutes to present your slides and get feedback.
  - **Retrospective**: 5 minutes to identify 1 thing you need to improve in your process for the next sprint.

Role-Play: “Scrummy” Roles

- Work with pre-assigned teams
- 3 Roles
  - Product Owner
  - Scrum Master
  - Team member (three of four – the rest of the team)
Role-Play: Scrum Master

• Your job is to guide your team to accomplish the task using elements of our Scrumy process.
• Enforce the timed increments.
• Make sure team members are volunteering to take on tasks they choose themselves.
• Try to encourage the overall activity to be subdivided into task units that can be worked on individually or in small subteams when possible.
• Have the product owner help choose which activities should be completed first.
• You cannot tell team members how to do their tasks – it is up to them to figure it out.
• Make sure there is something to present at the end of the time sprint. **Partial work is fine, but you must have something to show the stakeholders/users!**
• Expectations for sprint 1: Document tools needed to measure blood pressure. If you have time identify three or four things that need to be covered in the instructions.
• Expectations for the second and subsequent sprints: Gradually through a series of sprints you will build a product to meet the project objectives & requirements.

Role-Play: Team Member

Your job is to contribute ideas and work units that can be assembled into the finished product. Don’t let anyone assign you a task, but you should volunteer for at least one task each sprint. Pick the tasks you want to work on that you believe will advance the project the most in the current sprint.

If you cannot complete a task you signed up for in the current sprint, provide partial work. Remember, each sprint must have something to present to your stakeholders/users at the end.

If you don’t have specific expertise in the tasks, consider pairing up with another team member work jointly and help them work faster. You may also use your judgement - make something up that you think may be correct. Document what you think is correct then allow the feedback session to identify problems and guide correction.

• Expectations for sprint 1: Document tools needed to measure blood pressure. If you have time identify three or four things that need to be covered in the instructions.
• Expectations for the second and subsequent sprints: Gradually through a series of sprints you will build a product to meet the project objectives & requirements.

You may use the internet (google etc.) to obtain information you do not know personally. Remember you have very little time to create your deliverable, so don’t spend all your time searching. **YOU MUST ADD SOMETHING TO THE PRODUCT EACH SPRINT!**
Role-Play: Product Owner

Your role includes prioritizing tasks. When the team is struggling to decide where to start or what to work on first, you need to provide guidance. Make a decision, pick something and say the team should start with the item you identify as the most important. Even if you are unsure, you must provide clear decisions for the team (don’t worry about being wrong, do worry about taking too long to make a decision). Be careful, your role is to prioritize, but do not dictate. Don’t force the team to do it your way. Allow for the possibility that doing one less important task first may indeed help create the more important task faster.

- Expectations for sprint 1: Document tools needed to measure blood pressure. If you have time identify three or four things that need to be covered in the instructions.
- Expectations for the second and subsequent sprints: Gradually through a series of sprints you will build a product to meet the project objectives & requirements.

Role-Play: Sprint 1 instructions

Special instructions provided only to the Product Owner:
You have some information that the rest of the team does not have. The quality of your team’s product will be evaluated on how effectively the product incorporates these ideas.

- The presentation must identify the tools needed (e.g., stethoscope, watch, etc.).
- The presentation should identify the process as a series of steps (step 1: have the patient sit down, step 2: remove clothes from students left arm, etc....)
- Your team is assigned students in music history department as your customer – they know NOTHING about healthcare. It is your job as the product owner to represent the needs of these students so the final product will work for them.
- You will have new requirements at the end of each sprint. Only you have these requirements and you must communicate them to the team so they deliver the correct product in the end. Come visit the instructor while the project team is in stage C (consolidation) of each sprint.
Role-Play: Sprint 2

*Special instructions provided only to the Product Owner:*
Here are some requirement clarifications that you did not previously tell the team. You should do so now.

- The Powerpoint “product” should be 3 slides in length (no more, no less). (Put contributor names in the notes portion of the powerpoint slide, or in small print at the end – the team is creating a product not just a classroom assignment.)
- The presentation must be very specific about the steps to take. Instructions like “use stethoscope” are not good enough. How do you hold it? How firm should it be pressed into the patient’s flesh? Where on the patient’s body do you put it? When you are counting, beware that your music student will want to know if this is \( \frac{3}{4} \) time, or \( \frac{4}{4} \) time, or something else that has no meaning for measuring blood pressure. Your instructions must make sense in the language and background that these customers already have. Your music student customers knows NOTHING about this new process and it is your job to make sure the product works for them.
Role-Play: Sprint 3

*Special instructions provided only to the Product Owner:*
Here are some requirement clarifications that you did not previously tell the team. You should do so now.
- The PowerPoint product may actually be 4 slides long:
  - 1 slide to document materials needed
  - 1 slide to document the health implications of blood pressure
  - 2 slides to document in very precise detail the steps needed to measure someone’s blood pressure using the tools identified.

Role-Play: Sprint 4 (optional)

*Special instructions provided only to the Product Owner:*
Here are some requirements clarifications that you did not previously tell the team. You should do so now.
- Add 1 slide to document the process for measuring patient body temperature.
- Rectal thermometers are not appropriate for this assignment. If your team suggests rectal thermometers, be firm that it is not an option.
Role-Play: Classroom Post-Mortem

- Were you successful at executing the process?
- Were you able to create usable product?
- What was your biggest Challenge?
- What did you like about the process?

Role-Play: Take Away Lessons

- Agile – almost uniformly involves short time-boxed sprints
- Need to produce a piece of the product each sprint
- It’s OK to not deliver the whole product in the first (or second, or third) sprint
- The product is the basis for getting feedback
- Feedback drives correcting & improving the product
- Know that your users are also learning from the partial releases
  - By seeing and working with the product they reassess what they thought they wanted
  - Users learn where miscommunication has taken place
Study

• Data collection
• Analysis and findings

Research Question: Is role-play more effective than lecture accomplish Blooms Level 1, 2, 3 and 4 learning of Agile Project Management.

Study: Data Collection

• 3 Cohorts
  1) Undergrad CIS3001 (Health Informatics Cohort)
  2) Graduate CIS8000 (MS-IS cohort)
  3) Undergrad CIS3001 (Health Informatics Cohort)

• Post test self-assessment (all cohorts)
• Pre test self-assessment (cohorts 2 and 3)
• Final Exam test (cohort)
**Study: cohort 1 (N=29)**

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<th>Post Mean</th>
<th>Post St.Dev</th>
<th>Post Variance</th>
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<tr>
<td>Q1 Do you know what a Sprint is?</td>
<td>roleplay</td>
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<td>Q2 Do you know what a Planning Meeting is?</td>
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<td>3.59</td>
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<td>Q4 Do you know what a Scrum Master is?</td>
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<td>Q5 Do you know what time-boxing is?</td>
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<td>Q6 Do you know what a project retrospective is?</td>
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<td>Q7 Do you know the difference between an end of sprint project review and an end of sprint project retrospective?</td>
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<td>Q8 Do you know the difference between Planning Poker and a sprint Planning Meeting?</td>
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<td>Q9 Do you know what a Daily Standup meeting is?</td>
<td>lecture</td>
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<td>Q10 Do you know what an Epic/Theme is?</td>
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<td>3.52</td>
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<td>Q11 Do you know what a Burn-down Chart is?</td>
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<td>Q12 Do you know what velocity is?</td>
<td>lecture</td>
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<td>0.660</td>
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**Study: Cohort 2 (pre N=52, post N=59)**

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<th>Post Sim Mean</th>
<th>H: post - pre &gt; 0 t-score (pvalue)</th>
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<td>5.607 (&lt;0.0000)</td>
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<td>3.97</td>
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<td>Q4 Do you know what a Scrum Master is?</td>
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<td>3.83</td>
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<td>3.90</td>
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<td>3.78</td>
<td>10.862 (&lt;0.0000)</td>
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<td>3.56</td>
<td>7.518 (&lt;0.0000)</td>
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<td>3.93</td>
<td>3.577 (0.0003)</td>
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<td>3.49</td>
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<td>lecture</td>
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<td>3.50</td>
<td>5.959 (&lt;0.0000)</td>
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### Study: Cohort 3 (pre N=42, post N=39)

#### Statement of Knowledge

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<th>H: post - pre &gt; 0</th>
<th>t-score</th>
<th>pvalue</th>
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<td>7.232 (&lt;0.0000)</td>
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<td>3.62</td>
<td>3.455 (0.0004)</td>
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<td>3.72</td>
<td>3.522 (0.0004)</td>
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<td>6.913 (&lt;0.0000)</td>
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#### Mean Exam Score for specific questions (N=44)

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<th>X2</th>
<th>X3</th>
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<td>Agile values &amp; philosophy (test question not in pre/post questionnaire)</td>
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Exam Questions: X1 and X2

X1: Identify all the formal roles within the typical Agile project (select all that apply)
   a) Burn-Down Reporter
   b) Scrum Master ✔
   c) Senior Supplier
   d) Development Team Member ✔
   e) Product Owner ✔
   f) Time Keeper

X2: Select the items below that are valued in the Agile systems development philosophy (select all that apply)
   a) Working Software ✔
   b) Comprehensive Documentation
   c) User Collaboration ✔
   d) Following a Plan

Exam Questions X3 and X4

X3: Which of the following is not an accurate characterization for Agile project requirements
   a) A user story includes a brief description of how to test the requirement to verify it has been achieved/completed
   b) A user story may encompass multiple use cases
   c) A user story includes benefits achieved by the requirement so that different requirements can be prioritized relative to each other
   d) A use case is a collection of project epics ✔

X4: Which of the following are common practices for Agile projects? (select all that apply)
   a) Risk Poker
   b) Time-boxing ✔
   c) Sprint Retrospectives ✔
   d) Daily Standup meetings ✔
   e) Approved design specifications
Exam Question X5

X5: In Agile projects the ____________ help forecast when a project will end.
   a) CMM-I
   b) BAC index
   c) Cost Performance index
   d) velocity and burn-down charts ✓
   e) Pareto charts

I need some help

• Need guidance on balancing description of the role play and its mechanics vs. study and findings?
• Do self-report confidence levels have value for SOTL?
• Are these findings sufficient to submit for publication... if not, what is needed?