☐ **ICICLE Design for Learning SIG**

This document: Agendas and Notes

December 20th, 2022 - https://mit.zoom.us/j/99960999830

In attendance: Aaron Kessler, Michael Jay, Lauren Totino, Rob Nyland, Katherine McEldoon, Kristin Torrence, Shira Fruchtman, Amy Parent , Henry Ryng, Janet Kolodner, Avron Barr, Bror Saxberg, Arun, Dan Belensky, Jodi Lis, Kevin Owens, Michael Pilgreen, Omotayo Olorunfemi, Priscilla Cancar, Toni Shub, Dina Kurzweil

Welcome and New member Introduction (email if you would like)

Member Updates:

1) Aaron - Considering submission to ASEE for workshop or Panel
2) Janet - design templates that follow the structure of other engineering - making this a sub-group Sign Up! - following google group idea from Bror - what are design patterns we integrate and define in a way that are useful.
3) Kristin - ELearn podcast - speak as follow to DevLearn - AR and VR?? -
4) Kristin - TD magazine - Modeling Article in Discord - evidence centered design - fall upgraded to TD at work - 6000 words article, building on some things and other models - 1st draft posted on discord - Audience is novel and just learning

Agenda:

1) Writing Cases Discussion:

New Folder to share Cases

Reviewing Amy's Case

Aaron - How do you/we tell the story of how this is communicated with decisions makers, executives, investors?

Trying to serve different people - directors "show me the slide" one slide and summarizing the one story -

Indexing and summary points are easy for those to understand - these "corporate audience, here are the learners, here is who was involved"

Complexity goes beyond did we do it!!

What are the categories we can use for

Recognizing success

Assessing effectiveness (learning, capabilities)

Working group members:

Moving documentation forward

2) The SIG in the New Year
3) ICICLE Conference Update
    a) Meet on monday and discussing nature of engagement at conference and supporting community.
    b) Possibility of thematic was walk through the conference (assessment and design others). Learners are human and not just engagement that matters and the sometimes the opposite is true :)
    c) Potential for multiple keynotes and topics and panel discussions. Opportunity for show and share sessions (design stories) or other sets for themes -
        i) This year is about taking the emergent pieces from last year conference and moving it forward.
    d) Preplanning for 2024 - about getting ahead and taking up 2023 things that can't move forward.
4) January: Presentation by Katherine Pearson Learning Design Principles Preview
    Qs: What to share, where to share?
    Let's record the session (with permission) High Level Summaries of the ideas and are motivated to engage with it, still anchored in big ideas -

FEEDBACK REQUEST: Welcome feedback on Learning Design Principle SUMMARY REPORT - they are in the folder - here, Please drop in feedback HERE

November 29, 2022 - https://mit.zoom.us/j/99960999830

In attendance: Aaron Kessler, Lauren Totino, Lisa Jones, Shira Fruchtman, Dina K, Michael Jay, Katherine McEldoon, Janet Kolodner, Kristin Torrence, Jodi Lis

Welcome and New member Introduction (email if you would like)

- Karen Rege (krege@ccp.edu)

Member Updates:

1) xAPI cohort having xAPI party - prototypes and examples - Survey building using data model and scale analytics (Amy Parent) - https://www.learningguild.com/forms/?sid=223&utm_campaign=xapi-f22-party&utm_medium=social&utm_source=linkedin
2) Dina and Rob talked about paper on LE for military learning, working on that.
3) Janet - making program partially part time program for 2 years instead of one.
4) Jim Goodell work - https://www.crowdcast.io/c/idiodc-ep209-jim-goodell?utm_source=Crowdcast&utm_medium=LinkedIn&utm_campaign=Episode209&utm_id=IDIODC
5) Rachel - ELML special track if interested - LE community might be worth connection, collection thing in various spaces - https://www.iaria.org/conferences2023/CfPeLmL23.html

6) LE student from BC - world usability day challenge, designed app prototype for outdoor activities and engage with nature and think of selfs of learners - https://worldusabilityday.org/design-challenge/
7)
8)

Agenda:

5) Writing Cases Discussion:
   New Folder to share Cases
   Having tangible form that allows us to understand some of the how

   Working group members:
   Moving documentation forward (Special Issue, Open Source Site, template
   Other ideas - Scaling L&D, Solving I&D problems as scale, "Leveraging L&D as a "problem solving" partner…is it a learning problem? We have the tools, skills, processes to help" from Amy, how to establish value add justify work within business models, show change and sift in organizations - (capturing organizational change and change in understanding of ideas), Katherine "Scalable frameworks and tools to do learning engineering WELL at SCALE. Your book is a great start."
6) ICICLE Conference Update
7) (if time) Pearson Learning Design Principles Preview
   Qs: What to share, where to share?

November 1st, 2022 meeting - https://mit.zoom.us/j/99960999830

In attendance: Aaron Kessler, Dina Kurzweil, Michael Jay, Lauren Totino, Shira Fruchtman, Lisa Jones, Katherine McEldoon, Amy Parent, Rob Nyland, Henry Ryng, Jim Paradiso, Kristin Torrence

Welcome and New member Introduction (email if you would like)

- Rob Nyland, robert.nyland@au.af.edu

Member Updates:

- Rob - ADL - towards a model of LE, pilot process and get to align with LE work and they can feel intimidated and feel like they need to follow all parts. Nobody is doing perfect project but different mindset forwards the work. Ways in which we have tried to work on this and cases.
- Thoughts from PESC (Postsecondary Electronic Standards Council)

Agenda

- Sharing Ideas of Design Practices/Work within LE Process
  - Updates/examples
- Some thoughts following AECT

    - Collaborations
    - Space to present work
    - Still challenges
- What would a special issue of Journal look like -
    - OR how do you get people to come and understand the projects they are doing and get stories
    - What does it look like and how do we get them involved in special issues
- Follow up:
    - Links to folder
    - Request for examples
    - Share cases
    - Any contribution welcome

September 27th, 2022 meeting - https://mit.zoom.us/j/99960999830
In attendance: Aaron Kessler, Lauren Totino, Gautam Yadav, Dina Kurzweil, Katherine McEldoon, Julia Ridley, Henry Ryng, Jim Goodell, Michael Jay, Kristin Torrence

Welcome and New member Introduction (email if you would like)

Agenda
- Sharing Ideas of Design Practices/work within the LE Process frame:
    - Rachel - design??
    - Lauren - Build and explore TA site
    - Henry - firefighter training record - standards that fire service has and operating municipalities within - stakeholders - different criteria for different parts. (What tasks can demonstrate competency) different equipment that are specific and need flexibility
    - Michael - if you constrain it to much you can't allow flexibility to engage in specific work - describe educational elements in way that is open and strategy that allows for tagging and profile setting that allows for matching and hoping to see discussion of different entities that connect across individual components and allowing iteration.
    - Rachel - Helping get LE practices and process within own organization - working groups doing LE work and terms on the work being done - connecting terms and model with the work being done - helps grow LE - data and tooling and pilots of redesign for data reporting and instructor use (training and support).
        - From Lauren - Rachel, going back to growing/disseminating LE to teams doing the work - I'm curious, what approaches have seemed to work so far? i.e., having them read directly from the Toolkit, talking about examples, applying it to immediate work & projects?
            - Rachel - so my first step (currently a work-in-progress) is to identify different stakeholders within the company, and figure out what about learning engineering is relevant to that group. Some

people may only ever need more than understanding the central challenge, or thinking about working in a student-centered mindset. But the teams who actually ideate, design, develop new learning features need more details and the LEP. And for this group, using an existing project and mapping that to the LEP is the route I'm taking to start the deeper-dive with that team. Also thinking about a monthly book club call where we work through chapters together

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    - Jim - former employee (mid career) getting masters and pulling together a team to use NLP and Explainer to put together observation competency.

Member Updates:

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- Work moving forward:
    - Next meeting: Katherine McEldoon Presentation

August 30th, 2022 meeting - https://mit.zoom.us/j/99960999830

In attendance: Aaron Kessler, Dina Kurzweil, Lauren Totino, Michael Jay, Laura Lukes, Avron Barr, LIsa Jones, Daniel Blickensderfer, Rachel Van Campenhout

Welcome and New member Introduction (email if you would like)

Agenda

- ICICLE 2022 Conference Recap
    -
- Updates from members/what folks are working on/new roles/etc.
    - AECT - Presenting Lightboard work at MIT - over 2 years - impact practice session on how we design an implement in the process, focused on practical takeaways for other designers and can be used for folks beyond lightboard
    - Dina and Jim - will present a Presidential Session at AECT and joint session with others at joint conference
    - Dev Learn -
    - Learning 2022 -
    - ITSEC - Sae and Jim - slide deck using that we could as a group iterate and get working from starting point.
    - OLC -
    - Janet - writing piece to respond to JLS piece
    - Springer Educational Data Science book chapter (Rachel)
    - Opinions on the next ICICLE Conference (location and dates)
        - From Lisa - “Recruiting faculty who might benefit” (and grad students)

- Opportunities for us:
    - ISLS conference call
    - Rachel - Book chapter on Education data science and how that is based on LE as a process
- Work moving forward:
    - Building Exemplars and design strategies
    - Documenting process
    - Workshops

April 26th, 2022 meeting - Link: https://mit.zoom.us/j/99960999830
In attendance: Lauren Totino, Henry Ryng, Janet Kolodner, Michael Jay, Rachel Van Campenhout, Kristin Torrence, Jodi Lis, Dina Kurzweil, Jim Goodell

Strong Person Learning Engineering Process - Strong Person

Welcome and New member Introduction (email if you would like)

Agenda
- ICICLE 2022 Conference
    -
- Updates from members/what folks are working on/new roles/etc.
    -
- Work moving forward:
    - A variety of webinars on design process
        - Can reuse examples from the book for lots and lots of things
        - Design process
        - Design justice
        - Collecting and analyzing data to inform iterative design
        - …
        - Beginning in August; first one to be offered in late October, probably

March 29th, 2022 meeting - Link: https://mit.zoom.us/j/99960999830

In attendance: Aaron Kessler, Dina Kurzweil, Lauren Totino, John Murray, John Costa, Kristin Torrence, Jodi Lis, Michael Jay, Jennifer A. Turns, Amy Parent, George R. Stein, Jim Goodell

Welcome and New member Introduction (email if you would like)
- George R. Stein (georstein@gmail.com)
- John Costa (jbcosta@republit.com)

Agenda

- Updates from members/what folks are working on/new roles/etc.
    -
- Work moving forward:
    - CCC SIG competencies
        - Name if interested
        - John Murray
    - Work after ICICLE 2022 Conference
        - Ideas for workshops:
            - Discussions around the key processes listed in the infographic and what that looks like in practice
            - This is learning engineering in action!
                - [mini problem-based use cases that are familiar but show LE implemented - how,what,why,-situation,task, actions, results]
                - Could become mini workshops on each key process, problem based yielding outputs from process?- learner hands on wkshop.
            - Secrets your data's holding and how to get it to 'talk'
                - [inroad workshop that leads to tangible shifts in how you employ LE to get more value and meaningful inputs/outputs and impact]
            - Placeholder for lauren's idea - workshop(s) focused on designing
                - Theme: "Context Matters!"
                    - Defining the challenge & space - design is not always from scratch, sometimes it's redesign or another type of intervention (and even if it is from scratch, will be revisiting to iterate & improve).
                    - Identifying & assessing affordances and constraints of technology, the audience, other requirements, and using that to guide ideation (working w/ constraints/real world as engineering principle)
                    - Understanding audience and variation among learners + understanding stakeholders and their needs, goals, responsibilities (human-centered design)
                    - Help attendees understand that while definition of LE is solid and generalizable, actual examples and cases of teams doing this work will look different.
                - Theme: "Data Matters!" (a follow-on to previous theme)
                    - 2 key moments (at least) when data plays a big role - 1) starting to design (or redesign): doing research, being informed by LS/lit, and leveraging previously collected data to ideate and design and 2)

designing to obtain more data (instrumentation) once your experience is implemented and learners have engaged with it. Feeds into loop where you go back to redesigning to improve.
        - ^^Not trying to reinvent the wheel - people know how to design and have their own honed design stance (like IDs, LXDs) - so this would focus on framing design activities within the LE process.
        - ^^Still thinking about how these would be workshop-y (i.e., productive, practical, hands-on, walk away with something)
    - Establishing goals for organization as a whole
        - Interesting evolution of technology, data, analytics, learning, interoperability -
        - Business processing - moving information through, when you take this into publishing not a lot of tools and automation - improves pieces and fix in central data
        - How do we rethink the institutions and change management - how to bring silos together
        - Think about how to make change across areas -
- Continue work on the implementation doc (link below)
    - Recap of conversation last meeting
    -

Working Document: Designing for and across implementation levels and populations
Designing for and across implementation levels and populations

Feb 22nd, 2022 meeting - Link: https://mit.zoom.us/j/99960999830

In attendance: Dina Kurzweil, Henry Ryng, Lynn Wietecha, K. Gamor, Rachel Van Campenhout, Jim Goodell, Kristin Torrence, Janet Kolodner

Welcome and New member Introduction (email if you would like)

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Agenda

- Updates from members/what folks are working on/new roles/etc.
    - Congrats, Rachel!!
- Reflections/thoughts from Community Call on 2/16
    - Speaker Muffie Waterman, Cisco Networking Academy
        - Janet to reach out to Michael Jay for slides from Muffie (no recording)
- Continue work on the implementation doc (link below)

- Recap of conversation last meeting
- What's new & thinking about this work's role at the ICICLE conference
- Continue adding content/building out

Working Document: Designing for and across implementation levels and populations
Designing for and across implementation levels and populations

Jan 25th, 2022 meeting - Linkhttps://mit.zoom.us/j/99960999830

In attendance: Jim G, Jim P, Janet, Lauren, Laura, Erin, Aaron, Kristin, John Murray, one or two more who I am missing

Welcome and New member Introduction (email if you would like)

Community call, SIG, and updates
- Conference update
- SIG updates

Work for 2022 -
- Build out Implementation document
- Contributions to the conference
- Workshops post conference (see Build out implementation?)

Working Document: Designing for and across implementation levels and populations
https://docs.google.com/document/d/1k-4dAevenaN40YqW3NIcN_-Yz814HDzFBEQltR1P4-Q/edit?usp=sharing

Thanks for the additions -

NOV 30th, 2021 meeting - Link **https://mit.zoom.us/j/99960999830**

In attendance: Aaron Kessler, Henry Ryng, Michael Jay, Lauren Totino, Janet Kolodner, Erin Czerwinski, John Murray, Rachel Van Campenhout

Welcome and New member Introduction (email if you would like)

Community call, SIG, and updates
- Just had ICICLE upped for anther 2 years!

- Early community call this month -
- Conference work - looking at securing date for summer

UPDATE on Aaron Follow up with Erin and Tool SIG

Instrumentation and tools

Started with tools - conversations about data that comes from tools

What data could be used for what purposes - how to facilitate conversations across people and speaking same language - why or why not to solve challenges with data.

Started to broad scope to write instrumentation primer - cases where folks had to generate and place tools in place. Data for design purposes.

Lessons learned in scaling - what does it look like to re-engage stakeholders - what

Janet - It is easy to collect data on things you specifically design for - example of developing skills for students interests across a course, have to design to learn those things and you have to be designing the curriculum toward those objectives and not just individual courses - might also make clear to students that you are designing toward those objectives which may allow for self-reported assessments, journals, others… Collecting data that you want at a different level from a particular course requires designing in a way that allows for collecting of data.

Working Document: Designing for and across implementation levels and populations
https://docs.google.com/document/d/1k-4dAevenaN40YqW3NlcN_-Yz814HDzFBEQltR1P4-Q/edit?usp=sharing

Thanks for the additions -

Next steps

OCT 26th meeting - Link https://mit.zoom.us/j/95390254790
In attendance: Aaron Kessler, Dina Kurzweil, Lisa Jones, Henry Ryng, Lauren Totino, Laura Lukes, Jim Paradiso, Rachel Van Campenhout

Welcome and New member Introduction(email if you would like)

- John Murray
- Carol McDonald

Community call, SIG, and updates

- CCC SIG- trying to develop competency framework for LE - focus on data scientist part of LE due to data science for everyone.
- Book is being Typeset
- Reup of ICICLE continues -
  - Conference next year
  - Higher Ed MIG -

    - Corporate MIG is meeting this Friday -
- Thoughts on Grady Hillhouse conversation

Working Document: Designing for and across implementation levels and populations
https://docs.google.com/document/d/1k-4dAevenaN40YqW3NlcN_-Yz814HDzFBEQltR1P4-Q/edit?usp=sharing

Thanks for the additions -

Next steps

OCT 5th (Rescheduled Sep 28th) meeting - Link https://mit.zoom.us/j/93417373338
In attendance: Aaron Kessler, Lauren Totino, Jim Paradiso, John Murray, Avron Barr, Jodi Lis, Kristin Torrence, Jim Goodell, Dina Kurzweil, Henry Ryng

Welcome and New member Introduction(email if you would like)
-
Community call, SIG, and updates
- Jim P. - higher ed MIG meet- Emily - Talking about what were looking into
- Working on renewal for IEEE
- Working with OLC
- Competency and others are meeting
- Corporate MIG - roundtables -
- Planning on ICICLE - conference TBD

NEW Working Document: Designing for and across implementation levels and populations
https://docs.google.com/document/d/1k-4dAevenaN40YqW3NlcN_-Yz814HDzFBEQltR1P4-Q/edit?usp=sharing

Dina - group is working to define ideas of define phase - How do we define design - product paradigm, what falls into those? Storyboard

How do we come together to define design for all participants and people involved in the process.

Aug 31th, 2021 2pm ET (Zoom link -)
NEW MEETING Link - https://mit.zoom.us/j/96145801547

In attendance: Aaron Kessler, Dina Kurzweil, Mike Preble, Avron Barr, Jodi Lis, Janet Kolodner, Rachel Van Campenhout, Henry Ryng, Lauren Totino, Laura Lukes, Eddie Lin

Welcome and New member Introduction(email if you would like)

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Community call and SIG updates

- No Community Call this month
    - Jim SIG ramping up on Data Science Standardsok- Ideas and feedback welcome https://docs.google.com/spreadsheets/d/1if8W5U7Gn_RiFz6LIrdBJYMdUiGgUG_7zyGtFAWjIfY/edit#gid=1760891841 (See Tab on Data Science)
    - Tools SIG - Comments welcome on Instrumentation Primer https://docs.google.com/document/d/1D4oUDgfX5wa6_7XUQOshUWkAsmAQZM6Q3UuiMNqoHdo/edit#heading=h.79gkj8lp40ut

New Case Documents (Last month):
https://drive.google.com/drive/folders/1a1iEMSl6YBOsvWoUi2JFOoHXDj7UhZwM

Open Preprint (Data Economy) : https://osf.io/2qjcf/

Let's revisit - Anyone Interested in writing a position paper on Open/Practices of Publishing Materials: -

"Why Implementation matters"

This happens at various levels

We were thinking about writing and defining what implementation looks like at different levels

How do we capture language about what we mean and why it matters

What are the "bookends"?

INTERESTED in chatting: Jodi, Dina, Laura, Lauren

What does it look like to design for each of the levels, design for implementation across populations - How do we consider data on implementation for the design of learning experiences and how do we design opportunities for data collection to improve design in iterative cycles.

Connection with Universal Design - what is connection or what are departures between these?

Designing for access and disabilities

Designing for justice - physical accessibility? (Shelly's example from ICICLE)

Feeling welcome, feeling invited in, funds of knowledge valued, ways of doing/thinking valued, ...
What does it mean to have/get data that serves these^?
Connect data collection with re-design - beyond online courses, how do you do it?

How words mean things to different people (i.e., implementation means something very different to a teach vs. a computer scientist) - Hour glass idea from Dina - May consider as a follow up to book - Start putting together guide to things.

Exemplars/use cases for the purpose of saying, this means a lot of things to a lot of people. Want to get people to recognize that every situation has own unique structure; here are things that may help for various situations, as a starting point

Kinds of data and indicators that are different - specifically implementation of courseware in it's context, what is context, what is institutional level success metrics (how do they define usea and success) vs teachers vs students vs parents (Henry - Company, Individual, Unions)

Note from Jodi (https://docs.google.com/document/d/1D4oUDgfX5wa6_7XUQOshUWkAsmAQZM6Q3UuiMNqoHdo/edit#heading=h.g93p6ost26mr)- Instrumentation Primer is thinking abou: The purpose of the data table is to:
showcase the importance of collecting the right data for the right reasons
help to select the right data for a specific problem
offer examples that highlight the breadth of data and analytics for educational purposes.
Determine the right kind of instrumentation that is useful (what is useful in one case may not be needed in another)
Help stakeholders determine the short list of data to collect to solve a particular problem or to track a particular thing
Help developers/designers, etc. talk with stakeholders about what is needed
Understand the data used by different perspectives
Help people understand when the data won't tell you anything or what you want to know (are able to measure something the way you are measuring it?)

AARON WILL - create docs to write and brainstorm in and will reach out to ERIN

Updates from the group?

Upcoming Workshops

- iFEST is coming up - 30 August - 2 Sept
- AECT - November 2-6, 2021
- OLC
    - **Virtual:** September 20-24, 2021
    - **Washington, DC:** October 5-8, 2021

- Educause OCT 26-29 -https://events.educause.edu/annual-conference
- IMS Global Learning Impact (virtual for 2021: Oct 4 thru 7)

Our SIG Projects

July 27th, 2021 2pm ET (Zoom link - https://mit.zoom.us/j/91620334967)
In attendance: Aaron Kessler, Lauren Totino, Mike Preble, Dina Kurzweil, Jodi Lis, Avron Barr, Kristin Torrence, Lynn Wietecha, Rachel Van Campenhout, Jim Paradiso, Laura Lukes.

Welcome and New member Introduction(email if you would like)
- Laura's new email (llukes@eoas.ubc.ca)

Community call and SIG updates
-

New Case Documents:
https://drive.google.com/drive/folders/1a1iEMSl6YBOsvWoUi2JFOoHXDj7UhZwM

Updates from the group?
Rachel - null findings and reporting these?
How do we document and recognize the importance of findings that aren't "positive"
Any thoughts here on open science platforms that people track their projects and eventually post data, publication links?
Would be nice to have place where things live and are searchable. Where?
What does IEEE say about filling gap
Need to add for practitioners and move beyond

Open Preprint: https://osf.io/sqcn7/

Anyone Interested in writing a position paper on Open/Practices of Publishing Materials:
Aaron
Rachel!
Laura (especially interested in bringing DBER groups/X-DBER together around norms/standards)
Jim
Dina

Spectrum of data usage and analysis that are likely to be case specific and need to be shared in ways that can be used by others. (instructional practice and case connected with tools)

Micheal Jay - Potential ICICLE Session on The importance of implementation and strategies and tools to support describing that context.

Open Science/Reproduce work:

Upcoming Workshops

- iFEST is coming up - 30 August - 2 Sept
- AECT - November 2-6, 2021
- OLC
    - **Virtual:** September 20-24, 2021
    - **Washington, DC:** October 5-8, 2021
- IMS Global Learning Impact (virtual for 2021: Oct 4 thru 7)
- ASU-GSV San Diego, early August, in person

Our SIG Projects

- Let's talk about designing for professionals to understand LE
    -
- How (are?) our current pages and materials being used?
- Creating things people want:
    - Slide Repository

June 29th, 2021 2pm ET (Zoom link - https://mit.zoom.us/j/91620334967)
In attendance: Aaron Kessler, Janet Kolodner, Lisa Jones, Lynn Wietecha, Eddie Lin, Lauren Totino, Henry Ryng, Laura Lukes, Jenna Olsen, Jim Goodell, Andrew McCallister, Avron Barr, Rachel Van Campenhout, Jodi Lis, Jim Paradiso

Welcome and New member Introduction(email if you would like)

- Eddie Lin (Facebook data scientist)
    - eddiecylin@fb.com

Community call and CCC SIG updates

- (Jim) Working to extrapolate key competencies from job descriptions - (Please add if you have any https://drive.google.com/drive/folders/1ueBXPuYAHL5W8liANsuSQPz9RLEgbd0_?usp=sharing)
- By end of year Data science portion of LE competency framework will be built out in support of Futures work.
    - Bigger goal is complete framework - IDed categories and tasks are defined in ONET repository & OPM categories. Need to build out to granular definitions.
- CCC SIG Meeting July 9 3pm EDT: https://ieeesa.webex.com/meet/jgoodell

Corporate SIG Update:

New Case Documents:
https://drive.google.com/drive/folders/1a1iEMSl6YBOsvWoUi2JFOoHXDj7UhZwM

Updates from the group?

ISLS followup with group
Upcoming Workshops

- iFEST is coming up - 30 August - 1 Sept
- AECT - November 2-6, 2021
- OLC
    - **Virtual:** September 20-24, 2021
    - **Washington, DC:** October 5-8, 2021
- HCI International - http://2021.hci.international/T02.html#bio
    - http://2021.hci.international/ais "Learning Engineering as an Ethical Framework"
    - "Learning Engineering Bootcamp"
- IMS Global Learning Impact (virtual for 2021: Oct 4 thru 7)
- ASU-GSV San Diego, early August, in person
- The Thirteenth International Conference on Mobile, Hybrid, and On-line Learning (eLmL 2021) - July 18, 2021 to July 22, 2021 - Nice, France and virtual; Erin chairing a special track in Learning Engineering: Courseware Instrumentation and Learning Analytics...still collecting papers/presentations; contact me to present

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Our SIG Projects

- Let's talk about designing for professionals to understand LE
    -
- How (are?) our current pages and materials being used?
- Creating things people want:
    - Slide Repository

April 27th, 2021 2pm ET (Zoom link - https://mit.zoom.us/j/94491226059)
Agenda:
In attendance: Aaron Kessler, Henry Ryng, Avron Barr, Lisa Jones, Andrew McCallister, Rachel Van Campenhout, Lauren Totino, Jim Paradiso, Simon Hsu, Laura Lukes

Welcome and New member Introduction(email if you would like)

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Community call and CCC SIG updates

- Teacher and Learning Engineering Presentation - Thoughts and feedback welcome
- Potential next steps in working on xAPI collaborations
    - Following up on SCORM and xAPI conversation from our last meeting, the tools SIG meeting will include Aaron Silvers
    - Tool SIG meeting on Thursday (29) at 2pm (est)- https://cmu.zoom.us/my/opensimon
    - Tool meeting notes https://docs.google.com/document/d/1gJsz8w3QbcK0dVgqrdwBoHmxjZhw02nSKClHpXgCMqM/edit#heading=h.5glh1o80xs9r

- (Jim) Working to extrapolate key competencies from job descriptions - (Please add if you have any https://drive.google.com/drive/folders/1ueBXPuYAHL5W8liANsuSQPz9RLEgbd0_?usp=sharing)

Updates from the group?

- Jim Paradiso: Building the LE process and practices into the one year big build project they are undertaking. - conversations around complex implementation across a team. Henry shared idea of using flower representation as way to make clear within sprints the challenge and shared ideas to address that.

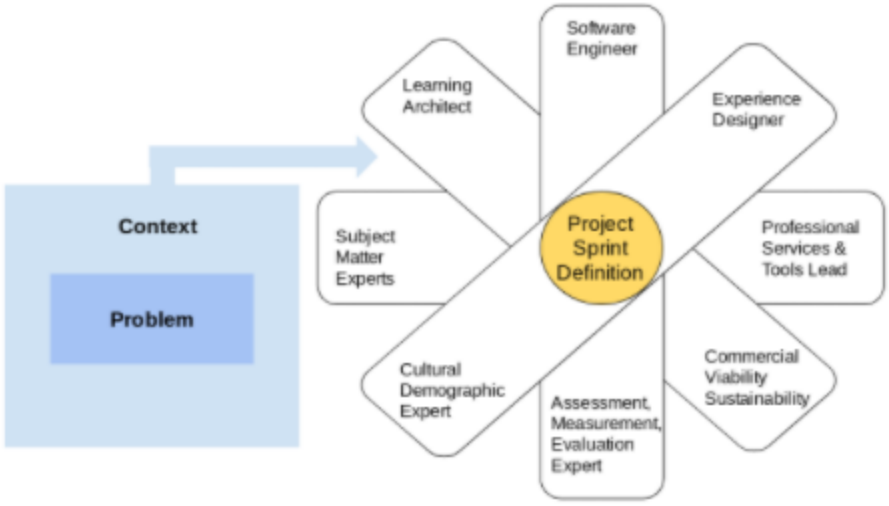


Figure 1: Project Formulation

Lisa shared - https://www.drawtoast.com/index.html#.YIhXXxNKiIZ
Jim came back to orchestrating metaphor

Upcoming Workshops

- ISLS 2021 Workshop https://2021.isls.org/islsws_01/
- L@S - More to come soon

        - Presentation - AI question generation Rachel
        - https://emoocs.hpi.de/
    - HCII - More to come soon
    - Others???
    - AIED - LT workshop - Avron sponsored by LTSC
        - https://aied2021.science.uu.nl/

Our SIG Projects

- Let's talk about designing for professionals to understand LE
    -
- How (are?) our current pages and materials being used?
- Creating things people want:
    - Slide Repository
    -

March 30th (RESCHEDULED for April 6th), 2021 - 2pm ET (Zoom Link:https://mit.zoom.us/j/94491226059)

Agenda:

In attendance: Aaron Kessler, Michael Jay, Rachel Van Campenhout, Jim Paradiso, Nick Runco, Avron Barr, Andrew McCallister, Kimbery Sinnott, Kristin Torrence, Francisco Crespi, Tanvi Domadia, Jodi Lis, Lynn Wietecha, Nick Stanley, Lauren Totino, Laura Lukes, Kevin Owens, Simon Hsu

Welcome and New member Introduction(email if you would like)

-

Community call and CCC SIG updates

- Potential next steps in working on xAPI collaborations
    - Avron: Scorm Profiles - Instrumentation is one of the 1st places LE and ID come together. Standards and LTSC working on roles/ideas for how data is collected and reported.
    - Need to make profiles to constrain data for collection in specific contexts - Several meetings with Aaron Silvers and they are not moving particularly fast.
    - Continue to think about goals and context
    - Nick - microcredentials are pushing systems and integration of systems and how this is handled.
    - Case study - UC Santa Cruz - No grades and the interoperability are a challenge - Conceptual piece and context - Yesterday Reusability competencies group.
    - Rachel - Vital source - big push to build and create content management system to connect sources of data flow. Need to output in usable forms. UT austin - research on student profiles and follow them through journey.

        - Jodi - work with training rural and hospital workers - Data from multiple systems (LMS, observation of applying skills, mentor feedback/checklist, Data set from health facility) want to know performance and considering xAPI to address this.
        - Aaron - example of CT system and data from implementation and context of teachers.
        - Rachel - Ethics of data that is collected
    - NEXT STEP - create workshop where we bring the community together around context, data, and ethics of use.
    - Return on experience vs return on investment
    - xAPI working group needs to make these systems by consensus.
    - Kristin - they way different media and process are engaged in over time. How are credentials kept up with, what is acceptable decay, do different structures have different value.

    - (Jim) Working to extrapolate key competencies from job descriptions - (Please add if you have any https://drive.google.com/drive/folders/1ueBXPuYAHL5W8liANsuSQPz9RLEgbd0_?usp=sharing)
    - Projects from group discussion - What's next?

Updates and thoughts about TOPkit Workshop (Aaron):
Check out a podcast Kristin was on:
https://www.thatsawesomeid.com/post/that-s-stealth-assessment-for-immersive-environments
ISLS 2021 Workshop Announcement:
Overview
Are you and your colleagues considering how to bring applied learning sciences to your institution? Have you been hearing about learning engineering as a model of applied learning sciences and want to know more? Do you want to do some collective thinking and sharing around development of applied learning sciences programs with facilitators who have already engaged in such work?

Facilitated by Aaron Kessler, Janet Kolodner, Karin Forssell, Lauren Totino, and Jodi Lis, our dual-session interactive workshop (June 1st & 3rd from 6pm-8pm ET) at the ISLS Annual Meeting 2021 will address all of these questions and more. The first session of the workshop will begin with a presentation and discussion of what an applied learning scientist needs to know and be capable of using thinking about learning engineering as a model. We continue by presenting different ways programs at Boston College, MIT, and Stanford help learners develop capacities to apply the learning sciences to real-world education design challenges. Between the two sessions, we'll ask participants to think about and record the strengths, possibilities, and challenges to putting together programming in applied learning sciences in their

organization and any additional ideas they have. In the second session of the workshop, participants will work together imagining the design of an applied learning sciences program. Then facilitators will lead breakout groups considering how to address particular institutional challenges in putting applied LS programs in place. We end with discussion and actionable items on continuing the conversation and building on the ideas shared over the course of the workshop.

Interested participants should register for the workshop by filling out this form https://forms.gle/BprWnyogfjcaSief6. Note, workshop participation is included with the cost of ISLS 2021 conference registration (https://2021.isls.org/registration/) and early bird registration ends April 15th.

Initiatives
Adjourn

February 23, 2021 - 2pm ET (Zoom Link: https://mit.zoom.us/j/98395735744)
Agenda:
In attendance: Aaron Kessler, Dina Kurzweil, Avron Barr, Lynn Wietecha, Lauren Totino, Mike Preble, Shawn Hammack, Nick Stanley, Jim Paradiso, Janet Kolodner,, Andrew McCallister, Kristin Torrence, Patrick Getchell, Jim Goodell, Simon Hsu (@KeyBridge), Maria Andersen, Thomas Reeves.

Welcome and New member Introduction(email if you would like)

- Lynn Wietecha, Lawrence Technological University (lmillerwi@ltu.edu)
- Maria Andersen, Coursetune (maria@coursetune.com)

Community call and CCC SIG

- Avron - Tool and instrumentation - What data do you need to connect? - Connects with profiles with xApi, making standard profiles, Aaron thinks about it in feedback loops.
- (Jim) Working to extrapolate key competencies from job descriptions - (Please add if you have any https://drive.google.com/drive/folders/1ueBXPuYAHL5W8liANsuSQPz9RLEgbd0_?usp=sharing)

Recap of last Meeting:

- Goal Setting Activity **https://drive.google.com/drive/folders/1OVky-fXuDpWzZUlV6Qg98tfyiefpOLZh?usp=sharing**

- Key takeaways:

1. Desire to have sharable resources (specific to SIG but potentially usable for all of ICICLE) and connections with outside groups.

    a. How do we organize existing and future materials?
2. Guideline(s) for equitable, inclusive, and participatory design
3. Models (cases) of LE in practice:
    a. Making clear(er) the changing role of team members within Process
        i. Potential for Aaron and Lauren to revisit MIT Lightboard case, focusing on the team/roles/perspectives

The work begins!

- Volunteer(s) to move these projects forward

Initiatives

Adjourn

January 26, 2021 - 2pm ET (Zoom Link: https://mit.zoom.us/j/95175063236)

Agenda:

In attendance: Aaron Kessler, Henry Ryng, Jim Paradiso, Todd Vanek, David Porcaro, Laura Lukes, Jim Goodell, Lisa Jones, Jodi Lis, Lauren Totino, Janet Kolodner, Kristin Torrence,

Welcome and New member Introduction

- Enter name and affiliation (email if you would like)

Recap of last year:

- Defining the LE process: See previous agenda notes
- ICICLE Strong Person: https://sagroups.ieee.org/icicle/learning-engineering-process/
- Creating space for LE cases: https://drive.google.com/drive/folders/1a1iEMSl6YBOsvWoUi2JFOoHXDj7UhZwM?usp=sharing and https://openlearning.mit.edu/mit-faculty/residential-digital-innovations/operationalizing-learning-engineering-process-online
- Conference workshop collaborations

Goal setting activity for 2021:

- What resources, materials, things would you like to see produced by the SIG?
- What outside organizations would you like to collaborate or connect?

1) **https://drive.google.com/drive/folders/1OVky-fXuDpWzZUlV6Qg98tfyiefpOLZh?usp=sharing**

Group 1 - spreading the word, equipping people with resources and materials to share LE

Working to interact with communities - collaborations - (Jim) share more widely ideas about how to make it usable by those in communities. (Using representations to support these discussions).

UCF - simulation and training work - building and making connections with corporate simulations with that group.

Henry - smaller teams face challenges of distributed roles - how they change over time - communicating that the flowers are not people, but capabilities of the team as a whole and will adjust as need to address challenge. Each case study will have these roles and we just need to pull that out and make explicit.

Jim - sets of slides

Credibility in using stories to communicate our ideas and share ideas- case studies and recordings of ideas.

Group 2 -

Todd - collection of resources - books/articles get mind around ideas and connect it with those pieces - connect with references and materials (Make it stick).

One pager of why is LE different from xxxx (set of one pager documents that communicate these ideas).

Jodi - We have lists of resources and materials - how do we organize them (blogs, presentations, corporate SIG has outside interviews).

2) Adjourn

November 24, 2020 - 2 PM ET (Zoom Link:https://mit.zoom.us/j/91717207219)

Agenda:

In attendance: Aaron Kessler, Henry Ryng (inxsol), Jim Paradiso, Todd Vanek, Jodi Lis, Avron Barr, Laura Lukes, Lauren Totino, Allyssa Thompson, chris?, Janet Kolodner, Simon Hsu

Welcome and New member Introduction

-

Updates from the November ICICLE community call:

https://docs.google.com/document/d/1lITUj4lWbiLP9snd4nJxVMmPvxxBN7VFw0gbjaudlkE/edit?usp=sharing

Aaron's podcast appearance - https://drlukehobson.com/podcast-episodes/ep-15-dr-aaron-kessler

Follow up from previous SIG meeting:

Place to store cases: https://drive.google.com/drive/folders/1a1iEMSl6YBOsvWoUi2JFOoHXDj7UhZwM?usp=sharing

Suggested refined representations: ??Members of the community are encouraged to send potential improvements or new ideas for the representation to Aaron (kesslera@mit.edu) or place them in this document.

Planning for 2021:

3) See where things are happening, what is going on in other groups, and understand landscape (where is design in these spaces) - learning agency advertising what is LE
    a) Links to other spaces:
        i) Advanced Distributed Learning Groups - https://adlnet.gov/research/working-groups/
4) Who do we want to engage with:
    a) Learning Science Communities
    b) Educational design
    c) Learning Analytics community -

Thank you!

October 27, 2020 - 2 PM ET (Zoom Link:https://mit.zoom.us/j/91717207219)

Agenda:

In attendance: Aaron Kessler, Jim Goodell, Henry Ryng, Jim Paradiso, Kimberly, Lauren Totino, Avron Barr, Jodi Lis, Todd Vanek, Dina Kurzweil, Laura Lukes

Welcome and New member Introduction

-

Updates from the October ICICLE community call:

https://docs.google.com/document/d/1lITUj4lWbiLP9snd4nJxVMmPvxxBN7VFw0gbjaudlkE/edit?usp=sharing

Follow up from previous SIG:

Place to store cases:
https://drive.google.com/drive/folders/1a1iEMSl6YBOsvWoUi2JFOoHXDj7UhZwM?usp=sharing

More well developed MIT case - Thanks to Lauren Totino
Other examples??:

- Dina - example

NEXT STEPS for the group: It has become clear from our group discussions that a more refined representation of the LE process might be needed to capture the nuance of each part. Members of the community are encouraged to send potential improvements or new ideas for the representation to Aaron (kesslera@mit.edu) or place them in this document.

Adjourn

September 29, 2020 - 2 PM ET (Zoom Link:https://mit.zoom.us/j/91717207219)

Agenda:

In attendance: Aaron Kessler, Lisa Jones, Jim Goodell, Chelsea Chandler, Jim Paradisio, Jodi Lis, Mike Preble, Nick Runco, Stephanie Pounds, Avron Barr, David Porcaro, Erin Czerwinski

Welcome and New member Introduction

-

Updates from the September ICICLE community call:

https://docs.google.com/document/d/1lITUj4lWbiLP9snd4nJxVMmPvxxBN7VFw0gbjaudlkE/edit?usp=sharing

Follow up from previous SIG:

Working to build out examples and extensions of LE Process work.
NEXT STEPS: Aaron write's MIT example/case, Aaron create new folder for design cases.

- U-M Center for Academic Innovation case-Chelsea
- Dina - example

Adjourn

August 25, 2020 - Rescheduled for Sep 1st, 2020 2 PM ET (Zoom Link:https://mit.zoom.us/j/95033845826)

Agenda:

In attendance: Aaron Kessler, Jodi Lis, Chelsea Chandler, Dina Kurzweil, Lisa Jones, Stephanie Pounds, Susan Magdziarz, Leonora Zefi, Avron Barr, Jim Paradiso, Erin Czerwinski

Welcome and New member Introduction

-

Updates from the August ICICLE community call:

- Final updates from presentation at Aug ICICLE Community Call StrongPersonhttps://drive.google.com/open?id=1b8tZleJEkJFQs7o3e4UqM-K55A TWIo:

Working to build out examples and extensions of LE Process work.

- Need for multiple examples (cases??) of how iterative design/instrumentation work take place in specific contexts
    - Requests for contributions
- Finding pieces from old cycles of development -
- Engineering component and template for keying in on explanation of whole work and really describing key aspects of design - defining what
- How can this be applied connected with instrumentation definition
- Note/comment from dina: Etymology Online design (v.)late 14c., "to make, shape," ultimately from Latin designare "mark out, point out; devise; choose, designate, appoint," from de "out" (see de-) + signare "to mark," from signum "identifying mark, sign" (see sign (n.)).
  The Italian verb disegnare in 16c. developed the senses "to contrive, plot, intend," and "to draw, paint, embroider, etc." French took both these senses from Italian, in different forms, and passed them on to English, which uses design in all senses.

  From 1540s as "to plan or outline, form a scheme;" from 1703 as "to contrive for a purpose." Transitive sense of "draw the outline or figure of," especially of a proposed work, is from 1630s; meaning "plan and execute, fashion with artistic skill" is from 1660s. Intransitive sense of "do original work in a graphic or plastic art" is by 1854. Also used in 17c. English with the meaning now attached to designate. Related: Designed; designing.
-

NEXT STEPS: Aaron write's MIT example/case, Aaron create new folder for design cases.

- U-M Center for Academic Innovation case-Chelsea
- Dina - example

Adjourn

July 27, 2020 - Rescheduled for Aug 4th, 2020 (Zoom Link:https://mit.zoom.us/j/99549527857)

Agenda:
In attendance: Aaron Kessler, Jim Goodell, Dina Kurzweil,Erin Czerwinski, Jim Paradiso, Avron Barr, Leonora Zefi, Erin Czerwinski, Tom Reeves, Nicholas Runco, Kirti Garg, Jodi Lis, Stephanie Pounds, Lisa Larson, Janet Kolodner, Dina Kurzwiel, Susan Magdziarz, Henry Ryng, Kevin Owens, Jenna Olsen (later half),

Welcome and New member Introduction

- Sue Magdziarz (Incoming grad student at Boston College)

Updates from the July ICICLE community call:

StrongPersonhttps://drive.google.com/open?id=1b8tZleJEkJFQs7o3e4UqM-K55A_TWlo:

- Review of updated representations
  - Comments?
- Finalizing the materials
- Presenting at Aug ICICLE Community Call

Building out examples and extensions of LE Process work.

Adjourn

June 30, 2020 (Zoom Link:https://mit.zoom.us/j/98187010945)

Agenda:
In attendance: Aaron Kessler,Mike Preble,Jim Paradiso, Kirti Garg, Dina Kurzweil, Jenna Olsen, Janet Kolodner, Chelsea Chandler, Jodi Lis, Kevin Owens, Tanvi Domadia, Erin Czerwinski, Stephanie Pounds

Welcome and New member Introduction

- Jim Paradiso, Instructional Designer - University of Central Florida
- Mike Preble, Curriculum Designer - Eastern Maine Community College
- Stephanie Pounds, Learning Program Manager, Hewlett Packard Enterprise (retired)
- Kirti Garg - Independent researcher, India
- Jenna Olsen, Sr. Analyst - Learning Analytics - Western Governors University
- Kevin Owens - Engineering Scientist / Instructional Designer, Applied Research Laboratories: The University of Texas at Austin (support various DoD learning projects) - kowens@arlut.utexas.edu

- Updates from the June ICICLE community call (**http://bit.ly/2sxPIMs**)

- StrongPerson (and any resources you feel are important to google folder) https://drive.google.com/open?id=1b8tZleJEkJFQs7o3e4UqM-K55A_TWlo:
    - Work to be done:
    -
- Adjourn

May 26, 2020 (Zoom Link:https://mit.zoom.us/j/92848142650)

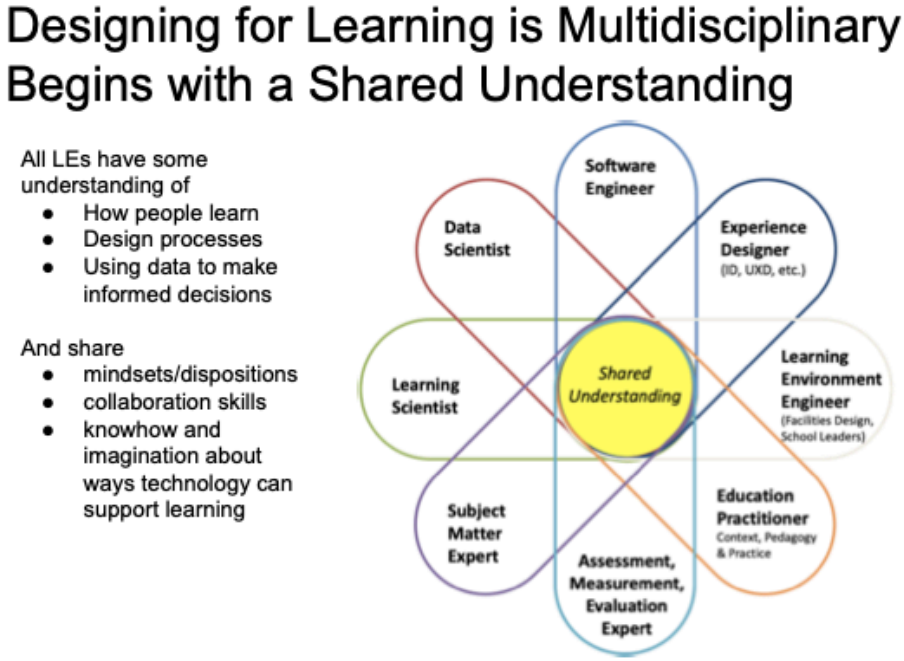
Agenda:
In attendance: Aaron Kessler, Erin Czerwinski, Dina Kurzweil , Jim Goodell, Janet Kolodner, Avron Barr, Jodi Lis, Tanvi Domadia, Ellen Wagner

Welcome and New member Introduction
    -
- Updates from the May ICICLE community call (**http://bit.ly/2sxPIMs**)
    - Upcoming Conference attendance
    - Development of Cases
        - Job descriptions
- Updates from other SIG Meetings
    - Consolidating our efforts to finish this work and push forward materials
        - SIG - Instrumentation and tools - connection to other documentation and work done within ICICLE; using the ideas captured about LE processes, roles, and definitions to date.
- Straw Man (and any resources you feel are important to google folder) https://drive.google.com/open?id=1b8tZleJEkJFQs7o3e4UqM-K55A_TWlo:
    - Add all materials by June 10th
    -
    - Definition of process - start with
    - Image of Process
    - Potential Problems to be solved and Connection to process
- Adjourn

April 27, 2020 (Zoom Link:https://mit.zoom.us/j/725815855)
Agenda:
In attendance: Aaron Kessler, Dina Kurzweil, Jim Goodell, Ellen Wagner, Avron Barr, Jodi Lis, Erin Czerwinski, Tanvia Domadia
- Welcome and New member Introduction
    -
- Updates from the April ICICLE community call (**http://bit.ly/2sxPIMs**)
    - Upcoming Conference attendance

        - Development of Cases
            - Job descriptions
- Updates from other SIG Meetings
    - LEAP SIG - Conferences and papers - push to identify work already doing LE and trying to decide in throughput models where they are doing LE.
        - Reporting forward - course on how to do LE in NOVO ED
            - Courses and subcourses - LE through the eyes of members
    - Tool SIG - Deliverables list that is a process for completing LE. What tools are used to complete these deliverables.
    - CCC SIG - working on a list of high level topics that are part of LE. People or team of LE that are doing the work to get a LE problem solved.
        - Processes of work - tools mostly in the instructional design space
        -
- Next steps in SIG work
    - Knowledge necessary to engage in the design of learning? How is this knowledge developed and supported (in formal settings)? How, if at all, is this connected with other knowledge from other parts of the flower petal?
        - Can we bring together people to answer for each of the petal images?
        - How do we allow for people to do or groups to engage in this work?
            - Discussion about previous work completed that we need to circle back and provide to everyone in order to utilize.
        - Jim will re-visit what examples of outputs for LE he has previously developed

Next Steps - two cycles and develop straw man - pull together objects - Send to group and have us work on it between now and next session. Send proceedings file and slides - Will set plan for completing the full draft by June meeting when we will discuss any edits and plan for distributing.



    -
    - Potential other work?
- Adjourn

March 31, 2020 (Zoom Link:https://mit.zoom.us/j/725815855)
Agenda:
In attendance: Aaron Kessler, Janet Kolodner, Dina Kurzweil, Jim Goodell, Jodi Lis, Avron Barr, Ian Gibson

- Welcome and Introductions
    -
- Updates from the March ICICLE community call (**http://bit.ly/2sxPIMs**)
    - Upcoming Conference attendance
    - Development of Cases
        - Job descriptions
    - Workshops on specific issues
    - Developing LE Certificate Programs, Competency Framework, and Maturity evaluation for tools
- Updates from other SIG Meetings
    - LEAP SIG
    - CCC SIG
- Next steps in SIG work
    - Supporting Case development?
        - Examples of how human-centered design in application of LS with data informed and iterative improvement?
    - Connecting specific competencies in cases with dispositions

    - What are/is the literature that people need to know
    -
- Adjourn

February 25, 2020 (Zoom Link: https://zoom.us/j/639249453)
Agenda:
In attendance: Aaron Kessler, Jodi, Katie Nicksic

- Welcome and Introductions
    -
- Updates from the February ICICLE community call
    - Upcoming Conference attendance
    - Development of Cases
    - Workshops on specific issues
    - Developing LE Certificate Programs
- Updates from last January SIG Meeting
    - LEAP SIG
    - CCC SIG
- Directions for next steps in SIG work
    - Supporting Case development?
        - Examples of how human-centered design in application of LS with data informed and iterative improvement?
    - Connecting specific competencies in cases with dispositions?
- Adjourn
- Next Meeting will be 3/31/20 from 2pm - 3pm EST

January 28, 2020 (Zoom Link: https://zoom.us/j/226797945)
Agenda:
In attendance: Aaron Kessler, Nick Howe, Henry Ryng, Janet Kolodner, Jim Goodell
- Introductions
    - Welcome back to the SIG and some Introductions
- Updates from the ICICLE community call on 1/22/20
    - IEEE ICICLE Survey: https://forms.gle/6U97EFe9geSrSA8a7
- Plans for the SIG
    - Didn't talk about the literature but we did cover dispositions and habits of mind
    - Connect these pieces with competencies groups
    - Really like pictures but need to connect with other pieces
    - What is the difference between designing LE and analytic LE - it is connected with social cultural perspectives. -
    - Analytical is cognitive - Design is sociocultural

    - Also fitting into what the education of a LE needs to be. - So many things they could be - is this distributed - someone who knows enough about each of different things to to be able to be connect all of the people on a team.
    - Chris Dede - people learn through combination of experiences - really good at designing instruction addition - all kinds of new opportunities
    - Nick - Paper maps and Google Maps - Can we get specific about what the parts are that we need to bring together to make that work as a LE.
    - Being careful to bring competencies associated with designing learning experiences.
    - The designs that are right for each population.
    - Dispositions -
    - Janet - focused on imagination - focused on the creativity - the knowing how to support specific populations of learners - imagine the ways you integrate with other kids of activities important for learning.
    - Example of MIT Bootcamps - anchored use cases to test these ideas - Inquirium
    - Thinking about all the things we did and didn't do - we wrote about being a good designer were common for designing technology - now we are talking about and related to design thinking and we didn't really look at that - the human-centered approach.
    -
- Set next meetings
  We will meet last Thursday of the month at 2pm - through zoom

August 8, 2019
In attendance: Janet Kolodner, Jim Goodell, Dina Kurzweil, Aaron Kessler
A meeting of the ad-hoc subcommittee writing for the conference proceedings

Question: We have two different things to write about: learning engineering competencies and competencies of learning engineers who design learning experiences. We've spent way more time on the second, while the first came from our work on putting a session on competencies together for the conference. How can we make sure people reading know that what we are proposing about competencies of learning engineers writ large is a conversation starter, while the other is farther along though also presented as a set of ideas to think with?

Answer: Let's do two presentations, and let's remember that the conference proceedings is not simply a text document but rather than it could take any multimedia form we want, e.g., slides with annotation, slides with talkover, text and slides with talkover or annotation mixed.

Question: Do we want to think about learning engineering as a process or a career choice?

Answer: We'll use learning engineering as a process as a stepping stone towards the idea of learning engineering as a profession. We'll make clear that it is hard now to imagine what a learning engineer would be, but, for sure, it will go beyond what instructional designers, learning scientists, etc. do now, and it will, for sure, require folks with expertise of those people on teams. By talking about the expertise needed on a learning engineering team, we will be able to segue into the competencies needed by individuals on a team and the need for someone or several someones on a team, whether the official team leader or someone else, to have capabilities of envisioning the whole of what is being designed and its parts in conjunction with each other.

Question: So what will we write?

Answer: We'll create two presentations:

- Part 1: starts the conversation about competencies of learning engineering teams and therefore learning engineers of the future themselves
- Part 2: competencies of teams that design learning experiences; this will refer back to Part 1 and entice readers to read Part 1. It will include a lot of lists as well as the notion that what people on the team need to know will include contextually-dependent specifics of some of the things others know more generally.

Homework: annotate this file with what we want to say about each slide and the segues into the next:
https://docs.google.com/presentation/d/1WjdefLrhj0RMKHAvtqlqPBAU7JespQ3MgDc6ck9PbdA/edit#slide=id.p

June 27, 2019
In attendance: Janet Kolodner, Avron Barr, Michelle Beasley, Anindya Roy, Tom Moher, Jim Goodell (late arrival)

Agenda:

- Writing up our competencies work for the conference proceedings
    - Our presentation at the conference (high level): https://docs.google.com/presentation/d/1qjt0bgWuXwFUzvnYrqwO3K2bwL7a4YPyF8bjqqXpxPo/edit#slide=id.p
    - Our competencies doc for those who are designing experiences: https://docs.google.com/document/d/1HP0Yd6Hd_OjmQSSNXdBWAs7ky4rpPl9-OkAHZk7sjsA/edit
    - Our list still did not differentiate learning engineering from what instructional designers do
        - There was some degree of consensus at the conference that we are defining a process rather than a job; what does that mean wrt competencies?
            - But this may make it hard to move forward

        - Maybe we need to talk about a maturity curve -- you come in from some discipline or traditional role and move into being able to take on more and become a learning engineer
        - The kinds of engineering problems that are going to arise are not here yet, so people aren't imagining the skill matrix that's needed
        - Whether a profession or a process, it will continue to be
            - Context-dependent -- on-line, face-to-face, who the population is, formal, informal, time frame, … -- the job description will be different at different places
            - Not clear what the jobs will be -- there will be a variety -- learning engineer, product owner, data manager, …
            - Could talk about competencies needed for design of learning experiences, ….
        - So let's focus on competencies of learning engineering teams
- Seems, given that, that the folks we educate should be excellent leaders and know enough about what all the different team constituents do to envision the big picture and how people work together to make it happen
    - Flower as a whole describes the team. There is a complementary relationship between the petals; those on the team need to be committed to working with others with complementary expertise and learning more about the ways the different areas of expertise need to work together even as they are also developing additional expertise in their own area(s).
    - A single individual has a signature across the petals
    - A new graduate has some shared understanding and expertise but not a lot of experience. He/she/they can contribute a lot wrt one or several of the petals and needs to deepen shared understanding and ability to work with others with complementary expertise.
    - A disciplinary person (e.g., software engineer, educational practitioner) has expertise and a lot of experience but may not have much shared understanding. He/she/they can contribute from their area of specialization and needs to deepen his/her/their shared understanding and ability to work with others with complementary expertise.
    - Learning engineering leaders have good shared understanding, expertise and experience in several of the petals, can envision the whole, and has some project management expertise (or can work well with a project manager); he/she/they probably has to have worked on a variety of learning engineering teams over some significant time to get to this
        - How many of the petals does a leader need expertise?
- What does this mean for the paper?
    - Focus on competencies of learning engineering teams
        - Some design experiences (we have details for this one)
            - Curriculum units, modules (doesn't have to be formal education)

        - Some design technologies that augment learning experiences
            - Modeling tool, simulation tool, collaboration tool, CoDAP, …
            - Might or might not be integrated into platforms
        - Some design technologies that learners immerse themselves in
            - Virtual world, augmented world (NySci), tutor,
        - Some design platforms and authoring tools
            - WISE, Nick Howe's company's platform
        - Some design instrumentation
            - This is the data piece, can come from a variety of places,
            - Might or might not be integrated into platforms
        - Some design orchestration tools
            - E.g., for managing what tools when and their configurations, for managing activities and sequencing of individuals and groups over time
    - Discuss roles of people on teams
        - everyone has their signature
        - leader
    - Individuals growing their competencies
        - Area of expertise
        - Shared understanding
        - Stretching into other areas
        - Working with others in other areas
        - Becoming a leader

May 16, 2019
In attendance: Janet Kolodner, Edward Jennings, Dina K, Jim Goodell, Aaron Kessler

Agenda:

- Introductions
    - **Edward Jennings:** instructional design and technology training, worked at Digital and at Microsoft; likes that IEEE is being used to elevate designing for learning to the next plateau; has trained information technology students, built curriculum platforms using off-the-shelf systems; excited to join us
- ICICLE conference and our session
    - Go over slides: https://docs.google.com/presentation/d/1qjt0bgWuXwFUzvnYrqwO3K2bwL7a4YPyF8bjqqXpxPo/edit#slide=id.p
    - Who will present what? (see slides)

April ??
In attendance: not sure

Agenda:

- Work on slides for ICICLE conference: https://docs.google.com/presentation/d/1qjt0bgWuXwFUzvnYrqwO3K2bwL7a4YPyF8bjqqXpxPo/edit#slide=id.p

March 21, 2019

In attendance: Janet Kolodner, Bev Wolfe, Peter Berking, Aaron Kessler, Michelle Beasley, Jim Goodell, Ian Gibson, Avron Barr, Ali Sadakon, Alisha Dakon, Marie Franetovic, Tom Reeves, Jodi Lis

Agenda:

- **Do the learning engineering survey -- scroll down on ieeeicicle.org**
- Introductions
    - **Marija Franetovic --** course developer and new-media specialist, Lawrence Tech University, instructor (WSU Learning Design and Technology Program); interested in learning experience designer and learning engineer
- Focus on competencies for learning engineers who design technology-rich learning experiences
    - Competencies of Designers of Learning Experiences:https://docs.google.com/document/d/1HP0Yd6Hd_OjmQSSNXdBWAs7ky4rpPl9-OkAHZk7sjsA/edit
    -
- Assignment for next time: We'll cover competencies of designers of technological infrastructures next time

February 21, 2019

In attendance: Janet Kolodner, Beverly Woolf, Jim Goodell, Michelle Beasley, Aaron Kessler, Alisha Dakon, H Chad Lane, Nick Howe, Peter Berking, Tom Reeves

Agenda

- Conference update from Olivia:
    - Please retweet, register, find sponsors, volunteer to help with logistics
- Competencies: https://docs.google.com/document/d/1_JMCFe3WsOeh0U_C9vOINlueQStFLLGJNib6x69tVU8/edit

- Paper by Barbara Wasson and others about people who design learning systems, train teachers in inquiry and learning analytics:

Mor, Y., Ferguson, R., & Wasson, B. (2015). Learning design, teacher inquiry into student learning and learning analytics: A call for action. British Journal of Educational Technology, 46(2), 221229

January 17, 2019:
In attendance: Janet Kolodner, Michelle Beaseley, Jim Goodell, Aaron Kessler, Shakir Hussain, Jod, Tom Moher, Peter Berking, Dina K, Avron Barr, Ian Gibson

Agenda

- New introductions
    - **Aaron Kessler** -- MIT Open Learning, Senior Learning Scientist, have an installation there that works with faculty; had a lot of learning engineers
- Jim Goodell introduce us to what he's been doing wrt how learning engineers work with others and what they do
- The file is here: https://drive.google.com/file/d/17uE8SUPhzqM3xPXpMnyqgYHk3M7ii2Lm/view
- Lots of different ways people "do" learning engineering. At Eberly Center (CMU), they have people called Learning Engineers who help faculty put course experiences together. At DuoLingo, doing language learning. Acrobatic. At Carnegie Learning, no learning engineers, but they do it. The three scenarios they saw are at the top of the chart -- consultative learning engineers give advice to faculty, college president, …; … Purpose has been, after meeting with our group and some of the other ones, to address the challenge of getting to a concrete definition of learning engineering. Jim and Mark Lee took a field trip to talk to learning engineers and places that use those types. This shows what they found about the what learning engineers do.
- Other scenarios: Learning engineer on a design team (leading from the bottom), learning engineering expertise distributed over the team
- Think about the different roles learning engineers play: leader, manager, designer, evaluator, consultant, knowledge manager, team member,
- Maybe this is about the situations learning engineers will be placed in; each learning engineer has different expertise (collaboration, assessment, …) and each learning engineer takes on roles;
- Key Processes -- What is listed now is stuff at the implementation level; for design, this would include knowing your learner population and their resources and needs and interests and so forth, knowing the context of learning and what it affords and constrains, identifying learning frameworks,
- Do we need two charts? One for mooc-like development with lots of technology (and lots of AI), and one for design of technology-rich experiences at the conceptual and functional level?
- What do we want to see in the future? Are they still dealing in video, what will modeling the learner mean?

Homework for December: See this file: https://docs.google.com/document/d/1_JMCFe3WsOeh0U_C9vOINlueQStFLLGJNib6x69tVU8/edit

December 20, 2018
In attendance: Janet Kolodner, Michelle Beasley, Tom Moher, Avron Barr, Jim Goodell, Alisha Kadon, Dina Kurzweil, Jeremy Roschelle,

Agenda
- New introductions if any
    - **Michelle Beasley:** corporate in tech and ed, Delphix, virtualization for enterprises; technical education program manager, about 10 -15 years, stumbled across us; she's doing this stuff
    - **Alisha Kadon:** information associate at an environmental non-profit, use of sustainable materials in society; helps folks publish in LMS, just finished an MS at GWU
- Reminders about conference: https://docs.google.com/spreadsheets/d/1rS5nbd5BqvNwlxc-vrkhSN6z3e7xThjfFGLKdkI_UPE/edit#gid=0
    - Tom, Jim, Mark, Dina, Janet, and Bev (Janet will check with Bev) will be writing 1-sentence and 1-paragraph descriptions of their sessions by the end of the year
- Competencies -- see file

November 15, 2018
In attendance: Janet Kolodner, Davinia Hernández-Leo, Chad Lane, Shakir Hussain, Ulises Musseb, Tom Moher, Peter Bierking, Dina Kurzweil

Agenda:
- New introductions:
    - Shakir Hussain: learning engineer at Northwestern in Doha, helps faculty design courses, run them, and evaluate them; mainly face-to-face; undergrad in CS from Carnegie Mellon, MEd from Penn State in Learning Design and Technology, EdD student in USC (global higher ed)
    - Ulises Musseb: senior educational technology specialist at NYU school of medicine; supports faculty using learning technologies, background in engineering, instructional design, ed tech, web tech, pursuing MA at NYU in digital media for education
- go over what we decided last time about the conference (see notes from Oct 18 below)
- discuss how we want to continue these meetings
    - Some folks think every two weeks would help with continuity

    - Wrt ambition, some groups have guest speakers so that the SIG members learn more about what's going on in the world; draws people
    - Need a focal point, anyway -- the white paper may do that
    - Also need to get going on conference stuff to make sure we're making progress
- synthesize our discussions of the past 3 months to create a list of competencies and dispositions of designing learning engineers
    - Scenarios: https://docs.google.com/document/d/14fmc7ZOFL4ovcNlJ_twsU-rruRAm57kcvU34IOLwXsE/edit
    - Straw-man competencies list: https://docs.google.com/document/d/1_JMCFe3WsOeh0U_C9vOINlueQStFLLGJNib6x69tVU8/edit

October 18, 2018
In attendance: Janet Kolodner, Tom Moher, Alisha Dakon, Dina Kurzweil, Jim Goodell, Peter Berking, Chad Lane

Agenda:

- **New members?**
    - **Alisha Dakon,** grad student at GWU in MA in Ed Tech Leadership; also information systems associate at Green Blue (nonprofit) on sustainable use of materials in society, creates educational content for them
    -
- **Conference responsibilities and roles**
    - Proposed conference schedule: https://docs.google.com/document/d/1gOBaVrXaevNTT-hJtwDRzLSbEyVvgKIcsieCU0NbhfI/edit
    - Proposed sessions that were accepted (and possibly adapted)
    - Do we want to do it? With whom? Who is/are our point person/people
    - Need to have speakers inline by early January
- *Title: Providing a Helping Hand - Sharing research & best practices on supporting teaching as a Learning Engineer (K-12 a well as college/university)* ***(DIna Kurzweil; Design SIG)***
    - ***PRE-conference workshop***
    - *If some learning engineers are an extension of what instructional designers do, then it is necessary for us to discover the best ways for these learning engineers to work with faculty and others who are using (and helping to design) the technologies; requires buy-in from organizations and leadership as well.*

    - *Sharing basic research elements (4 articles looking at how these organizations are supported) and discussing in small groups (based on type of organization) on stronger ways of providing support and overcoming challenges.*
    - *Will require facilitators at each small table*
    - *Right now, comes from the ID perspective; might be good to have some additional perspective (can Janet find someone at BU or BC? Or CMU and MIT actually call their employees learning engineers)*

- *Title: Affordances and challenges of emerging technologies for supporting* learning
  Matrix #8 / Program ID: **PRE-B3; Mark Lee and Tom Moher will take the lead from Design; we would welcome participation from x-reality and Learning analytics (Peter will let us know who -- Peter and Mitch Bonnet of Army E-learning) sigs, perhaps AI also.**
- Session Type: Pre-conference workshop
  Duration (minutes): 120
  Committee Notes: None
- We want to bring together this one and PreB-2 (#28) and have people from both tracks taking part; indeed, that's the whole idea here, to bring both tracks together
- Organize as a World Cafe, perhaps, the idea here is that the many new technologies that seem promising have more promise to begin with than something that can be used immediately: x-reality one, analytics, and others. By looking at a variety of these technologies, identify promises and challenges -- for both integration into classrooms of today and for future ambitious pedagogical designs. Could also have stations that focus on particular instances of sort-of-successful new technologies. In the end, some synthesis and debrief to bring together what can be learned across them with respect to what it takes to get new technologies to productive use and what learning engineers will have to cognizant of as they try new ones.

  Title: Design for learners/learning as a team science
  Matrix #5 / Program ID: **C**
  Session Type: **Plenary**
  Duration (minutes): 30
  Committee Notes:
  Can this be done by examples of existing teams -- e.g. Simon Institute Initiatives, Kaplan University, Army Distributed Learning, DuoLingo, Khan, PBS/Lure of the Labyrinth (Scot O.)?-- panel? video vignettes?
- Possibiities: Jim and Mark L could talk to people at Simon and DuoLingo to find out more about how teams operate; the idea here would be to tell team stories that make clear some of the competencies of those on the teams, the need for many people with different competencies and expertise, no one person has it all; we could do 3 of these -- some technology product, something done for classrooms/teachers, and maybe Scot's thing; maybe advanced distributed learning group (about bringing people together to

make teams, perhaps; in sec of defense office; Sae Schatz); real quick vignettes, or Marcia at CMU on helping faculty;
- Jim G and Mark Lee will work on this; Tom has a story, could be a panel or videos or a combo

-

Title: Competencies for designer-type learning engineers
Matrix #6 / Program ID: **J3**
Session Type: TBD
Duration (minutes): 60
Committee Notes: None

-
- We suggest swapping J3 and H3 so that competencies come first and then curriculum. We will have a competencies and dispositions document that we will distribute or present and let the discussion go from there.
- Lead: Janet,

T*itle: Data as a tool for learning engineering*
Matrix #New / Program ID: **N2**
Session Type: TBD
Duration (minutes): 60
Committee Notes:
Ryan Baker? Susan Singer?
The goal of this 1 hour session block is that each birds-of-a-feather session leaves with ideas/tools to bring to the next cross-functional group session to discuss the question: "How can organizations ensure that what they do and create reflects what we know about how people learn?" (In this case the role of data.)

-
- We want to substitute in here some variation on #7 **Bringing together learning and assessment - how do/should people who do these work together?**
- **New title would be something like Design and analytic learning engineers working together**
    - Purpose -- Learning processes help us design learning experiences that give us the outcomes we want to get and that we are assessing; Analytics (these allow assessment) as going along with learning processes and what influences them

Design will take the lead; we;d like AI and laerning analytics people working with us. Bev Woolf, Janet Kolodner; we like the idea of asking Ryan and/or Susan to join.

Title: Rationalizing the learning design process for specific technologies
Matrix #24 / Program ID: **PRE-B2**
Session Type: Pre-conference workshop
Duration (minutes): 120

Committee Notes:
To be developed in conjunction with the xAPI and Learning Analytics SIG
See above, to be combined with Pre-B3

-
- Also *Curriculum for Learning Engineering with the curriculum SIG* -- ***H3 -- joint between Design and Curriculum; Dina wants to be part of this also***

- **Competencies and dispositions of learning engineers who design (we didn't get to this)**
    - Scenarios: https://docs.google.com/document/d/14fmc7ZOFL4ovcNlJ_twsU-rruRAm57kcvU34IOLwXsE/edit
    - Straw-man competencies list from BC: https://docs.google.com/document/d/1_JMCFe3WsOeh0U_C9vOINlueQStFLLGJNib6x69tVU8/edit

September 20, 2018
In attendance: Janet Kolodner, Amos Glenn, Thomas Reeves, Beverly Woolf, Jodi, Peter Berking, Mark Potter, Dina K, Davinia, Jim Goodell

Agenda:
New members:
-- Amos Glen -- instructional designer for training and education center at U of Pittsburgh and serving the National Library of Medicine; their job is to provide training and education needs of NIH's All Of Us research project. Collecting DNA from a million people; much of the training is compliance training (ethics, datasets, etc.); there also needs to be education aimed at participants (those who offer their DNA and get data back have to be able to understand their own data); he wants to bring more about learning into their thinking. Was previously at CMU in Simon Initiative and in HCIC. He's the only instructional designer on staff (but they want to rely on him).

Conference update:
- Program:
- https://docs.google.com/document/d/1y7TItlsDYxfaMi_K-OnyxlXp_WZyMdb2IpqsRhxy4t0/edit#
- We are in charge of pre-conference one workshop and participating in another; also several sessions in the conference; please take a look and let me know what you are interested in -- as a leader or as a participant in planning or as a panel member. (We do have notes about what people have already volunteered for.)
- Soon we'll know officially what belongs to us, and we'll work on getting ourselves organized in our next session.

Competencies of a Learning Engineer who designs

- Scenarios: https://docs.google.com/document/d/14fmc7ZOFL4ovcNlJ_twsU-rruRAm57kcvU34IOLwXsE/edit
- Straw-man competencies list from BC: https://docs.google.com/document/d/1_JMCFe3WsOeh0U_C9vOINlueQStFLLGJNib6x69tVU8/edit

August 16, 2018

In attendance: Janet Kolodner, Chad Lane, Peter Berking, ???

Agenda:

Competencies of a Learning Engineer who designs

- Scenarios: https://docs.google.com/document/d/14fmc7ZOFL4ovcNlJ_twsU-rruRAm57kcvU34IOLwXsE/edit
- Straw-man competencies list from BC: https://docs.google.com/document/d/1_JMCFe3WsOeh0U_C9vOINlueQStFLLGJNib6x69tVU8/edit
- Many notes (some aha's) in the Scenerios doc

July 26, 2018

In attendance: Janet Kolodner, Beverly Woolf, Avron Barr, Dina Kurzweil, Mark Lee, Jim Goodell, Ian Gibson, Tom Moher, Henry Ryng

1. Conference -- This is the ICICLE 2019 Conference May 21 - 23, 2019 Arlington Va
2. What sessions do we want to lead? Who do we want to invite to help with those? What do we want to participate in?

- 8. Design for Learning as a Team Science: A pane. Dina K., Janet want to help,
- 9. Competencies for designer-type learning engineers. Janet is interested.
- 10. Bringing together learning and assessment - how do/should people who do these work together? A panel. Bev Woolf is interested.
- Instead of submitting papers prior to this conference, we request case studies to be submitted for several of our panels -- in the spreadsheet notes for those panels
- Pre-conference is May 20, 2019
- 11. Cases on Affordances and challenges of emerging technologies for supporting learning Emerging technologies; Tom Moher, Mark Lee, Bev Woolf will work on this.
- 12. What does it mean to be adaptive? (and adaptable?) Tom Moher and Bev Woolf will be active on this
- 19. What is the role of the learner in an AI-augmented learning process? (maybe, instead, how to manage mixed-initiative?)

June 14, 2018
In attendance: Janet Kolodner, Jeremy Roschelle, Peter Berking, Jim Goodell, Mark Potter, Chad Lane, Ian Gibson

Agenda: Continue discussion from previously, moving on to what skills and competencies do the learning engineers who design have to have?

But first, for discussion:

Suggested definitions of a Learning Engineer:

[Janet, Mark Lee, Ken Koedinger]
Learning Engineering is the systematic application of evidence-based principles and methods from the learning sciences to support as well as to better understand learners and learning. It emphasizes the use of human-centered engineering design approaches in conjunction with analyses of rich data sets to iteratively develop and improve solutions that address specific learning needs and problems, often with the help of technology. Working with subject-matter and other experts, the Learning Engineer deftly combines knowledge, tools, and techniques from a variety of technical, pedagogical, empirical, and design-based disciplines to create effective and engaging learning experiences and environments, and to evaluate the resulting outcomes. While doing so, the Learning Engineer strives to generate processes and theories that afford generalization of best practices, along with new tools and infrastructures that empower others to create their own learning designs based on those best practices.

[Jeremy's from last meeting]
To design, implement and improve learning systems -- using learning theories, models of learning, and data about learning -- that are grounded in research and wisdom of practice, have a promise of effectiveness that can be measured, and use data to continue to improve.

Suggested very short definitions of a Learning Engineer:

1. *Learning engineering is the systematic and iterative application of evidence-based principles and methods from the learning sciences to better understand and support learners and learning.*
2. *Learning engineers solve learning problems and innovate new learning solutions through systematic and iterative application of evidence-based principles and methods from the learning sciences.*

3. *Learning Engineering is the systematic application of evidence-based principles and methods from the learning sciences in conjunction with iterative human-centered design approaches to better understand and support learners and learning.*
4. *Learning engineering is the systematic and iterative application of evidence-based and human-centered principles and methods to better support learning.*
5. *Learning engineering is the systematic and iterative application of evidence-based and human-centered principles, methods, and technologies to better support learning.*
6. *Learning Engineering is the application of learning sciences and engineering principles to support and better understand learners and learning.*
   (Learning engineering teams use human-centered design and data analysis to iteratively develop and improve solutions that address specific learning needs and problems, often with the help of technology.)
7. *Learning engineering is the systematic and iterative application of evidence-based and human-centered principles and methods to design, build, and improve systems that support learning.*
8. *Learning engineers apply scientific knowledge of how people learn to design and build systems that support learners and improve learning*

Moving on towards competencies of a Learning Engineer who designs:
https://docs.google.com/document/d/1cnMosAkNhZg_iF_sCNe7FVgZUZrEKiUcz9a9N8kIHCE/edit

For next time: Scenarios? Put them in this file:
https://docs.google.com/document/d/14fmc7ZOFL4ovcNlJ_twsU-rruRAm57kcvU34IOLwXsE/edit

May 17, 2018
In attendance: Janet Kolodner, Mark Decker, Jeremy Roschelle, Avron Barr, Bev Woolf, Chad Lane, Whitney Kilgore, Tom Moher, Peter Berking, Dina Kurzweil, Ellen Wagner, Davinia Hernández-Leo (only half of the meeting), Henry Ryng, Jim Goodell, Michael Jay

1. **Introductions of new people**
   a. **Mark Decker,** performance consultant, entrepreneur, working with gov't agencies and companies, launching a software platform -- a performance support tool for a design team that uses analytics to optimize learning designs, wants to offer his ideas of what learning engineers are and also learn from the group. LearningROI.com
   b. **Whitney Kilgore,** instructional designer, used to teach elementary, then technology in school, now builds programs for learners all over the world, now iDesign to allow others to build on what she's done in the past

c. **Chad Lane**, Dept of Ed Psych, U of Illinois, CS background, game-based and immersive techs for science learning, engagement and interest
d. **Ellen Wagner,** interested in how to elevate boots on the ground folks who are making things happen, learning technologist for a long time, education as well as corporate learning, in software, in academia at first, then moved to companies and has been building and managing building of technologies in support of learning, also working with the product and prof dev teams, interacts with standards orgs, policy orgs, etc.; real interested in designing so that people can actually use things and elevating the conversation to that, cochair of conference
e. **Ian Gibson,** originator of xAPI analytics for e-books. Chartered Electrical Engineer, interested in defining scope and role of new discipline of Learning Engineering.

2. **Community stuff**
    a. NSF STEM Video Showcase; take a look at it; several of our folks have
    b. http://stemforall2018.videohall.com/
3. **Update on the conference**
    a. See https://docs.google.com/document/d/1PW9iYbMCoW31uWiyg7oA1I4FEOf4RlSzq3Y7NRZryEw/edit#heading=h.ll9pm9x74th4 for conference planning
    b. https://goo.gl/HLmKD9 for notes
    c. JLK offered all of the conference ideas we've had; you will see other ideas as well and a proposed conference agenda; it still needs work
    d. TO DO: Please look at the agenda, **any comments are welcome; ideas are still welcome but right away; if you want to help organize or lead a session, please let me know right away so I can pass it on**.
    e. WIll be at George Mason (Arlington, VA, outside DC) in May 21-23, 2019
4. **Moving on to answering our questions**
    a. Update on our goals as a SIG
        i. Focus on the kind of learning engineer who serves on teams that design experiences, activities, technology, manipulatives, environments (physical and virtual) … to support learning
    b. Review of questions: https://docs.google.com/document/d/1PW9iYbMCoW31uWiyg7oA1I4FEOf4RlSzq3Y7NRZryEw/edit#heading=h.ll9pm9x74th4
    c. Begin with question 1: "What does a learning engineer who designs for learners do?" -- in the large (big goals) and in the small (what they work on each day)
        i. Including what are their roles in doing these things?
        ii. how do they work with others?
        iii. Who are the others they work with?
        iv. Without being too technocentric; as learning engineers might also focus on pedagogy without focusing directly on technology. (Ellen and Dina -- learning engineer is not simply a person familiar with principles and

paradigms of technology but able to bring a deeper awareness of what is known about learning to all of it)

v. Let's think about the whole human/technology system that supports learners -- including teachers, facilitators
vi. The context assumes people will be around to provide additional expertise
vii. Discussion here: https://docs.google.com/document/d/1OV4Ud9ofk-AlVDx9G78Yx4Dn5ZJZFN0T_fi3WffntCg/edit
viii. Jeremy playing with language: To design, implement and improve learning systems -- using learning theories, models of learning, and data about learning -- that are grounded in research and wisdom of practice, have a promise of effectiveness that can be measured, and use data to continue to improve. (Need to distinguish from Instructional Design)

d. Next questions (to keep in mind):
    i. What do they need to be capable of to do these things? (competencies)
    ii. What do they need to know to do these things? (knowledge)
        1. The whole system of people and stuff that together foster learning; what are the layers; the learning engineer should be cognizant of that and be able to work across layers, help define layers, etc.
    iii. About a whole range of things: learning, pedagogy, assessment, technology, policy, standards, environments for learning (e.g., classrooms, zoos, homes).
    iv. At least three categories: Required, Recommended, and Optional
    v. And/Or could be several varieties and different requirements for each

5. Plan toward next meeting

a. Need to move next meeting; many of us will be in London -- week before? June 14?
b. Report out on roles people want to play in planning and attending next May's conference
c. Think about the kinds of products we may want to create
d. Add ideas to answers to question 1 and to the next questions (here for Question 1: https://docs.google.com/document/d/1OV4Ud9ofk-AlVDx9G78Yx4Dn5ZJZFN0T_fi3WffntCg/edit)

April 19, 2018

In attendance: Janet Kolodner, Shane Gallagher, Mark Lee, Ellen Wagner, Tom Moher, Nick Howe, Tom Reeves, Christian Glahn, Peter Berking, Dina Kurzweil, Henry Ryng, Avron Barr, Mark Potter

1. **Introductions of new people and people not at the last meeting**
    a. R Barrera,
    b. Bdodd,
    c. Kirti Garg,
    d. Benjamin Goldbert,
    e. Shane Gallagher, Institute for Defense Analyses Adjunct Researcher. My specialization is instructional technology and I am and have been researching e-learning standards and specifications for Advanced Distributed Learning and pedagogical models for cyber operators training. This is mostly for the US Department of Defense Office of the Secretary of Defense Personnel and Readiness. I am currently PI over assessing the Total Learning Architecture for ADL a multi-year DBR effort on developing communication specifications for future learning ecosystems and am developing assessment models for cyber operators training and advising for HHS, lots of different types of learners, design-based research, future ecosystems for interoperability and adaptability, assessing immersive training program
    f. Cary Jim,
    g. Chad Lane,
    h. Mark Potter, Pearson, 3.5 years as a Learning Designer, now an Efficacy Improvement Manager. Specialized in designing and iterating on higher ed courseware products specifically in personalized/adaptive learning and analytics and grounding learning product design in varying evidence bases (e.g., user experience, market research, learning literatures). Graduate out of CMU's Masters in Educational Technologies and Applied Learning Sciences program.
    i. Whitney Kilgore
    j. Deborah Tatar
    k. Tom Moher, Emeritus Faculty, U Ill Chicago, Computer science/Human-Computer Interaction, science in elementary and middle school, whole-class inquiries, technology for making phenomena happen, connect students, connect heterogeneous technologies
    l. Dina Kurzweil - Uniformed Services University of the Health Sciences (USUHS) - Faculty in the School of Medicine Health Professions Education Program and Director of the Education & Technology Innovation (ETI) Support Office, partner with faculty in her organization to support teaching and use of technology.
    m. Nick Howe - I'm the CLO at Area9 Learning. We are (arguably) the global leader in adaptive learning platforms. Part of my responsibility is to lead a team of learning engineers who work with customers to create adaptive online offerings. We built the technology that powers 2000 McGraw-Hill adaptive courses and textbooks, as well as for dozens of large/global corporations.
    n. Henry Ryng

2. **Reminder to join Slack Design for Learning Thread**

a. Slack channel for this SIG: https://ieeeicicle.slack.com/messages/C9PTGABJM
b. Use this link to join the IEEE ICICLE Slack (right away, as it will expire in 4 weeks): https://join.slack.com/t/ieeeicicle/shared_invite/enQtMzQ5OTQyNzMxNzE3LWVhNTMwNDZkNDI4ZmY5ZTg2ZDRkNDg5MTUzOWE3ZDllYTg5NThkYzc0YmQ1MWZkZjg2YmVhYzg4NzBhMjIwMTk

3. **Broader ICICLE community -- see SLACK**
    a. Community meetings 3rd Thurs of each month, 11:00 AM Eastern

4. **Learning Engineering Conference**
    a. To be held in spring, 2019, each SIG will propose a set of thematic sessions, some plenary, some shared with other SIGs -- should not overlap with DIS (June 23-28) or with CSCL (when?)
    b. Review of what we proposed last time (see below for details)
        i. Design for learning as a team science. (Case studies, panel, what competencies are needed, how do they work together and support others (including the educators we're designing for).
        ii. What differentiates an LE from an ISD, Learning Scientist, Instructional Technologist, Instructional Designer, Educator? -- sets the tone; **overlaps with competencies and curriculum sig discussions; together with them;** working title was "Will the real learning engineer please stand up?"; comes up with/resonates every group; probably should be done as an introductory session showing off the different kinds of learning engineers; there's also such a thing as bringing pieces of learning engineering competency to a team without being a learning engineer; focus on "what is your job?" (Dina); also see competencies discussion two down. Invite Bror Saxberg (but not sure he really focuses on the broad range of what we know about influences on learning)?
            1. Something to keep in mind: some of the expertise that LE's need may include areas of zero interest to Learning Scientists or to teachers: government regulations and local policies; current products' strengths and weaknesses; new products, tools, and trends; standards; project management; best practices in the field; LE failures and their causes; and so on.
            2. What is our sweet spot? Defining the knowledge, skills, and attitudes that the learning engineer working on design needs to have.
            3. Is this a prereq or is this something to aim for in the conference?
        iii. Bringing together learning and assessment - how do/should people who do these work together?
            1. Learning processes help us design learning experiences that give us the outcomes we want to get and that we are assessing

2. Analytics (these allow assessment) as going along with learning processes and what influences them
3. https://lo-f.at/glahn/2018/03/every-teacher-lecturer-and-professor-needs-to-be-fluent-in-computational-thinking.html
4. Let's not confuse assessment (measuring people and performance and processes) with evaluation (measuring programs)
5. At lots of levels --
6. Panel with case studies of what has worked and what's needed? Followed by discussions at tables and report back?

iv. **Competencies for learning experience design? -- think about how a learning engineer fulfills competencies within the workforce --** in government, there is the 1700s series of instructional designers; focus on "what is your job?"; a different perspective on competencies -- Dina, Christian, using technology changes everything; major shift going on in the workplace/workforce development; Shane's Total Learning architecture project? 2015 article in Chronicle of Higher Ed (Dina): https://www.chronicle.com/article/Why-We-Need-Learning-Engineers/229391

1. Ken K says A learning engineer has shallow competencies across a variety of areas and deep expertise in one or a few. Our session might focus on the specifics of what ones who focus on design need. E.g., ability to work with subject-matter experts, ability to deal with technical people learning processes, pedagogies that engage and foster learning, learning environments they are designing for
2. Think about bridging technology and high-level design; there are different things to think about in doing design than you had to think about before technology came into it. (Shane) For example, how do we design for leveraging recommender systems, learner competency/learning activity alignments requiring specific metadata or paradata
    a. Do we have to be talking about technology when we talk about learning engineering?
    b. Let's not go too heavy into technology to the detriment of the learning side.
    c. Define Learning Engineering. is it from the Etymological sense to arrange, contrive, guide or manage.
3. Ditto for cognitive issues, engagement issues, ...
4. Some competencies are foundational and integrative (Mark L); the learning engineer needs to be able to deal at least a little with all

kinds of things and be able to work across all the different things that need to be taken into account.

v. What do the production tools look like?
vi. What is a learning experience anyway?
vii. Why and how a LE should behave as designer - interactions between design thinking and LE.
viii. Affordances and challenges of emerging technologies (see below); overarching across sigs with follow up in smaller sessions; we could take the lead in putting the plenary together to set the scene as a prelude to individual sigs taking it where they might. -- Mark Lee interested in this
    1. Our specific one might focus on imagining what's possible and identifying competencies needed to bring new technologies into our designing as they emerge
ix. Adaptation and reuse -- we'll talk next time

c. What has been proposed by other SIGS and the Conference SIG
i. ICICLE's International Conference on Learning Engineering will be a two-day gathering of professionals from industry, academia, and government featuring presentations, papers, and demonstrations organized by ICICLE SIGs. The event will highlight the state-of-the-art in the profession and academic discipline of Learning Engineering.
ii. Venue (probably): George Mason U, outside of DC
iii. TIme: Spring, 2019
iv. Participants: Learning engineers, learning practitioners, learning researchers
v. For more info: https://docs.google.com/document/d/1Fa7GwyrJCM7Y94GjMlO7_zjie4rrY_xW7eiJMlKA-vk/edit
vi. Suggestions from other SIGs that are consistent with our suggestions or of interest to us:
    1. **Learning engineering as a team sport, and perhaps formulating the conference with that in mind**
    2. **What does it mean to be adaptive? Different definitions (from JLK's pt of view, there's in the small and in the large; JLK would like to see this as a plenary)**
    3. Roles of learners in an adaptive learning system
    4. Role of learning engineer in design and development of adaptive learning systems
    5. Integrating AI in learning experiences
    6. Ethics
    7. Bridging gaps between learning engineers and others with similar competencies
    8. Competencies of a learning engineer (as a plenary?)

9. Demands in the marketplace in terms of learning engineers and how that tells us about the different kinds of learning engineers and competencies they should have
10. Data standards -- roles, what's there, …
11. **Cross-discipline panel -- build it, deliver it, take it -- wrt data generation and use -- opportunities for recognizing data governance and privacy concerns and the resources available**
12. **Tools for tracking learners across learning experiences -- making sure they are secure and private**
13. **x-Reality SIG -- augmented, virtual, mixed; their roles; equipping people; horizons -- what's coming up**
14. **Emerging technologies -- separating the hype from reality, affordances for learning, and constraints for learning environments -- xrealities, analytics, … (with several SIGs; plenary)**

d. Other ideas/ continuing the discussion

5. **Our 6 questions to be discussed in google docs and slack for next time -- Janet will take care of this.**

6. **Edited chat session follows.**

From Avron Barr to Everyone: (01:05 PM)
agenda:
https://docs.google.com/document/d/1LK3FlpIaFvCDgjrQy0c3nz_Dis8m4TKPFG1vEaOAbGI/edit
From Dina Kurzweil to Everyone: (01:21 PM)
just to clarify I could not get into the Sig at 11 today.
From thomasreeves to Everyone: (01:22 PM)
Are there specific people at George Mason University involved in hosting this?
From Shane Gallagher to Everyone: (01:22 PM)
ditto to Diana's comment
From Dina Kurzweil to Everyone: (01:22 PM)
you probably do not want to conflict with AERA
for the conference date
From Shane Gallagher to Everyone: (01:25 PM)
what about a special session at AERA?
From Dina Kurzweil to Everyone: (01:25 PM)
Ditto Shane
2019
Friday, April 5 – Tuesday, April 9
Toronto, ON, CANADA

aera 2019
Friday, April 5 – Tuesday, April 9
Toronto, ON, CANADA
From Shane Gallagher to Everyone: (01:27 PM)
I brought up the learning engineer effort during my paper session last week and there was definitely interest
From ellenwagner to Everyone: (01:28 PM)
Olivia Blackmon is the POC at GMU. Im also in touch with Kevin, Brenda, Nada and Shahron to make sure the are all in the loop
From ellenwagner to Everyone: (01:28 PM)
Sorry that was for Tom Reeves, but since we are among family and friends… :-)
From Shane Gallagher to Everyone: (01:28 PM)
I'm also an adjuct at GMU and know them all well if we need to communicate more FwF f2f
From Mark Potter to Everyone: (01:30 PM)
Thanks all. I unfortunately have a work conflict and need to jump early. Looking forward to continuing this SIG!
From ellenwagner to Everyone: (01:33 PM)
thnx Shane, that's good to know. Brenda has been involved in ICICLE, but of course her day job keeps getting in the way of meetings
No we def don't want to conflict with AERA. And yes, that would be one of the places it would be awesome to get some papers placed in the SIGs for next year's event.
From thomasreeves to Everyone: (01:36 PM)
Looks like good people at GMU. Ellen.
From Dina Kurzweil to Everyone: (01:47 PM)
https://www.chronicle.com/article/Why-We-Need-Learning-Engineers/229391
From thomasreeves to Everyone: (01:50 PM)
Searching for a "Learning Engineer" position online yields few opportunities. Most of the jobs I see are for "Machine Learning Engineers" or "Deep Learning Engineers." I assume we are talking about a different type of professional.
From ellenwagner to Everyone: (01:50 PM)
Bror is one of our uber intellectual sponsors and a member of our steering committee, also someone who has been actively evangelizing learning engineering for a few years now, spurring on people like Michael, Feldstein and others,
From ellenwagner to Everyone: (01:51 PM)
He wants to finished the job that Herb Simon started :-)
From Dina Kurzweil to Everyone: (01:51 PM)
I think we would need to clarify what we mean by design? Instructional, technical, etc. pedagogy/androgogy
From thomasreeves to Everyone: (02:03 PM)
Good point, Dina.
From Christian Glahn (other Screen) to Everyone: (02:04 PM)

I think that a major shift is happening in the direction that it is no longer possible ti separate the educational and technological facets of learning engineering
From thomasreeves to Everyone: (02:08 PM)
I think DBR skills should be a distinguishing competency of Learning Engineers whereas Instructional Designers would focus more on traditional formative and summative evaluation skills.
From Dina Kurzweil to Everyone: (02:08 PM)
Ditto Christian
From Shane Gallagher to Everyone: (02:08 PM)
ditto diana/chirstian
From Peter Berking to Everyone: (02:08 PM)
I agree with Christian. Every technology has an implicit learning theory built in - none of them are neutral
From Avron Barr to Everyone: (02:09 PM)
Perhaps smaller sessions or tracks focused on different types of attendees.
From thomasreeves to Everyone: (02:17 PM)
I agree about the importance of the definition work.

March 15, 2018

1. **What is this ICICLE? What is this SIG? What other SIGs?**
    a. **ICICLE:** An IEEE 2-year initiative to aimed at defining and supporting the profession of learning engineering. Among the aims are to define what is a learning engineer, to suggest what credentials and/or competencies a learning engineer needs, the education a learning engineer needs, and to propose new learning technology data standards.
    b. **What a Learning Engineer is:** For now, people who are involved in designing, deploying, learning how to effectively use, and improving technologies and technological infrastructures that are appropriate for integration into education and training environments, including learning management systems, MOOCS, authoring tools, serious games, simulations, pedagogical agents, and more.
    c. **The Design for Learning SIG:** Address the issues listed above in the context of *learning engineers who design learning experiences and who design the infrastructure and authoring systems that will make it easy for others to design high quality courses and programs*. “High quality,” for learning engineers, will involve how insights and findings from research on learning are integrated with other design factors.
    d. **Interacting with other SIGS:** curriculum, credentials, AI, xAPI (collecting data (clickstream and perhaps more) for analytics; using analytics to inform

pedagogical decision making/supporting teacher, using analytics for automating the role of the teacher/facilitator), infrastructure

e. **Other SIGs:** for this and other info, see http://ieeeicicle.org

2. From Craig: All kinds of info about Slack, ICICLE urls, other SIGs, …
    a. Slack channel for this SIG: https://ieeeicicle.slack.com/messages/C9PTGABJM
    b. Use this link to join the IEEE ICICLE Slack: https://join.slack.com/t/ieeeicicle/shared_invite/enQtMzMwMzgyMjg3MjE5LTlhZGYxZGFmNzBmOGI3M2ZmZTRiMGE4NTM0ZjkwZjg1MDFmMGJlZWEzNTc3YWQ5Mzc0NTUxYTFmOGRkYzY2ODU
    c. about IEEE ICICLE: https://www.ieeeicicle.org/about/
    d. webpage for this SIG: https://www.ieeeicicle.org/learning-experience-design-sig/
    e. list of the IEEE ICICLE Special Interest Groups (SIGs): https://www.ieeeicicle.org/sigs/
    f. upcoming webinar on xAPI: https://tldc.us/xapi-playlist-march-19-2018/
    g. more on xAPI: https://docs.google.com/document/d/17QMM6Ic-i6MLJY5DZ2ydu7ocE8Nn0alyLwRM364IYJM/edit?usp=sharing
    h. What is Learning Engineering? https://boardthing.com/board/5a90349baf0a2c060f7a4288

3. **Who are we?** We come from a variety of sectors (gov't, higher ed, nonprofit, private, K-12) and a variety of fields (instructional technology, instructional design, learning sciences, AI & Ed, EDM folks, maybe more). We are low on learning scientists, and I am aiming for a couple more.
    a. **Janet Kolodner**, chair, janet.kolodner@bc.edu, Boston College Lynch School of Education, formerly GA Tech College of Computing, learning scientist, computer scientist (AI), founder of *The Journal of the Learning Sciences*, co-founder of the International Society of the Learning Sciences, designs learning experiences, learning technologies, science curriculum, particularly focused on learning from experience, also looking in on Curriculum and Competency SIGs, goes to ICLS and CSCL conferences, AERA if someone makes me
    b. **Avron Barr,** avron@aldo.com. Santa Cruz, CA. Chair of IEEE Learning Tech Standards Committee, which is the sponsor of the ICICLE effort. The LTSC is where we work on standards for learning technologies. Recently there seems to be increased interest in making products work together -- current projects include xAPI, augmented reality, adaptive instructional systems, competency frameworks,, and mobile platforms. Been workgin in AI and learning technology since 1972. Freelance consultant in Silicon Valley. AIED, ADL iFest, DevLearn.
    c. **Peter Berking**, I work at Eduworks (Robby Robson's company) in Corvallis, Oregon, USA. I work remotely from Sonoma County, California, USA. I am an

Instructional Designer. Interested in/working on AI for Education, Personalized E-Books for Learning (PEBL - IEEE standards project), competency-based education (ADL CASS system). Worked for Advanced Distributed Learning (ADL) (U.S. Department of Defense research lab in learning technology) for 8 years developing learning standards (including xAPI). I am also on xAPI ICICLE SIG

d. **Christian Glahn**, christian.glahn@htwchur.ch. Zurich and Chur, Switzerland, I am the Head of the Blended Learning Center at HTW Chur (a University of Applied Sciences) and the president of the national universities' ed-tech working group (ETWG). My main responsibilities are related to educational technology infrastructure, resources and methods. I am working with XAPI for interactive resources and integrated XAPI activity traces into learning design models. I am also active in different of training and education activities for educational staff and Ph.D. candidates at EATEL and IAmLearn.
e. **Jim Goodell**, Based in MA
(pasted bio) Jim Goodell has extensive experience with education data standards and the application of learning sciences and technology to improve teaching and learning. At QIP he leads standards development for the U.S. Department of Education sponsored Common Education Data Standards (ceds.ed.gov) and works with stakeholders from early learning, K12, postsecondary, and workforce organizations (from accountability to supporting learning). With Liz Glowa, Jim co-authored the iNACOL paper "Student-Centered Learning: Functional Requirements for Integrated Systems to Optimize Learning"
(I'm participating in the Curriculum, AI, and Standards SIGs.)
f. **Davinia Hernandez-Leo**, davinia.hernandez-leo@upf.edu, assoc prof in ICT Dept. Universitat Pompeu Fabra, Barcelona, technology for supporting learning design, European projects. Vice President of European Association for Technology-Enhanced Learning, chairing LT data standards SIG, main conferences ECTEL, ICALT, LAK, CSCL, http://daviniahl.wordpress.com
g. **Mark Lee**, malee@csu.edu.au I am an educational technology and learning sciences academic with a particular interest in learning designer/teacher-designer beliefs, cognition, and practices. I also conduct applied research around the broad theme of technology-enhanced learning designs, pedagogies, and environments that straddle multiple spaces, modalities, and temporalities. I divide my time between Australia, where am affiliated with the School of Education at Charles Sturt University (Australia's 8th largest public university and its largest provider of online education) and the US, where I have a Visiting Faculty role at Carnegie Mellon University's Entertainment Technology Center, collaborating with faculty and students on initiatives related to VR, AR, and MR for learning. My conference attendance patterns vary from year to year, but this year I will be attending AECT, ASCILITE (Australasian ed tech conference), IEEE TALE (IEEE Education Society's flagship Asia-Pacific conference, of which I am one of the General Chairs this year and where I will

also be organizing a Special Track on Learning Engineering), and possibly also EDUCAUSE.

h. **Tom Reeves**, Professor Emeritus of Learning, Design, and Technology in the College of Education at The University of Georgia. He was a Fulbright Lecturer in Peru and has given invited presentations in the USA and more than 30 other countries. His books include *Interactive Learning Systems Evaluation* (with John Hedberg), *A Guide to Authentic E-Learning* (with Jan Herrington and Ron Oliver), *Conducting Educational Design Research* (with Susan McKenney), and *MOOCs and Open Education Around the World* (with Curt Bonk, Mimi Lee, and Thomas Reynolds). His research interests encompass educational technology in developing countries, design-based research, and evaluation.

i. **Jeremy Roschelle**,

j. **Henry Ryng**, ryng@inxsol.com, President of InXsol LLC www.inxsol.com which is an Arizona based small business in elearning space. My background is electrical engineering with a career in training that transitioned from flight simulation devices to desktop simulations and elearning. We have several funded SBIR R&D projects in eLearning/simulation. I participate in the xAPI and CMI5 spec development meets and years ago on AICC which pre-dated SCORM. I am currently trying to blend AI into performance support/training. In aerospace we are extending S1000D and adding crowdsourced/social learning, as we do that we need AI to better curate content and assess competency which can drive “badges” and micro credentialing. Also doing work with first responders and workers involved with HAZMAT. We have some cloud based voice recognition driven training and some iOT devices prototyped on raspberry and arduino to add sensor inputs for the AI. I attend DevLearn/Learning Solutions and NIH conferences.

k. **Craig Wiggins**, vice-chair of ICICLE, liaison between us and the SIGs and Steering Committee

l. **Beverly Woolf**, bev@cs.umass.edu, College of Information and Computer Science, University of Massachusetts, Amherst, MA. I develop intelligent tutors that model student affective and cognitive characteristics and combine cognitive analysis of learning with artificial intelligence, network technology and multimedia. These systems represent the knowledge taught, recognize learners’ skills and behavior, use sensors and machine learning to model student emotion, and adjust problems to help individual students. I published the book Building Intelligent Interactive Tutors and am the lead author on the NSF report Roadmap to Education Technology in which forty experts and visionaries identified the next big computing ideas that will define education technology and developed a vision of how technology can incorporate deeper knowledge about human cognition.

m. **Nick Howe**, nick@area9.dk. Chief Learning Officer at Area9 Lyceum. Adaptive learning platform company; we built that technology that powers McGraw-Hill’s

adaptive textbooks and courseware. Now separate from McGraw and addressing the needs of K-12, HE, publishing and corporate. For 12 years I was global VP of learning at Hitachi Data Systems where I deployed adaptive learning to 100 countries. At Area9 I'm chief evangelist, own our corporate go-to-market, and provide guidance to our team of Learning Engineers. Also advisor to Institute for Simulation and Training at the University of Central Florida.

4. **Introducing the Conference and Products we might produce**
    a. **Conference** -- we don't know yet who will be there; we can be creative about topics and session formats; we can consider multiple audiences; we begin next month within ICICLE to define this; topics can go across SIGs
        i. Consumers -- those who will work in learning engineers
        ii. Producers of learning engineers
        iii. Big change recently is going from an art to a team science
        iv. Suggestion: Design for Learning as a Team Science (important for both consumers and producers)
            1. Competencies needed -- core so we can all talk to each other and specialties
            2. Competencies includes both high-level skills and also more granular expertise that is measurable and observable; both are needed
        v. Suggestion: what is a learning engineer, and how sto they interact with others who are using technology for fostering learning; what differentiates a learning engineer from a learning scientist? From an educator?
        vi. IEEE is really technical, what we are trying to do combines technical with non-technical
        vii. Curriculum development vs learning design; usually people who talk about learning design focus at the activity level rather than the longer-term; suggestion: discussion about what it means to bring the two together; look at some successes (with or without technology)
        viii. Suggestion: bringing together learning and assessment; how will those folks work together to get integrated systems that both foster learning and assess?
        ix. Suggestion: involving teachers; teachers are usually told what's available but we need them on our design teams; invite teachers who are already involved in these things (IEEE TEL conference in Australia doing something like this -- Mark Lee -- with a teacher stream that cuts across everything)
        x. Suggestion by Peter (after meeting): 3 tracks at conference (maybe incompasses more than our SIG):

1. Learning Experience Design competencies (**who we are/what we know).** This applies to design teams, not just individuals.
2. Learning Experience Design production tools (ie, storyboard tools). Mostly focused on how we communicate a learning design. This is very important and often overlooked - “the medium is the message” ie, the design format is the design (**how we do it)**
3. Learning Experiences **(what we do/create).** Not to be confused with #2 (tools), but focused on the actual learning experiences and technologies used to create them.

xi. Suggestion by Davinia (after meeting): I think we could articulate WHY and HOW a Learning Engineer (LE) should behave as a designer, including:

1. Knowing learning science underpinnings, analysing users (learners and teachers)’ needs, etc…
2. Which design techniques from other domains can be useful for learning engineers (connected to point 2 of suggestion by Peter above)

ca

b. **Products** -- could be curriculum guidelines, white papers, policy advice, ...

5. Questions we might address in the SIG

a. What is a learning engineer with respect to designing for learning?

i. Possibly: takes responsibility for choosing and integrating platform (or infrastructure) technologies with an understanding of the learning processes that are thereby afforded and can be taken advantage of in later stages of design. Learning engineering is about designing enterprises and not just courses and their technologies. (Need to say what we mean by enterprises; it isn’t just infrastructure but includes whatever is needed so that those designing the courses will make them active and engaging experiences for the learners.

ii. Design in learning engineering is not about designing new technologies or even just designing individual courses but rather about developing models and infrastructure for integrating people, technology, materials, curriculum, etc., into effective and interoperable systems; in the best of worlds, pieces can be reused or repurposed or adapted for reuse, we know how to support all stakeholders, and learning engineers are keeping their eyes and ears open to new technologies as they develop and their integration and effective use in the complex systems that make up learning environments.

iii. From Avron: He thinks of learning engineers as also doing these things: (i) Rethinking the classroom/school: flipping, redesigning schooling to take advantage of technology (e.g., abandoning the tradition of age-based cohorts in order to allow mastery-based early math education), (ii)

Creating an education system in countries where there are not enough teachers or schools, (iii) Creating the infrastructure, policies, and procedures needed to use technology effectively (such as defining the competency framework for an organization that is getting into certificates/badges)., (iv) In other words, I'd like to include educators/trainers who are involved in exploring design possibilities created by technology (Janet says perhaps these are not learning engineers per se, but we need to discuss this)

1. For example: https://www.educationdive.com/news/institutional-innovation-the-classroom-of-the-future-for-all-types-of-stud/519044/?utm_source=Sailthru&utm_medium=email&utm_campaign=Issue:%202018-03-15%20Higher%20Ed%20Education%20Dive%20Newsletter%20%5Bissue:14459%5D&utm_term=Education%20Dive:%20Higher%20Ed

b. What do learning engineers need to know and be capable of to do this design work?

i. We identified three things so far: (i) asking the right questions, (ii) finding, reading, making sense of, and figuring out how to use the results of research, and (iii) keeping eyes and ears open to new possibilities

c. What do learning engineers need to know about technology? About learning? What technologies do they need to know?

d. How might learning engineering support teachers and other participants/stakeholders in fostering learning?

i. E.g., teachers, those seeking to adopt pedagogies and technologies, those installing technologies and educating teachers

e. Role of learning engineers in content and curriculum development?

f. How can working learning engineers keep up with best practices, notable failures, new products, etc.

6. Policy Issues

a. Classrooms nowadays aren't integrating anything in except the low-hanging fruit; how can we address that?
b. Privacy, confidentiality issues -- wrt students and teachers
c. Protecting what we collect about students
d. Supporting teachers; how can we help them learn to choose and use technology well