# Online Learning Design and Implementation Models: -A Model Validation Study Using Expert Instructional Designers

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## Abstract

Online learning continues to grow at unprecedented rates. In higher education over 7.1 million students took a course in 2013, which represented over 33.5% of the total student population. K-12 is growing at similar rates with over 275,000 students enrolled in full time virtual schools in 2011-2012 and over 2 million participating in at least one online course. Corporations are experiencing growth as well with technology based learning at 37.30% and online learning at 24.77%.

Despite this unprecedented growth, there is little research on model formation and model validation for online learning. Two research-based models were created: eSUCCESS and R2D2/C3PO to help project managers, instructional designers, and developers design and implement online learning solutions. Both of these models were created based on research findings using qualitative case study and design and development case study guidelines. Both models have a strong focus on culture, learning, and technology, and the change management strategies necessary for successful design and implementation of online learning in different contexts such as, K-12, higher education, healthcare, military, and corporate organizations.

The purpose of this descriptive qualitative study was to describe the process of model creation for both models and to systematically validate the two models using a survey and The Nominal Group Technique (NGT) with expert instructional designers. Participants were instructional designers who are experts in online learning across industries. Five participants were asked to review materials on the models and provide comments on the models pre-meeting. Following the individual model review, three participants attended a 1 1/2-hour focus group discussion responding to and commenting on each element in the models. The focus group session was professionally facilitated, digitally recorded, and transcribed verbatim.

The NGT is a five-step process whereby participants meet one another, generate ideas based on their pre-work review, share ideas with the group, discuss ideas, and vote and rank items based on original questions about the models. In addition to the discussion session, participants were asked to complete a survey ranking elements of the model using a Likert-scale.

Data analysis included the use of descriptive statistics generated in EXCEL from the survey.  Themes generated from the focus group discussion session were analyzed using NVIVO software, which was used as a centralized database for all study materials. A preliminary list of start codes based on the elements of the model was used to begin the data analysis and was supplemented with new emerging themes from the analysis. Similar analysis was done with the individual response sheets the participants submitted as part of the pre-work. Finally, the data analysis showed the results of the voting and ranking at the NGT focus group discussion session. Results of the analysis are presented as a narrative, as a matrix summary to show the level of support for each of the model components, and as potential updates to the models.

The U.S. is behind other developed countries in many areas of academic education and students are finding it difficult to find gainful employment upon graduating from U.S. schools. The cost of education continues to escalate in the U.S. Online learning is a cost-effective way to deliver learning at affordable price points and often at faster rates than traditional classroom. Online education can be available 24X7X365 anywhere in the world where there is an internet connection. Companies and educational institutions are providing classes to diverse cultural populations around the world. Providing project managers, instructional designers, systems administrators, and

developers with research-based models that have been evaluated by experts will give these leaders the tools they need to successfully deliver online learning to cross cultural groups.

## Introduction

### Problem Statement

Online learning continues to grow at unprecedented rates. In higher education over 7.1 million students took a course in 2013, which represented over 33.5% of the total student population (Allen & Seaman, 2014). K-12 is growing at similar rates with over 275,000 students enrolled in full time virtual schools in 2011-2012 and over 2 million participating in at least one online course (Allen & Seaman, 2014). Corporations are experiencing growth as well with technology based learning at 37.30% and online learning at 24.77% (Miller, 2012).

Despite this unprecedented growth, there is little research on model formation and model validation for online learning (Richey & Klein, 2007; Richey, Klein, & Tracey, 2011). Two research-based models were created: eSUCCESS (Armstrong, 2007; 2008; 2016b) and R2D2/C3PO (Armstrong, 2014; 2016a) to help project managers, instructional designers, and developers design and implement online learning solutions. Both of these models were created based on research findings using qualitative case study and design and development case study guidelines. Both models have a strong focus on culture, learning, and technology, and the change management strategies necessary for successful design and implementation of online learning in different contexts such as, K-12, higher education, healthcare, military, and corporate organizations. The specific problem that was the focus of this study is validation of the two research based models.

### Purpose Statement

The purpose of this descriptive qualitative study was to describe the process of model creation for both models and to systematically validate the two models using a survey and The Nominal Group Technique (NGT) with expert instructional designers. For the purpose of this study, the NGT was based on Potter, Gordon and Hamer's (2004) adaptation of the technique. Participants were instructional designers and instructional technologists, who are experts in online learning across industries. Inclusion criteria included more than 5 years of instructional design/instructional technology experience and a doctoral degree in Instructional Design, Instructional Technology, or related field.

### Research Questions

The research questions were focused on validating the two models based on the experiences of expert instructional designers and align with Yin's (2014) assertions that case study questions should be "how" and "why" questions and Thomas' (1983) expert requirements that the questions be clear and stimulating for the participants.

**Research Question 1.** How do instructional designers believe the eSUCCESS model serves as a valid framework for design and implementation of online learning programs? Why do they hold these beliefs?
**Research Question 2.** How would the instructional designers augment the model?
**Research Question 3.** How do instructional designers believe the R2D2/C3PO model serves as a valid framework for design and implementation of online synchronous learning programs? Why do they hold these beliefs?
**Research Question 4.** How would the instructional designers augment the model?

### Methodology and Design

The methodology was qualitative and the design descriptive case study. Data collection techniques included document review of the models, expert survey responses, and a focus group interview using the NGT technique. Six participants were asked to review materials on the models and provide comments and complete a survey on the models pre-meeting. Five agreed to participate. Following the individual model review, three of the five participants attended a 1 ½ hour NGT focus group discussion responding to and commenting on each element in the models. The focus group session was professionally facilitated, digitally recorded, and transcribed verbatim.

Jones and Hunter (1995) emphasized the importance of recruiting participants who are subject matter experts on the topic. Experienced instructional designers having at least 5 years instructional design experience and

an advanced degree in instructional design, instructional technology, educational technology, or an equivalent degree were recruited. A purposive, convenience sample (Miles & Huberman, 1954) was used based on 25+ years of networking experience with instructional designs who met the inclusion requirement.

Several instruments were employed during the data collection process: 1) pre-data collection questionnaire, 2) pre-focus group model evaluation and survey, and a 3) focus group protocol based on the NGT. The model evaluation, model survey, and focus group data were used for convergence of data following Yin's (2014) call for triangulation to ensure the validity of the data. The Model Evaluation Surveys required participants to write down their own ideas that come to mind as they are reviewed each of the models. The Model Evaluation Survey also required the participants to rank the elements of the models using a Likert Scale.

The NGT is a five-step process whereby participants meet one another, generate ideas based on their pre-work review, share ideas with the group, discuss ideas, and vote and rank items based on original questions about the models. Delbecq and van de Ven (971) stressed the importance of using an expert in the topic area during the NGT session and Gallagher et al. (1993) stressed that the facilitators must be highly skilled in group facilitation techniques. Both facilitators were experts on the topic having worked on the design and development of the models and both are trained and endorsed Dale Carnegie trainer/facilitators. The focus group was held online using a virtual classroom technology, GoToMeeting. Prior to the NGT focus group and following receipt of Informed Consent and Northcentral University IRB approval, participants received an introduction to the NGT protocol and several published articles that explained the models. Participants were then asked to rate each item in the models on the Model Evaluation Survey using a Likert scale from 1-4 to rank the importance of each element in the model, with 1 as unimportant, 2 of little importance, 3 important, and 4 very important. Space was available for comments and suggestions. Estimated time was 1 ½ hours. Following receipt of the surveys, an NCT focus group session was scheduled. Each of the steps in the NCT protocol was followed:

**Step 1. Introduction and explanation.** A focus group session was held online using the GoToMeeting virtual classroom technology. The session began with an introduction and explanation of the purpose, a review of the agenda (appendix C) and an overview of the procedures for the meeting (5 minutes);

**Step 2. Silent generation of ideas.** The second step for each model was quiet time for silent generation of ideas. Participants were asked to reflect on each model separately and generate ideas for what components that would add to each element of the model and to the model itself and to write these ideas on a sheet of paper (10 minutes);

**Step 3. Sharing ideas.** Participants were asked to share their ideas based on their review of the materials in Step 2 and prior to the NCT session. Brookfield and Preskill's (1999) Circle of Voices protocol (appendix D) was used so that each person could further explain their ideas, initially without interruption. In this step, no debate was allowed and everyone had an opportunity to make an equal contribution to the discussion (3-5 minutes per participant). Total time 15 minutes.

**Step 4. Group discussion.** Continuing with the Circle of Voices protocol, after each participant had shared their individual ideas, group discussion was opened up and cross talk allowed. (15 minutes)

**Step 5. Voting and Ranking.** Facilitators reviewed suggestions for enhancement to each model and presented the suggestions to the group. Participants voted on each suggestion and the results are in the results and findings. Each participant later emailed their silent generation of ideas sheets back to the facilitators.

Data analysis included the use of descriptive statistics generated in EXCEL from the survey. Results were calculated for the average, mean, mode, and standard deviation of each element of the models. Themes were generated from the following: 1) comment section of the surveys, 2) NCT focus group discussion session, and 3) silent generation of ideas sheets. Each data collection vehicle was analyzed using NVIVO software, which was used as a centralized database for all study materials. A preliminary list of start codes based on the elements of the model was used to create parent and child nodes and start the data analysis. The preliminary list of start codes, transferred to parent and child nodes, was supplemented with new emerging themes from the analysis. Finally, in the data analysis are the results of the voting and ranking at the NGT discussion session. Results of the analysis are presented as a narrative and as a matrix summary to show the level of support for each of the model components. This data will be used to update the models.

## Models Validated

The goal of this study was to use expert subject matter experts to validate two research-based models. The first model was the R2D2/C3PO model based on Bonk and Zhang's (2006) R2D2 model that focused on constructivist strategies for developing online instruction. Armstrong (2014; 2016a) expanded this model during

design and development case study research using a blend of synchronous and asynchronous delivery in higher education classes (Armstrong & Thornton, 2012). Five components were added to Bonk and Zhang's original model along with tools, techniques, strategies, and activities for each component of the model.

**R2D2/C3PO.**

Table 1 shows the R2D2/C3PO model as an expansion of the original Bonk and Zhang (2006) R2D2 model. Each component is described, followed by instructional strategies and activities that can be used for each component. Finally, synchronous tools to support each of the learning activities and instructional strategies are described.

*Table 1.* R2D2/C3PO Components, Instructional strategies/learning activities, synchronous tools

| R2D2/C3PO Component | Instructional Strategies/Learning Activities | Synchronous Web-Conferencing Tools |
|---|---|---|
| Read/Listening | Reading materials online or offline.<br><br>Creating participant manuals for each Live synchronous event.<br><br>Listening to audio materials online or offline.<br><br>Synchronous Expert Lectures/Presentations/Tutorials Demonstrations. | Downloadable participant manuals as pdf and/or word files.<br>Downloadable audio files.<br>Downloadable video/multimedia files.<br><br>"Live" synchronous facilitator/faculty presentation/demonstrations/lectures.<br><br>Facilitator/faculty tools include whiteboards, chats, application sharing, file transfer, share pods, screen sharing, PowerPoint slides, polls, and note boards for announcements, Q&A, and FAQs.<br><br>Links to websites. |
| Reflect/Writing/Sharing | Time allocated for reflection:<br>1. Pre-work<br>2. During synchronous event.<br>3. Between synchronous events (multi-event course)<br><br>Small Group Discussion.<br><br>Focus Group Discussion.<br><br>Online Role Play.<br><br>Self-Assessment.<br><br>Online Quizzes.<br><br>Practice. | Downloadable participant manuals used to write reflections and journal.<br><br>Chat pods used for sharing reflections with other participants.<br><br>Polls used to capture self-assessment and compare anonymously with other participants.<br><br>Breakout rooms used for small group discussions, debates, mock trials, role play, practice with partners, and focus groups. |
| Display | Visual Representations including: pictures, diagrams, graphs, multimedia, video, charts, animations.<br><br>Demonstrations. | Downloadable participant manuals with visual representations of key concepts.<br><br>Facilitator/faculty "live" presentation using a share pod with a PowerPoint presentation with robust visuals to help explain concepts. |

| | | Visual of the facilitator/faculty presenting or demonstrating "live," which enhances teacher presence.<br><br>Links to videos on YouTube, TED Talks, Khan Academy etc. |
|---|---|---|
| Doing | Caselettes (short cases).<br><br>Case Studies.<br><br>Practice.<br><br>Project-based learning.<br><br>Collaborative group project, paper, etc.<br><br>Cognitive Apprenticeship.<br><br>Assessment. | Downloadable participant manuals with case, project, collaboration, and apprenticeship instructions.<br><br>Live facilitator/faculty presentation, demonstration, and modeling for all activities. Time allocated for reflection and Q&A.<br><br>Breakout rooms with whiteboards and chat pods for individual and collaborative work. Polls available, when needed.<br><br>Breakout rooms for practice with partners or in larger groups, such as triads.<br><br>"Live" individual or group presentations in the main room. |
| Coaching | Cognitive Apprenticeships.<br><br>Scaffolding.<br><br>Interactive feedback. | Facilitator/faculty feedback through "live" voice, chat, and private chat.<br><br>Peer coaching in breakouts and private chats. |
| Conviviality | Ground Rules to encourage Collaboration, Cooperation, and Trust. | Participatory establishment of ground rules using "live" discussion, chats, whiteboard tools, and polls. |
| Critical Incident Questionnaire (CIT) | Use CIT for immediate student feedback between instructional events. | Downloadable form or Anonymous Poll. |
| Planning/Organization | Fast Start<br><br>Quick Reference<br><br>Participant Manual<br><br>Timeline for all Activities.<br><br>Time for Reflection during event and between events. | Fast Start and Quick Reference Guides on how to use the web conferencing tools.<br><br>Participant manual containing content and exercise during the live session.<br><br>Facilitator/faculty manual with suggested timelines for all activities.<br><br>Reflection time built into all events. |

**eSUCCESS.**

Following Christensen (2006) stages of model building Armstrong (2007; 2008; 2016b) observed Chief Learning Officers (CLOs) of some of the largest corporations in the world and interviewed these CLOs as they

rolled out large-scale learning management systems and online web-based learning courses for several hundred thousand employees. Following observation and interviews, data was categorized into themes and associations and connections reported (Armstrong, 2007; Armstrong, 2008). The analysis revealed five major categories and 30 indicators that ultimately became eSUCCESS. Reducing the data further, eight tenets were identified that embodied how CLOs described the necessary elements for successful implementation of an eLearning system. Table 2 shows the tenets and their descriptions.

*Table 2.* eSUCCESS Tenets with Descriptions

| Tenet # | Tenet Name | Description |
|---|---|---|
| 1 | eXecutive Sponsorship | Time<br>Money<br>Resources<br>Communications<br>Vision<br>Values<br>Change Management Strategy |
| 2 | Support from the Organization | Line of Business Executive<br>Learning Executive<br>IT Executive<br>Direct Manager Involvement<br>Project Manager for eLearning Initiatives<br>Strong Technology Infrastructure<br>Help Desk<br>"Built into the Organization"<br>Communities of Practice<br>Social Networks |
| 3 | Understand and Motivate the Learner | Benefit Communicated<br>Included in Performance Plan<br>Granted Additional Resources<br>Continuing Education Requirement<br>"Peer Pressure"<br>"Mandated" by the Regulators<br>Pre-requisite to Live Training Event<br>Threat of Job Loss<br>Certification and Accreditations |
| 4 | Culture Fosters Learning | Systems for Continuous Learning and Sharing<br>Promote Dialogue and Inquiry<br>Collective Mission<br>Leader<br>Collaboration and Team Learning<br>Connecting to the Environment |
| 5 | Content is Relevant to the Learner and Organization | Job and Task Specific<br>CEUs, PDU, CPEs<br>Certifications<br>Branded to the Culture and Environment<br>Recognized SMEs/Experts<br>Facilitating/Teaching<br>"Hot Topics" in the Industry |

| 6 | **E**valuate and Assess | Kirkpatrick Level 1<br>Kirkpatrick Level 2<br>Kirkpatrick Level 3<br>Kirkpatrick Level 4 |
|---|---|---|
| 7 | **S**tructure of Program is Engaging, Interactive, and Blended | On-the-Job Training (OJT)<br>Coaching and Mentoring<br>Web-based Technology<br>Traditional Classroom |
| 8 | **S**imulate the Work Environment and Work Tasks | Goal-based Scenarios<br>Problem-based Learning<br>Case Studies<br>Caselettes |

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## Results and Findings

To meet the NGT requirement that evaluators were experts in the field, a pre-data collection questionnaire was used to ensure each participant met the study inclusion criteria. Inclusion criteria included more than 5 years of instructional design/instructional technology experience and a doctoral degree in Instructional Design, Instructional Technology, or related field. Table 3.0 shows participant demographics. All experts had at least 15 years instructional design experience with three having over 20 years. All experts had doctoral degrees in instructional design, instructional technology, or a related field. All experts worked in field where they applied instructional design and instructional technologies. Table 3.0 details participant demographics across the inclusion criteria for the study.

*Table 3.0.* Participant Demographics

| Participant # | Years in Field | Title | Degree | Concentration | Conferences |
|---|---|---|---|---|---|
| P1 | >20 | Instructional Director for Training and Education | EdD | Leadership in Education | USDLA, FGDLA |
| P | >20 | Instructional Designer | EdD | Human Resource Development<br>Distance<br>Education | Sloan-C |
| P3 | 15-20 | Design Consultant | PhD | Applied Technology Training Development | ATD, ISPI, AECT |
| P4 | 15-20 | Instructional Design Faculty | PhD | Educational Technology | AECT, ATD OLC |
| P5 | >20 | Program Director, Instructional Technology | PhD | Computing and Technology in Education | IDC, PLN |

**Results from Participant Responses to R2D2/C3PO Model Evaluation Survey.** Table 4.0 shows the results from participant evaluations of the R2D2/C3PO Model Evaluation Survey (Appendix A). Each participant was asked to rank each component from 1-4, with 1 as unimportant, 2 of little importance, 3 important, and 4 very important. All components of the model received at least a 3, important, with the exception of 1b (create participant manuals for live synchronous events), 2b (reflection time allocated during synchronous event), 2e (focus group discussions), and 2f (online role play).

*Table 4.0.* Rankings by Participants: R2D2/C3PO Model Evaluation Survey

| | Ranking by Participants | 1 | 2 | 3 | 4 | 5 | Mean | Mode | SD |
|---|---|---|---|---|---|---|---|---|---|
| 1 | **Read/Listen** | | | | | | | | |
| 1a | Read materials online or offline | 4 | 3 | 3 | 4 | 4 | 3.6 | 4 | .44 |
| 1b | Create participant manuals for "live" synchronous events. | 2 | 2 | 2 | 2 | 4 | 2.4 | 2 | .69 |
| 1c | Listening to audio materials online or offline. | 3 | 3 | 3 | 3 | 4 | 3.2 | 3 | .35 |
| 1d | Facilitator for lectures/presentations/ Tutorials/demonstrations is a subject matter expert | 3 | 3 | 3 | 3 | 4 | 3.2 | 3 | .35 |
| 2 | **Reflect/Writing/Sharing** | | | | | | | | |
| 2a | Time allocated for pre-work | 3 | 4 | 3 | 3 | 4 | 3.4 | 3 | .44 |
| 2b | Reflection time allocated during synchronous event | 2 | 4 | 2 | 2 | 4 | 2.8 | 2 | .87 |
| 2c | Reflection time allocated between events (multi-day) | 3 | 4 | 3 | 3 | 4 | 3.4 | 3 | .44 |
| 2d | Small group discussions | 3 | 3 | 3 | 3 | 4 | 3.2 | 3 | .35 |
| 2e | Focus group discussions | 2 | 3 | 2 | 2 | 4 | 2.6 | 2 | .71 |
| 2f | Online role play | 2 | 3 | 2 | 2 | 4 | 2.6 | 2 | .71 |
| 2g | Self-assessment | 3 | 3 | 4 | 4 | 4 | 3.8 | 4 | .35 |
| 2h | Online quizzes | 3 | 3 | 4 | 3 | 4 | 3.4 | 3 | .44 |
| 2i | Practice | 4 | 3 | 4 | 4 | 4 | 3.8 | 4 | .35 |
| 3 | **Display** | | | | | | | | |
| 3a | Visual representations, such as: pictures, diagrams, graphs, multi-media, video, charts, animations | 4 | 3 | 3 | 4 | 4 | 3.6 | 4 | .44 |
| 3b | Demonstrations | 4 | 3 | 3 | 4 | 4 | 3.6 | 4 | .44 |
| 4 | **Doing** | | | | | | | | |
| 4a | Caselettes (short cases) | 3 | 3 | 2 | 3 | 4 | 3.0 | 3 | .53 |
| 4b | Case studies | 3 | 2 | 2 | 3 | 4 | 2.8 | 3 | .64 |
| 4c | Practice | 4 | 3 | 4 | 4 | 4 | 3.8 | 4 | .35 |
| 4d | Project-based learning | 4 | 3 | 4 | 4 | 4 | 3.8 | 4 | .35 |
| 4e | Collaborative group project | 4 | 2 | 2 | 4 | 4 | 3.2 | 4 | .87 |
| 4f | Cognitive apprenticeship | 4 | 2 | 3 | 4 | 4 | 3.4 | 4 | .71 |
| 4g | Assessment | 4 | 3 | 4 | 4 | 4 | 3.8 | 4 | .35 |
| 5 | **Coaching** | | | | | | | | |
| 5a | Cognitive apprenticeships | 4 | 2 | 3 | 4 | 4 | 3.4 | 4 | .71 |
| 5b | Scaffolding | 4 | 3 | 3 | 4 | 4 | 3.6 | 4 | .44 |
| 5c | Interactive feedback | 4 | 3 | 4 | 4 | 4 | 3.8 | 4 | .35 |
| 6 | **Conviviality** | | | | | | | | |
| 6a | Ground Rules to encourage collaboration, cooperation, and trust | 4 | 2 | 4 | 4 | 4 | 3.4 | 4 | .71 |
| 7 | **Critical Incident Technique (CIT)** | | | | | | | | |
| 7a | Use CIT for feedback between multi-day instructional events | 4 | 2 | 2 | 4 | 4 | 3.2 | 4 | .87 |
| 8 | **Planning/Organization** | | | | | | | | |
| 8a | Fast Start | 4 | 2 | 3 | 4 | 4 | 3.4 | 4 | .71 |
| 8b | Quick Reference | 4 | 2 | 3 | 4 | 4 | 3.4 | 4 | .71 |
| 8c | Participant Manual | 4 | 3 | 3 | 4 | 4 | 3.6 | 4 | .44 |
| 8d | Timeline for all activities | 4 | 2 | 3 | 4 | 4 | 3.6 | 4 | .69 |
| 8e | Time for Reflection during events and between events | 4 | 3 | 3 | 4 | 4 | 3.6 | 4 | .44 |

**Results from participant responses to eSUCCESS Model Evaluation Survey.** Table 5.0 shows the results from participant evaluations of the eSUCCESS Model Evaluation Survey (Appendix B). Each participant was asked to rank each component from 1-4, with 1 as unimportant, 2 of little importance, 3 important, and 4 very important. All components of the model received at least a 3, important, with the exception of 3h (threat of job loss) and 7d (traditional classroom).

*Table 5.0.* Rankings by Participants: eSUCCESS Model Evaluation Survey

|  | Question | 1 | 2 | 3 | 4 | 5 | Mean | Mode | SD |
|---|---|---|---|---|---|---|---|---|---|
| 1 | **eXecutive Sponsorship** | | | | | | | | |
| 1a | Time | 3 | 3 | 4 | 3 | 4 | 3.2 | 3 | .64 |
| 1b | Money | 3 | 3 | 4 | 3 | 4 | 3.4 | 3 | .44 |
| 1c | Resources | 3 | 3 | 4 | 3 | 4 | 3.4 | 3 | .44 |
| 1d | Communications | 3 | 3 | 4 | 3 | 4 | 3.4 | 3 | .44 |
| 1e | Vision | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 0 |
| 1f | Change Management Strategy | 4 | 3 | 4 | 4 | 4 | 3.8 | 4 | .35 |
| 2 | **Support from the Organization** | | | | | | | | |
| 2a | Line of Business Executive | 3 | 4 | 4 | 3 | 4 | 3.6 | 4 | .44 |
| 2b | Learning Executive | 3 | 4 | 3 | 3 | 4 | 3.4 | 3 | .44 |
| 2c | IT Executive | 3 | 4 | 2 | 3 | 4 | 3.3 | 3 | .64 |
| 2d | Direct Management Involvement | 3 | 4 | 3 | 3 | 4 | 3.4 | 3 | .44 |
| 2e | Project Manager for eLearning Initiatives | 4 | 4 | 2 | 4 | 4 | 3.6 | 4 | .69 |
| 2f | Strong Technology Infrastructure | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 0 |
| 2g | Help Desk | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 0 |
| 2h | Built into the Organization | 4 | 4 | 3 | 4 | 4 | 3.8 | 4 | .35 |
| 2i | Social Networks | 2 | 4 | 2 | 3 | 4 | 3.2 | 3 | .64 |
| 3 | **Understand and Motivate the Learner** | | | | | | | | |
| 3a | Benefits Communicated | 4 | 3 | 4 | 4 | 4 | 3.8 | 4 | .35 |
| 3b | Included in Performance Plan | 4 | 2 | 4 | 4 | 4 | 3.8 | 4 | .35 |
| 3c | Granted Additional Resources | 4 | 2 | 4 | 4 | 4 | 3.6 | 4 | .69 |
| 3d | Continuing Education Requirements | 4 | 2 | 3 | 4 | 4 | 3.4 | 4 | .71 |
| 3e | "Peer Pressure" | 3 | 2 | 3 | 3 | 4 | 3.0 | 3 | .53 |
| 3f | Mandated by the Regulators | 3 | 3 | 4 | 3 | 4 | 3.4 | 3 | .44 |
| 3g | Pre-requisite to Live Training Event | 4 | 4 | 3 | 4 | 4 | 3.8 | 4 | .35 |
| 3h | Threat of Job Loss | 1 | 2 | 4 | 1 | 4 | 2.4 | 1 | 1.25 |
| 3i | Certification and Accreditations | 3 | 3 | 3 | 3 | 4 | 3.2 | 3 | .35 |
| 4 | **Culture Fosters Learning** | | | | | | | | |
| 4a | Systems for Continuous Learning and Sharing | 3 | 4 | 3 | 3 | 4 | 3.4 | 3 | .44 |
| 4b | Promote Dialogue and Inquiry | 3 | 3 | 3 | 3 | 4 | 3.2 | 3 | .35 |
| 4c | Collective Mission | 3 | 3 | 3 | 3 | 4 | 3.2 | 3 | .35 |
| 4d | Leader | 3 | 4 | 4 | 3 | 4 | 3.6 | 4 | .44 |
| 4e | Collaboration and Team Building | 3 | 3 | 4 | 3 | 4 | 3.4 | 3 | .44 |
| 4f | Connecting to the Environment | 3 | 3 | 4 | 3 | 4 | 3.4 | 3 | .44 |
| 5 | **Content is Relevant to the Learner and Organizations** | | | | | | | | |
| 5a | Job and Task Specific | 4 | 3 | 4 | 4 | 4 | 3.8 | 4 | .35 |
| 5b | CEUs, PDUs, CPEs | 4 | 2 | 3 | 4 | 4 | 3.4 | 4 | .71 |
| 5c | Certifications | 4 | 2 | 3 | 4 | 4 | 3.4 | 4 | .71 |
| 5d | Branded to the Culture and Environment | 3 | 2 | 3 | 3 | 4 | 3.0 | 3 | .53 |
| 5e | Recognized SMEs/Experts Facilitating/Teaching | 4 | 2 | 2 | 4 | 4 | 3.0 | 4 | .87 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 5f | "Hot Topics" in the Industry | 2 | 2 | 4 | 4 | 4 | 3.2 | 4 | .87 |
| 6 | **Evaluate and Assess** | | | | | | | | |
| 6a | Kirkpatrick Level 1 | 2 | 2 | 2 | 2 | 4 | 2.4 | 2 | .69 |
| 6b | Kirkpatrick Level 2 | 2 | 2 | 3 | 2 | 4 | 2.6 | 2 | .71 |
| 6c | Kirkpatrick Level 3 | 4 | 3 | 3 | 4 | 4 | 3.6 | 4 | .44 |
| 6d | Kirkpatrick Level 4 | 4 | 3 | 4 | 4 | 4 | 3.8 | 4 | .35 |
| 7 | **Structure of Program is Engaging, Interactive, and Blended** | | | | | | | | |
| 7a | On-the-Job Training (OJT) | 4 | 3 | 3 | 4 | 4 | 3.6 | 4 | .44 |
| 7b | Coaching and Mentoring | 4 | 3 | 3 | 4 | 4 | 3.6 | 4 | .44 |
| 7c | Web-based Technology | 4 | 2 | 3 | 4 | 4 | 3.4 | 4 | .71 |
| 7d | Traditional Classroom | 1 | 2 | 3 | 1 | 4 | 2.2 | 1 | 1.07 |
| 8 | **Simulate the Work Environment and Work Tasks** | | | | | | | | |
| 8a | Goal-based Scenarios | 4 | 3 | 4 | 4 | 4 | 3.8 | 4 | .35 |
| 8b | Problem-based Learning | 4 | 3 | 4 | 4 | 4 | 3.8 | 4 | .35 |
| 8c | Case Studies | 4 | 3 | 3 | 4 | 4 | 3.6 | 4 | .44 |
| 8d | "Caselettes" | 4 | 3 | 2 | 4 | 4 | 3.4 | 4 | .71 |

**Results of the Focus Group**

Results from the NGT focus group yielded important addition suggestions for the two models which are presented in this section. The suggestions for the R2D2/C3PO follow and each is listed under the appropriate component in table 3 in **bold**.

**Read/Listening.** Adding "live authors" to the synchronous expert lectures was suggested based on experience from several of the experts.

**Reflect/Writing/Sharing.** Recommendations were made to enhance the reflection time by including "silent time" for reflection along with questions that encourage deep thought, such as "what was learned," "how it was learned," and "how the learning can be applied."

**Display.** Recommendations to enhance the display component included additional technologies such as virtual worlds and mobile technology, along with detailed demonstration techniques such as process steps, concept maps, logic steps, and using real-world work examples. There was a recommendation for providing instructor live video-based feedback of work products.

**Doing.** Recommendation for adding adaptive learning and gaming to enhance interactivity and student engagement were suggested.

**Conviviality.** Adding to the model a focus on support for the instructor/facilitator by focused attention on instructor/facilitator workload pre-and post-learning event, as well as during the learning event.

**Planning and organization.** The importance of a component for both formative and summative assessment was emphasized, which can be readily accomplished through use of polls and observation. Adding a Facilitator/Instructor Manual that aligns with the Participant Manual would enhance the model and allow for greater consistency in delivery.

*Table 3.* R2D2/C3PO Components Updated, Instructional strategies/learning activities, synchronous tools

| R2D2/C3PO Component | Instructional Strategies/Learning Activities | Synchronous Web-Conferencing Tools |
|---|---|---|
| Read/Listening | Reading materials online or offline.<br><br>Creating participant manuals for each Live synchronous event.<br><br>Listening to audio materials online or offline.<br><br>Synchronous Expert Lectures/**" Live Authors"**/Presentations/Tutorials | Downloadable participant manuals as pdf and/or word files.<br>Downloadable audio files.<br>Downloadable video/multimedia files.<br><br>"Live" synchronous facilitator/faculty and **"Live Author"** presentation/demonstrations/lectures. |

| | | |
|---|---|---|
| | Demonstrations. | Facilitator/faculty tools include whiteboards, chats, application sharing, file transfer, share pods, screen sharing, PowerPoint slides, polls, and note boards for announcements, Q&A, and FAQs.<br><br>Links to websites. |
| Reflect/Writing/Sharing | Time allocated for reflection:<br>1. Pre-work<br>2. During synchronous event.<br>3. Between synchronous events (multi-event course)<br><br>**"Silent Time" allowed for deep reflection**<br><br>**In-depth Reflections**<br>　　**What was learned?**<br>　　**How learned?**<br>　　**How learning can be applied?**<br><br>Small Group Discussion.<br><br>Focus Group Discussion.<br><br>Online Role Play.<br><br>Self-Assessment.<br><br>Online Quizzes.<br><br>Practice. | Downloadable participant manuals used to write reflections and journal.<br><br>Chat pods used for sharing reflections with other participants.<br><br>Polls used to capture self-assessment and compare anonymously with other participants.<br><br>Breakout rooms used for small group discussions, debates, mock trials, role play, practice with partners, and focus groups. |
| Display | Visual Representations including: pictures, diagrams, graphs, multimedia, video, charts, animations, **virtual worlds, mobile technology**.<br><br>Demonstrations.<br>　　**Process Steps**<br>　　**Concept Maps**<br>　　**Logic Steps**<br>　　**Real-world Work**<br>　　**Examples**<br><br>**Instructor live video-based feedback of work products and student work.** | Downloadable participant manuals with visual representations of key concepts.<br><br>Facilitator/faculty "live" presentation using a share pod with a PowerPoint presentation with robust visuals to help explain concepts.<br><br>Visual of the facilitator/faculty presenting or demonstrating "live," which enhances teacher presence.<br><br>Links to videos on YouTube, TED Talks, Khan Academy etc. |
| Doing | **Adaptive learning.**<br><br>Caselettes (short cases).<br><br>Case Studies. | Downloadable participant manuals with case, project, collaboration, and apprenticeship instructions.<br><br>Live facilitator/faculty presentation, demonstration, and modeling for all |

| | | |
|---|---|---|
| | **Gaming.**<br><br>Practice.<br><br>Project-based learning.<br><br>Collaborative group project, paper, etc.<br><br>Cognitive Apprenticeship.<br><br>Assessment. | activities. Time allocated for reflection and Q&A.<br><br>Breakout rooms with whiteboards and chat pods for individual and collaborative work. Polls available, when needed.<br><br>Breakout rooms for practice with partners or in larger groups, such as triads.<br><br>"Live" individual or group presentations in the main room. |
| Coaching | Cognitive Apprenticeships.<br><br>Scaffolding.<br><br>Interactive feedback. | Facilitator/faculty feedback through "live" voice, chat, and private chat.<br><br>Peer coaching in breakouts and private chats. |
| Conviviality | Ground Rules to encourage Collaboration, Cooperation, and Trust.<br><br>**Consideration for instructor/facilitator workload in planning event.** | Participatory establishment of ground rules using "live" discussion, chats, whiteboard tools, and polls. |
| Critical Incident Questionnaire (CIT) | Use CIT for immediate student feedback between instructional events. | Downloadable form or Anonymous Poll. |
| Planning/Organization | Fast Start.<br><br>Quick Reference Guide.<br><br>Participant Manual.<br><br>Timeline for all Activities.<br><br>Time for Reflection during event and between events.<br><br>**Evaluation and Assessment.**<br>         **Formative**<br>         **Summative**<br><br>**Facilitator Manual.** | Fast Start and Quick Reference Guides on how to use the web conferencing tools.<br><br>Participant manual containing content and exercise during the live session.<br><br>Facilitator/faculty manual with suggested timelines for all activities.<br><br>Reflection time built into all events.<br><br>**Self and group assessments in polls.** |

The suggestions for the eSUCCESS model follow and each is listed under the appropriate component in table 4 in **bold.**

**Tenet 1: eXecutive sponsorship.** Adding mission to the description of vision and values was considered important.

**Tenet 2: Support from the organization.** More specificity around the concept of "built into the organization," should be added including: needs assessment, continuous improvement in updated courses, and focus on learning transfer.

**Tenet 3: Understand and motivate the learner.** Going beyond a performance plan to a development plan that focused on motivation training and remediation was recommended.

**Tenet 4: Culture fosters learning.** Making sure that all leaders have leadership training and are required to attend various trainings with the "rank and file." Emphasis on "futuring" and visioning and change management strategies should be included. Offering badges was recommended for fostering extrinsic motivation.

**Tenet 6: Evaluate and assess.** Add Philips Level 5, Return on Investment (ROI), Return on Training (ROT), and continuous program evaluation and continuous needs assessments.

**Tenet 7: Structure of program is engaging, interactive, and blended.** Add mobile technologies.

**Tenet 8: Simulate the work Environment and work tasks.** Add guided practice with feedback, Ted Talks, YouTube videos, gaming, and virtual worlds.

*Table 4.* eSUCCESS Tenets Updated with Descriptions

| Tenet # | Tenet Name | Description |
|---------|------------|-------------|
| 1 | eXecutive Sponsorship | Time<br>Money<br>Resources<br>Communications<br>Vision<br>**Mission**<br>Values<br>Change Management Strategy |
| 2 | Support from the Organization | Line of Business Executive<br>Learning Executive<br>IT Executive<br>Direct Manager Involvement<br>Project Manager for eLearning Initiatives<br>Strong Technology Infrastructure<br>Help Desk<br>"Built into the Organization"<br>✓ **Needs Assessment**<br>✓ **Continuous Improvement-Course Updates**<br>✓ **Learning Transfer**<br>Communities of Practice<br>Social Networks |
| 3 | Understand and Motivate the Learner | Benefit Communicated<br>Included in Performance Plan<br>**Included in Development Plan**<br>✓ **Motivation Training**<br>✓ **Remediation**<br>Granted Additional Resources<br>Continuing Education Requirement<br>"Peer Pressure"<br>"Mandated" by the Regulators<br>Pre-requisite to Live Training Event<br>Threat of Job Loss |

| | | |
|---|---|---|
| | | Certification and Accreditations<br>**Badges** |
| **4** | **C**ulture Fosters Learning | Systems for Continuous Learning and Sharing<br>Promote Dialogue and Inquiry<br>Collective Mission<br>Leader<br>   ✓ **Leadership training**<br>Collaboration and Team Learning<br>**Leaders/Managers attend training with rank and file**<br>Connecting to the Environment<br>**Futuring and Visioning**<br>**Change Management Strategies** |
| **5** | **C**ontent is Relevant to the Learner and Organization | Job and Task Specific<br>CEUs, PDU, CPEs<br>Certifications<br>Branded to the Culture and Environment<br>Recognized SMEs/Experts<br>Facilitating/Teaching<br>"Hot Topics" in the Industry |
| **6** | **E**valuate and Assess | Kirkpatrick Level 1<br>Kirkpatrick Level 2<br>Kirkpatrick Level 3<br>Kirkpatrick Level 4<br>**Phillips Level 5-ROI**<br>**Return on Training – ROT**<br>**Continuous Program Evaluation**<br>**Continuous Needs Assessment** |
| **7** | **S**tructure of Program is Engaging, Interactive, and Blended | On-the-Job Training (OJT)<br>Coaching and Mentoring<br>Web-based Technology<br>Traditional Classroom<br>**Mobile Technologies.** |
| **8** | **S**imulate the Work Environment and Work Tasks | Goal-based Scenarios<br>Problem-based Learning<br>Case Studies<br>Caselettes<br>**Guided practice with feedback**<br>**Ted Talks**<br>**YouTube Videos**<br>**Gaming**<br>**Virtual Worlds** |

## Significance of the Study

Many models in instructional design and instructional technology and media are developed based on experience in practice and/or hearsay, rather than on rigorous empirical study (Richey, Klein, & Tracey, 2011). Richey and Klein (2007) explained that these models should be validated using design and development research. Both the R2D2/C3PO model and the eSUCCESS model emerged from rigorous research. The goal of this study was to further validate the models by intensive review by instructional designers and instructional technologists who had extensive and intensive experience in the field as well as doctoral degrees in the field. The models can serve as a

guide for practitioners as the seek to develop online learning programs. The expert validation strengthens the models and their use in practice.

## Conclusion

Expert validation confirmed that the major components of the model were predominately important or very important, with a small fraction being of little importance. While the experts did not add major elements to either model, minor enhancements were made to most components of both the R2D2/C3PO and eSUCCESS models and will further augment the models and provide stronger frameworks for professionals to use as a guide for implementing online learning and synchronous online learning in their organizations. Two data collection techniques, expert Survey and expert NGT focus group, were primary in providing trustworthiness, transferability, credibility, confirmability, and dependability to the results and findings.

## Future Research

The field of Instructional Design and Instructional Technology is relatively new and growing rapidly as technology is changing at an ever-increasing rate. Often models, frameworks, and processes are created based on experience in practice or limited research. Future research using a quantitative correlational analysis of the different components of both models would further validate the major categories and components of each model, thereby, enhancing their importance to researchers and practitioners alike. Applying the models in practice and reporting on the findings in a design and development model research study would be another way to extend the research. Additions to model components or categories from that research would serve to further enhance the instructional design knowledge base.

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**Appendix A**

## MODEL EVALUATION SURVEY 1

### R2D2/C3PO Model

Please rate each element in the R2D2/C3PO model as to its importance in the model on a scale of 1 to 4. 1 is unimportant. 2 is of little importance. 3 is important. 4 is very important.

| | Question | 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|
| 1 | **Read/Listen** | | | | |
| 1a | Read materials online or offline | | | | |
| 1b | Create participant manuals for "live" synchronous events. | | | | |
| 1c | Listening to audio materials online or offline. | | | | |
| 1d | Facilitator for lectures/presentations/ Tutorials/demonstrations is a subject matter expert | | | | |
| 1e | Management usually keeps us informed about things we want to know | | | | |
| 2 | **Reflect/Writing/Sharing** | | | | |
| 2a | Time allocated for pre-work | | | | |
| 2b | Reflection time allocated during synchronous event | | | | |
| 2c | Reflection time allocated between events (multi-day) | | | | |
| 2d | Small group discussions | | | | |
| 2e | Focus group discussions | | | | |
| 2f | Online role play | | | | |
| 2g | Self-assessment | | | | |
| 2h | Online quizzes | | | | |
| 2i | Practice | | | | |
| 3 | **Display** | | | | |
| 3a | Visual representations, such as: pictures, diagrams, graphs, multi-media, video, charts, animations | | | | |
| 3b | Demonstrations | | | | |
| 4 | **Doing** | | | | |
| 4a | Caselettes (short cases) | | | | |
| 4b | Case studies | | | | |
| 4c | Practice | | | | |
| 4d | Project-based learning | | | | |
| 4e | Collaborative group project | | | | |
| 4f | Cognitive apprenticeship | | | | |
| 4g | Assessment | | | | |
| 5 | **Coaching** | | | | |
| 5a | Cognitive apprenticeships | | | | |
| 5b | Scaffolding | | | | |
| 5c | Interactive feedback | | | | |
| 6 | **Conviviality** | | | | |
| 6a | Ground Rules to encourage collaboration, cooperation, and trust | | | | |

| | | | | | |
|---|---|---|---|---|---|
| 7 | **Critical Incident Technique (CIT)** | | | | |
| 7a | Use CIT for feedback between multi-day instructional events | | | | |
| 8 | **Planning/Organization** | | | | |
| 8a | Fast Start | | | | |
| 8b | Quick Reference | | | | |
| 8c | Participant Manual | | | | |
| 8d | Timeline for all activities | | | | |
| 8e | Time for Reflection during events and between events | | | | |

**Comments.** Please use the space below to comment on any of the components of the model. Add any suggestions you have for elements that should be added to the model.

**Appendix B**

## MODEL EVALUATION SURVEY 2

### eSUCCESS Framework

**ESUCCESS Framework**

Please rate each element in the ESUCCESS Framework as to its importance in the model on a scale of 1 to 4. 1 is unimportant. 2 is of little importance. 3 is important. 4 is very important.

|     | Question | 1 | 2 | 3 | 4 |
| --- | --- | --- | --- | --- | --- |
| 1 | **eXecutive Sponsorship** | | | | |
| 1a | Time | | | | |
| 1b | Money | | | | |
| 1c | Resources | | | | |
| 1d | Communications | | | | |
| 1e | Vision | | | | |
| 1f | Change Management Strategy | | | | |
| 2 | **Support from the Organization** | | | | |
| 2a | Line of Business Executive | | | | |
| 2b | Learning Executive | | | | |
| 2c | IT Executive | | | | |
| 2d | Direct Management Involvement | | | | |
| 2e | Project Manager for eLearning Initiatives | | | | |
| 2f | Strong Technology Infrastructure | | | | |
| 2g | Help Desk | | | | |
| 2h | Built into the Organization | | | | |
| 2i | Social Networks | | | | |
| 3 | **Display** | | | | |
| 3a | Visual representations, such as: pictures, diagrams, graphs, multi-media, video, charts, animations | | | | |
| 3b | Demonstrations | | | | |
| 4 | **Understand and Motivate the Learner** | | | | |
| 4a | Benefits Communicated | | | | |
| 4b | Included in Performance Plan | | | | |
| 4c | Granted Additional Resources | | | | |
| 4d | Continuing Education Requirements | | | | |
| 4e | "Peer Pressure" | | | | |
| 4f | Mandated by the Regulators | | | | |
| 4g | Pre-requisite to Live Training Event | | | | |
| 4h | Threat of Job Loss | | | | |
| 4i | Certification and Accreditations | | | | |
| 5 | **Culture Fosters Learning** | | | | |
| 5a | Systems for Continuous Learning and Sharing | | | | |
| 5b | Promote Dialogue and Inquiry | | | | |
| 5c | Collective Mission | | | | |
| 5d | Leader | | | | |
| 5e | Collaboration and Team Building | | | | |
| 5f | Connecting to the Environment | | | | |

| | | | | | |
|---|---|---|---|---|---|
| 6 | **Content is Relevant to the Learner and Organizations** | | | | |
| 6a | Job and Task Specific | | | | |
| 6b | CEUs, PDUs, CPEs | | | | |
| 6c | Certifications | | | | |
| 6d | Branded to the Culture and Environment | | | | |
| 6f | Recognized SMEs/Experts Facilitating/Teaching | | | | |
| 6g | "Hot Topics" in the Industry | | | | |
| 7 | **Evaluate and Assess** | | | | |
| 7a | Kirkpatrick Level 1 | | | | |
| 7b | Kirkpatrick Level 2 | | | | |
| 7c | Kirkpatrick Level 3 | | | | |
| 7d | Kirkpatrick Level 4 | | | | |
| 8 | **Structure of Program is Engaging, Interactive, and Blended** | | | | |
| 8a | On-the-Job Training (OJT) | | | | |
| 8b | Coaching and Mentoring | | | | |
| 8c | Web-based Technology | | | | |
| 8d | Traditional Classroom | | | | |
| 9 | **Simulate the Work Environment and Work Tasks** | | | | |
| 9a | Goal-based Scenarios | | | | |
| 9b | Problem-based Learning | | | | |
| 9c | Case Studies | | | | |
| 9d | "Caselettes" | | | | |

**Comments.** Please use the space below to comment on any of the components of the model. Add any suggestions you have for elements that should be added to the model.

**Appendix C**


<div align="center">

**Focus Group**
**Nominal Group Technique-Model Validation**
**eSUCCESS**
**R2D2/C3PO**
**Agenda**

</div>


**Welcome and Overview (2 minutes)**
**Process for each model**
  Step 1. Review of Model Components and Silent Generation of question(s) to be addressed. What components might you add to each element in the model? And, to the model itself? (10 minutes)

  Step 2. Sharing Ideas. Each participant shares their ideas about additions. No debate at this stage (2-3 minutes each). (10 minutes)

  Step 3. Group Discussion. (20 minutes)

  Step 4. Voting. (3) minutes

**Appendix D**

## Brookfield's Discussion Techniques

**Circle of Voices**

  Individuals reflect on the discussion topic (1-3 minutes)

  Participants go around the circle in order - each person has up to 1 minute of uninterrupted air time to give their viewpoint on the topic.  No interruptions are allowed.

  Move into free discussion with the ground rule that every comment offered must somehow refer back to a comment made by **someone else** in the opening circle of voices.  This need **NOT** be agreement - it can be a disagreement, a question, an elaboration or extension, an illustration, and so on.

Retrieved from:http://www.stephenbrookfield.com/Dr._Stephen_D._Brookfield/Workshop_Materials.html