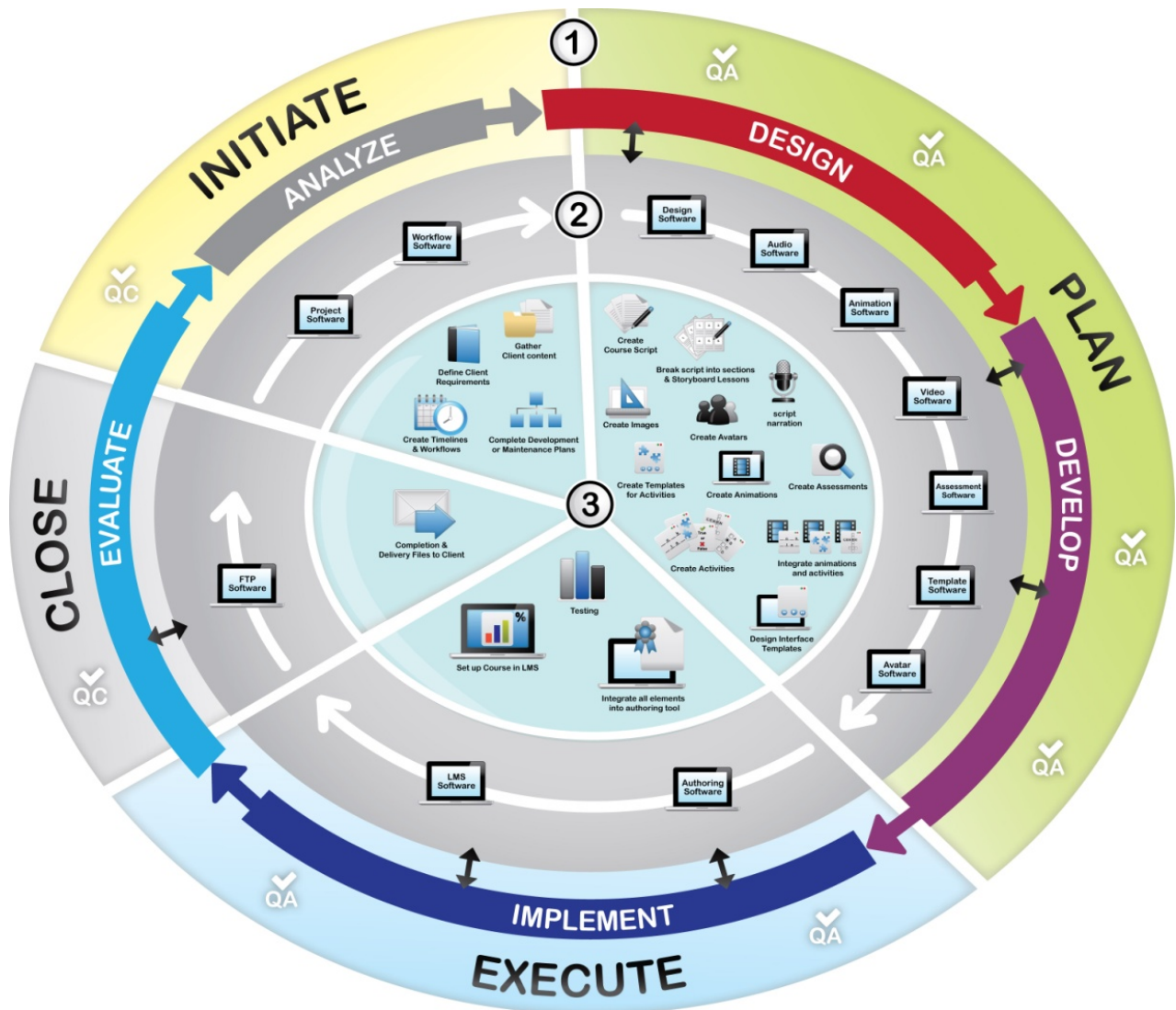


# The Instructional Design Maturity Model Approach for Developing Online Courses

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This Instructional Design Maturity Model (IDMM) was created by iPal to illustrate the connection between the Instructional Design Process, the Instructional Design Systems and the Instructional Design Capabilities following the discipline of Project Management as seen by the outer rings. With the advancement of technology and the requirement to be 'on-line', the IDMM helps better define the process an Instructional Designer would follow when developing an on-line course.

## The Advancement of the Instructional Design Methodology

There have been a lot of changes in the way we learn since the days of Blooms' Taxonomy Authored in the early 1950's'. Many approaches have been founded upon this methodology and have incorporated new levels of learning techniques in order to ensure that the learning meets the requirements of the time. With today's advancement of technology and the movement towards on-line education, the way we construct courses must adapt to these changing needs. The IDMM provides a model that supports that process.

This document outlines the correlation between the various levels of development and the steps required within each level to develop a successful online course.

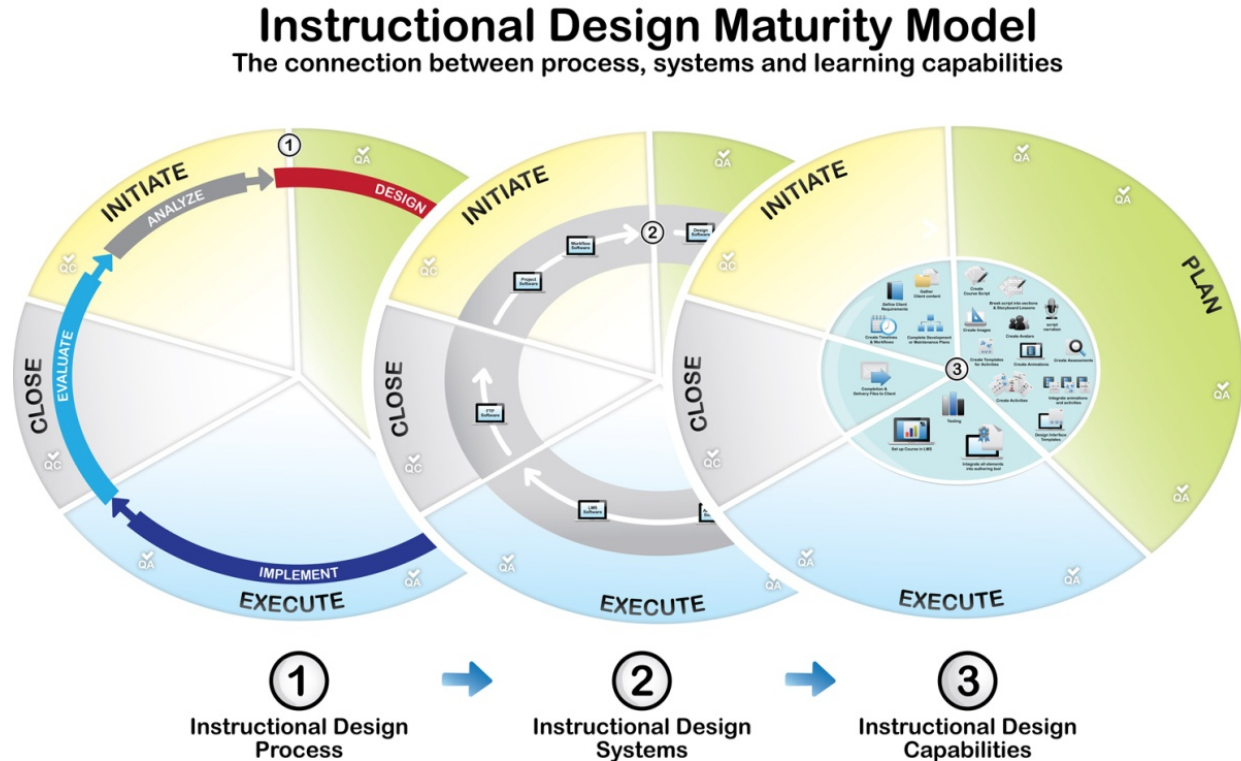
### Levels of Instructional Design (ID)

There are 3 levels of Instructional Design that support the creation of an online course, with the underlying management principles of Project Management. These include:

1. The Instructional Design Process (IDP);
2. The Instructional Design Systems (IDS); and
3. The Instructional Design Capabilities (IDC).

The following figure illustrates these 3 levels as well as the Project Management (PM) principals for development and quality control throughout the development lifecycle.

Figure 1.1 – Connection between levels of ID

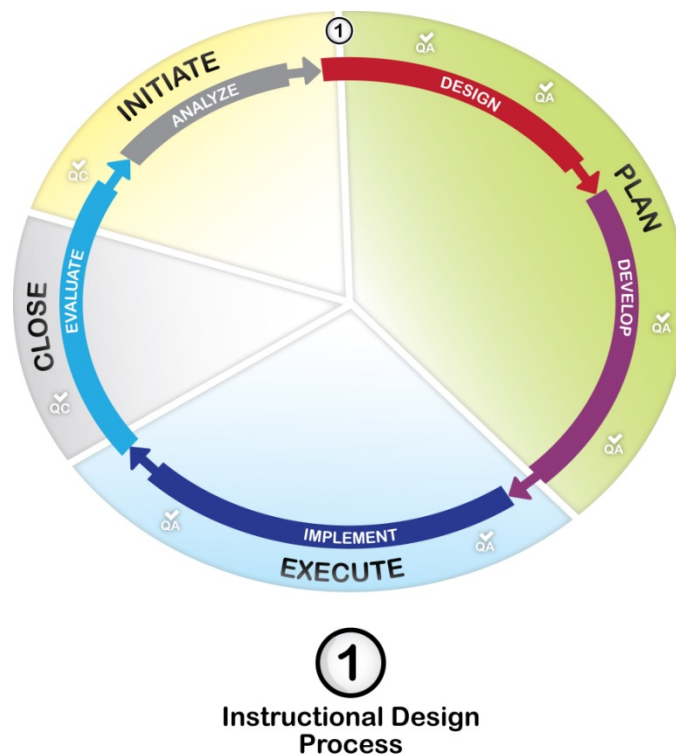


Each one of these elements contributes to the development of a mature level of on-line design. The better defined the process and deployment of the system components the greater the likelihood that the desired ID capabilities will be achieved.

The ID process is a long standing process that has been in use for as long as most could remember and is still used, or should be used, by organizations who are involved in the development of traditional or instructor led courses. When developing an on-line course however, there are several items that need to be included in this process, that are not listed in the traditional approach, in order to ensure that the process supports the desired online training outcome.

## Level 1 - The Instructional Design Process (IDP)

Figure 1.2 – PM integrated Instructional Design Process Model



The following section outlines the process steps required in the development of a course. They consist of 5 phases: Analyze, Design, Develop, Implement and Evaluate. This is the first series of steps in the process for developing an on-line course. As with any type of development, you must first develop the foundation on which (in this case) the on-line course could be built.

## 1. Analyze Checklist

- ✓ Determine if the client's materials for the course have already been created into a printable and useable program (ie: Workbook, PowerPoint presentation).
- ✓ If the course already exists, determine if the course was built following an Instructional Design Process. If so, then the course might already have the foundation for conversion into an online format. If not, a Subject Matter Expert is required.
- ✓ Determine course and lesson outcomes and linkage back to organizational goals.
- ✓ Analyze organizational environment (department, position, culture...etc) to gain an understanding of the course requirements and desired outcomes.
- ✓ Compile all development tasks associated with each lesson.
- ✓ Develop a course Work Plan that details each lesson, each activity and the result you want the learner to achieve. Select tasks that people need to learn to become performers (perform a needs analysis of course materials to convert to online materials).
- ✓ Review performance measures of a SCORM (Sharable Content Object Reference Model) compliant program for the tasks to be taught and how the information will be captured and delivered in the Learning Management System (LMS).
- ✓ Outline environmental setting for the tasks to be learned, ie: classroom, on-the-job, on-line self-led, on-line Instructor-led, blended.
- ✓ Estimate timelines, costs and compare against benefits that would be realized.

## 2. Design Checklist

- ✓ Develop the 'Learning Objectives' for the course.
- ✓ If the course is part of a series of courses, ensure that the Objectives align with the other modules within the program.
- ✓ Develop the learning outcomes per lesson within each course.
- ✓ Identify and list the learning steps that are required for each lesson and how they link back to the Learning Objectives of the course.
- ✓ Structure the lessons to support learning, but that are also focused on increasing retention rate and further define how to do this.
- ✓ Outline the 'Domains of Learning' for the various lessons and activities, then show how they tie to your Learning Outcomes per lesson.
- ✓ Develop activities and a main test/quiz to better track a learner's understanding as well as their strengths and weakness.
- ✓ List the prerequisites that the learner must demonstrate prior to entering the learning program.
- ✓ Sequence and structure the learning objectives.
- ✓ Review iPal's Design Process under Level 3 for more details on Instructional Design Capabilities specifically for on-line development.

## 3. Develop Checklist

- ✓ List activities that will help the students learn the task. This could be pulled from the Subject Matter Experts (SMEs) of the course if the course has been built.

- ✓ Select the learning activities (result desired).
- ✓ Review existing materials so that you do not reinvent the wheel when compiling your information.
- ✓ Incorporate the instructional courseware into the Authoring Tool.
- ✓ Synthesize the courseware into a viable learning program, made up of learning lessons and tied to other learning modules if the course is part of a larger program.
- ✓ Validate the instruction to ensure it accomplishes all goals and objectives as previously defined.
- ✓ Enter in all descriptions, keys words, lesson headers and other details that will be required for the Manifest of the Authoring Tool so it is captured in the (LMS)<sup>1</sup>.
- ✓ Export course materials are SCORM package to ensure reportable functions work properly in the LMS;
- ✓ Import 'Package' into a Learning Management System and test functionality.
- ✓ Implement Checklist Create a management plan for conducting the training.
- ✓ Assign learners with access user names and password for the LMS
- ✓ Conduct the training.

#### 4. **Evaluate Checklist**

- ✓ Review and evaluate each process phases (analyze, design, develop, implement) to ensure it is accomplishing its goals and objectives.
- ✓ Perform external evaluations, e.g. observe that the tasks that were taught can actually be performed by the learners in their working environment.
- ✓ Revise training system to include improvements and better meet future challenges.

## Level 2 - The Instructional Design Systems

As we walk through the Instructional Design Process we notice that there are areas of development that require the 'entering of data' into a system or multiple systems. These systems are called 'The Instructional Design Systems' and all online courses require some or all of these tools in order to successfully develop an online course.

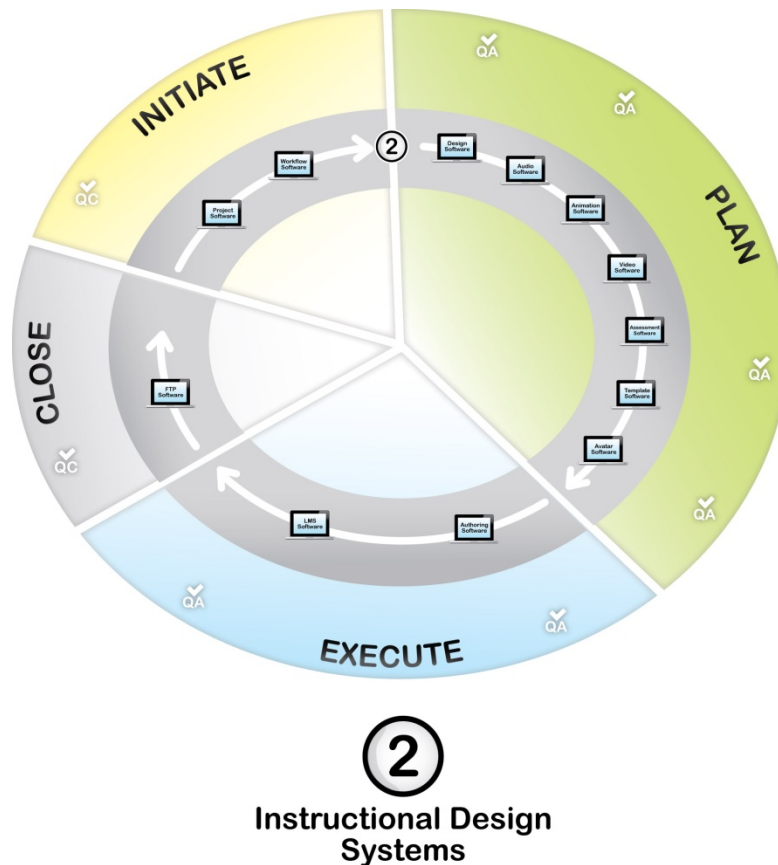
It is critical to remember that when incorporating the systems and tools into the development process that 'inputs' and 'outputs' of each technology need to be considered. What this means is that not all systems will work well together and thus potentially create 'technical' issues.

The following model illustrates the order in which the technologies are being used as we move through the lifecycle of the course development. Each technology plays it's part not only along the cycle, but across the layers of ID.

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Learning Management System – A system that is used in the delivery of on-line course content, which enables the learner's progress, results and much more to be captured and made available for analyses so long as the course itself has been developed within a SCORM compliant framework.

Figure 1.3 – PM integrated Instructional Design System Model



Without the proper tools, the Instructional Design Process (IDP) and your IDC are greatly compromised in supporting the online world. With the traditional IDP being for in-class materials development, the systems and tools required were really only word document processing tools such as word perfect and MSP suite of products. These tools are mass marketed and very inexpensive to acquire. When you move to developing materials to be distributed in the virtual world, the level of required technology increases immensely and if you want to create dynamic and interactive on-line learning, even more so. This is due to the fact that traditional IDP enables the instructor led courses with an ability to make best use of the various Pedagogy approaches without the need to technology, because they are present in the same room with the learner and through simple observations such as body language, gesturing, as well as direct communication and other forms of interaction, the professor is able to gauge the learner's understanding and adapt their learning approaches.

In an online environment, these approaches need to capture what is done within a classroom setting to the best of its ability. In order to do this, systems and tools are required that surpass what is readily available to the common person.

Once a person has access to these technologies, there is still the need to understand how to incorporate the content, the ID and the technologies together to produce the desired result. The understanding of these processes and the ability to integrate them is key to being successful with the further development of the on-line course, but the work is just

beginning. The third level of development taps into the capabilities of the On-line Instructional Designer. The difference between a traditional ID and an On-line ID is the level of capabilities as it pertains to transforming content into on-line content using the technologies available. These capabilities in the on-line world are known as the Instructional Design Capabilities.

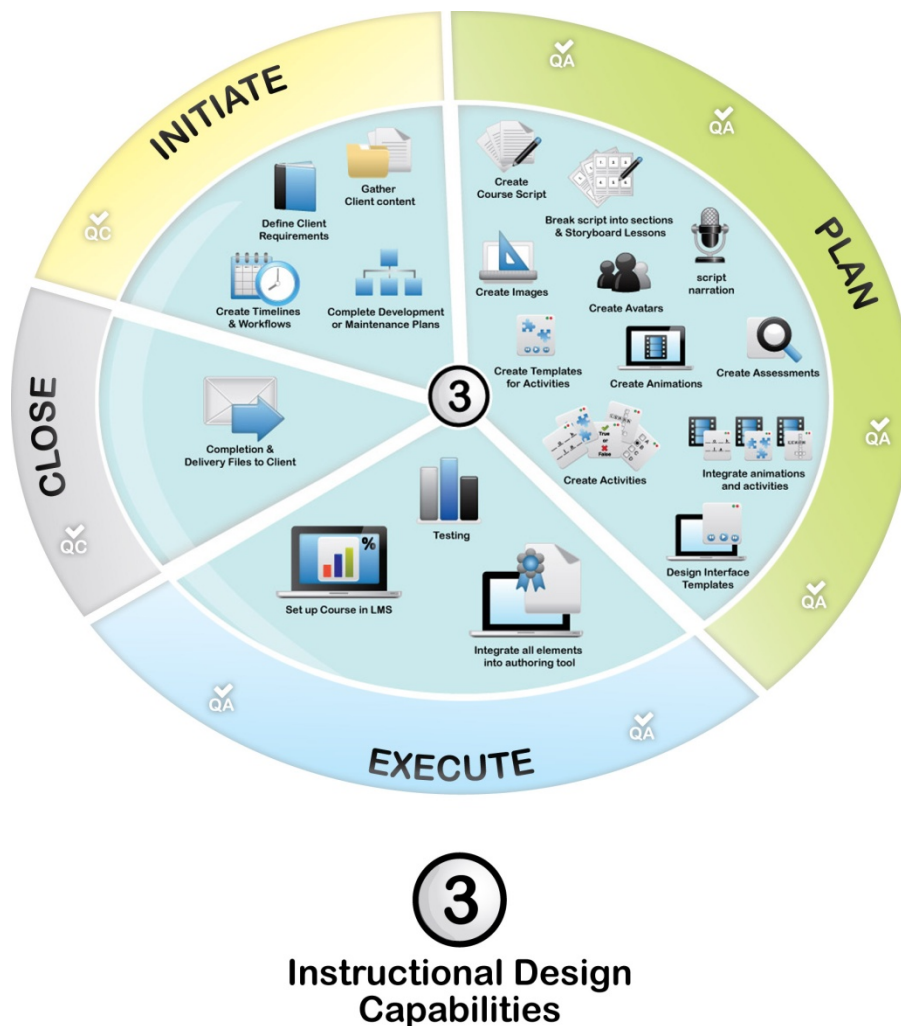
### Level 3 - The Instructional Design Capabilities (IDC)

From Wikipedia:

**Capability** – “A capability is WHAT a company or organization needs to be able to do to execute its’ strategy. Another way to think about capabilities is a container of people, process and technology that is addressable for a specific purpose”


When developing an online course, it is important to also understand all levels of Instructional Design, but being successful is the ability to move those theories into results. Instructional Design Capabilities (IDC) are the main infrastructure of tangible course development, the “to dos”. This is where all the systems and tools are used by the course technicians to start building the framework, the elements, the activities and the outcomes that make up a good online course.

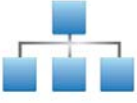
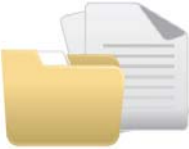




Figure 1.4 – PM integrated Instructional Design Capabilities Model




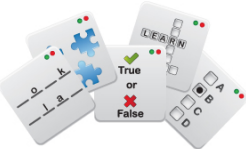






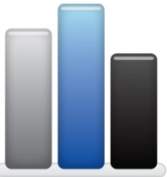

Some Instructional Designers consider that by incorporating graphics and the use of an Authoring tool would automatically create a great on-line course, but this is obviously not the case. The best results is in our ability to successfully move materials through to an end product by following all processes defined by the IDMM; helping capture the essence of the content, enhancing the ability of a learner to retain the information through proper learning techniques and of course how to best make use of the knowledge. All of this must be built using the right technologies, with the right developers who understand the products' inputs and outputs and who have the capabilities in all levels of ID to move the product through the process. A typical ID methodology still focuses mainly on a single dimensional process, but in the virtual world we need to be thinking more 3 dimensional, multiple levels and integration of the learning approaches.

In iPal's IDC model, we aim to illustrate the various elements required in order to move your concepts, content and ideas through to a tangible product by leveraging state of the art learning tools. These elements, made up of multiple technologies, include such things as enhanced animations, rich graphics, videos, virtual characters, interactions with content that are sequenced across timelines, and then combined with professionally scripted narrations, reinforced through visual and audio stimulations. The capabilities of a developer at this stage should be focused around the use of technologies and the know-how to move through each step in a logical and sequential format, capturing all the learning outcomes and transforming them into lessons that provide an engaging and rich learning environment. There are a number of elements required to create an on-line course some of which are illustrated in Figure 1.4. The specific roles of each capability in the e-learning course development cycle are outlined in the table below.

ICON	Descriptive	Process Step
 <p><b>Define Client Requirements</b></p>	<ul style="list-style-type: none"> <li>• Determine size and length of course.</li> <li>• Who the users of the courses will be.</li> <li>• Budget and timelines.</li> <li>• Limitations and constraints.</li> <li>• Available resources, current course content.</li> <li>• Type of output required or desired.</li> <li>• Technical vs soft skills training.</li> <li>• Internal or external SMEs.</li> <li>• Server and technical capabilities.</li> </ul>	Initiate

 <p>Complete Development or Maintenance Plans</p>	<ul style="list-style-type: none"> <li>• Develop agreements outlining scope of work and continuation of work.</li> </ul> <p>This helps ensure the client understands the level of effort required in the development and support of an on-line course.</p>	Initiate
 <p>Gather Client content</p>	<ul style="list-style-type: none"> <li>• Request to see course content</li> <li>• Access to systems and software</li> <li>• Images or design elements that the client would like to add in the course.</li> </ul> <p>It is important to understand the scope of what the customer has as well as what they want you to develop. This will have an impact on the scope of the development</p>	Initiate
 <p>Create Course Script</p>	<p>When creating an on-line course it is important to understand how to deliver it as though it was being taught by an instructor with a common sense approach. Most materials are written in the 3<sup>rd</sup> person and we need to rewrite it in the 1<sup>st</sup> person as though you are talking to the learner directly. This will increase the connectivity you would have with your audience.</p>	Plan
 <p>Break script into sections &amp; Storyboard Lessons</p>	<p>Once the script is defined, it is important to break them down into management sections. These sections are then storyboarded with learning outcomes, common look and feel, potential activity ideas and other elements that begin to form the framework for the lessons.</p>	Plan
 <p>Create Images</p>	<p>During the storyboarding, images start to take shape and are outlined for each section. These images will be used to tie into the script and help emphasize key points and the message the lesson is trying to get across. They can either be created or purchased from an art source bank.</p>	Plan
 <p>Script narration</p>	<p>The narration of the script is developed so that it can be added in a timeline for the development of the animations, graphics and other illustrations. In order for everything to be sequenced together, the narration needs to be used as the benchmark.</p>	Plan

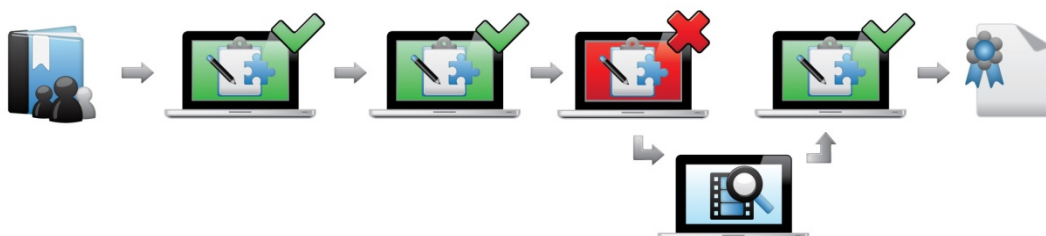
 <p><b>Create Avatars</b></p>	<p>Virtual Instructors (Avatars) would need to be added into the storyboarding processes so that placement can be incorporated into the design of each lesson. The placement of these characters will help ensure the run time of the narrated content is easily visible behind the Avatar. Avatars are used as a means of helping connect with an instructor. They are not always required, but for the most part they add a level of interactivity.</p>	<p>Plan</p>
 <p><b>Create Animations</b></p>	<p>There is content that is sometimes more technical or requires a little more explanation and animations are a great way to accomplish this.</p>	<p>Plan</p>
 <p><b>Create Templates for Activities</b></p>	<p>With on-line development, the activities need to be housed in a design that represents the CLF of the lessons. In order to do this a template will need to be created. This template would include supporting links, content and a tie into the authoring tool.</p>	<p>Plan</p>
 <p><b>Create Activities</b></p>	<p>For each lesson, the ID should outline the type of activities and the results the activities are meant to accomplish. These activities are then developed and incorporated into the Authoring tool. In order to have a successful on-line course, it is critical that the activities incorporate the testing elements and are recorded properly. Are testing elements a different capability?</p>	<p>Plan</p>
 <p><b>Design Interface Templates</b></p>	<p>As with activity templates, the lessons need to have a template created as well. This template would need to incorporate a 'Table of Contents', links to supporting documents and glossary, navigation through the lessons, activities and tests as well as a CLF.</p>	<p>Plan</p>
 <p><b>Integrate animations and activities</b></p>	<p>After the development of the graphics, animations and other elements particular to the course design, they need to be compiled together into one file so that they would run seamlessly together as well as tie into the Authoring Tool. This should also include such things as Activities.</p>	<p>Plan</p>

 <b>Create Assessments</b>	<p>It is important to ensure that the learner is being assessed on progress, understanding and retention. To do this, assessments need to be developed and incorporated throughout the lessons and/or at the end of the course. There are a variety of pre and post assessments that can be incorporated in the development of your course, so ensure that you determine what these assessments are designed to accomplished</p>	<p>Plan</p>
 <b>Set up Course in LMS</b>	<p>After all the sections, activities, tests, templates, graphics, animations and other learning elements are compiled together, they need to be exported using a SCORM compliant tool in order to be successfully recorded within a Learning Management System</p>	<p>Execute</p>
 <b>Testing</b>	<p>Throughout the entire process, testing needs to be performed to ensure that the elements work seamlessly together. Once compiled and ready for LMS use, the testing will need to be performed on each lesson, on links, from results of activities, retesting on loading, reloading, capacity usage and other elements as defined by the customer.</p>	<p>Execute</p>
 <b>Completion &amp; Delivery Files to Client</b>	<p>Once the product has been completed, the files are compiled, zipped and provided to the customer in the required format to be used within the LMS.</p>	<p>Close</p>

## Continual Results

After the final product has been handed over to the client, there is still work to be done to ensure that the learning outcomes are being retained. Providing good information in a measureable delivery system is critical to being successful with an on-line course, but you also need to ensure that your people are retaining the information weeks after they have taken the course. To do this, all that is required is to create a follow-up assessment using the same course materials that would test their understanding and depending on those results would either pass them through to the next assessment or require them to take a support lesson. The following model illustrates this process.

*Figure 1.5– Assessments to reinforce understanding*



## Conclusion

Developing on-line courses are a great way to reduce costs, increase flexibility, increase market share and potentially earn money while you sleep, but there is a lot of work involved in the development of a course that is to be considered successful. An on-line learning program needs to capture the learners' attention, hold it for the duration of the course, ensure that the learner understands the lessons and is able to retain the information and put it to good use. On-line learning differs from instructor led in-class lessons because the learner is dependent solely on the course materials, the animations, illustrations, graphics, voice instructions, specifications, models and processes, quizzes, tests and other elements that tries to emulate what is taught in the classroom. If these elements are not developed and delivered properly, the overall course might not accomplish the objectives of what is to be considered a success. The iPal IDDC differs from other Instructional Design Models because it incorporates multiple levels of development that are required to meet today's technological advancements and user expectations.

If you have any questions or would like to make comments on our approach, please feel free to contact us at [bloiselle@i-pal.ca](mailto:bloiselle@i-pal.ca)

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Brad Loiselle, PMP, is the founder and President of iPal Interactive Learning Inc., an on-line development company that specializes in e-learning. Brad is also on several Committees and Board of Directors including iPal, the Project Management Institute's Ottawa Chapter and Algonquin College's Multimedia Program. For more information about iPal, visit [www.i-pal.ca](http://www.i-pal.ca)