Educational Reforms, Learning-Centred Education and Digital Resources for Learning

1

Learning Outcomes:

- Describe what is a digital resource for learning;
- Discuss key ideas that underline digital resources for learning as presented in this book;
- Describe the main role of digital resources in learning-centred activities; and
- Classify digital resources for learning into different forms according to a classification based on declarative-procedural-conceptual curriculum content knowledge forms.

1.1 Introduction to Digital Resources for Learning

The central question this book is attempting to address is what are effective digital resources for today's teaching and learning, and how such resources can be designed, developed, used, reused and managed. In the book, we will explore forms of digital media for teaching and learning. More specifically, the purposes of the book are as follows:

- The book is a useful guide for the development of digital resources for learning.
- The book presents a set of practical recommendations for the uses of these resources in educational activities. Thus, the book is a useful reference material for teachers in identifying, using and reusing digital resources for learning in their teaching.

D. Churchill, *Digital Resources for Learning*, Springer Texts in Education,
DOI 10.1007/978-981-10-3776-4_1

- The book is a valuable resource for those teachers who wish to conceptualize digital resources for their own teaching.
- The book is useful reference material for digital media publishers and designers of educational resources as it provides a unique perspective and approach to the conceptualization, design, development and deployment of digital resources for learning.
- The book is a useful guide for researchers investigating learning issues surrounding design, development and use of digital resources for learning.

There has been a wide spread absence of understandings of what are digital resources for learning, their connection to a curriculum, and their learning uses and management. Often, technologies and digital resources are taken simply as instructional medium for the transfer of explicit information to passive learners. Even the most contemporary initiatives such as MOOC[1] and Flipped Classroom, continue to deploy information technologies and digital resources in a way that reflects such outdated practice.

Digital resources for learning are best described as technology-based multimedia content specifically designed for educational (and training) purposes. There are a lot of digital resources on the Internet and other sources, designed for various purposes, such as to provide news information, marketing or entertainment. However, digital resources for learning are designed with specific intention to be used for learning rather than for any other information purposes. Therefore, their design includes a focus on how people learn with the utility of such media in their activities, and how such resources can be designed, developed and managed for that specific purpose.

Important
Digital resources for learning are best described as technology-based multimedia content specifically designed for education and training purposes.

Here are some brief examples of what might be effective digital resources for learning:

- Learners are presented to an interactive representation that permits the manipulation of parameters and exploration of relationships, e.g., changing some parameters that cause pollution and observing effect on climate change, or changing parameters related to the migration of a population and observing the impact on regional economies.

[1]A massive open online course (MOOC) is a contemporary approach to the development of online courses aimed at wide participation and open access via the Internet. A number of top universities in the world provide MOOC courses for free to prospective students and others interested to learn specific topics. The educational quality of many of MOOCs is questionable as there is absence of any useful learning design strategy to guide their development.

Important
Digital resources for learning are designed based on focus on how people learn with the utility of such media in their activities, and how such resources can be designed, developed and managed for that specific purpose.

- Data, information and ideas are presented mathematically, e.g., selecting start and target destination on the map and manipulating the acceleration of a vehicle to obtain information about its velocity and displacement, or increasing the number of vehicles in Europe and obtaining mathematical or statistical representations of the amount of certain pollutants in the air.
- Data, information and ideas are expressed in non-mathematical ways, e.g., manipulating changes in social welfare regulations and obtaining statements of opinions from people across Europe.
- Representations are manipulated graphically, e.g., dropping an icon of an electric coal power station on the map and observing the change in global warming over some areas of China.
- Data, information and ideas are represented and structured in information networks and pop-up displays, e.g., rolling a mouse pointer over a city to access information about its population, selecting two of more cities and obtaining information about the distance between them; dragging a slider along a time line and accessing some historical information relevant to different countries.
- Data are accessed by dragging an icon of a thermometer or a barometer and collecting data about weather conditions in different locations on a map. In this approach, learners could collect some real-life data about a phenomenon if this digital resource is linked to some meteorological data source. Data could be randomized to ensure that different learners or teams access different quantities and various representations of these, but remain unified within a method of solving a specific problem at the center of a learning activity set for them.

These examples illustrate how interactive and visual affordances of contemporary representational technologies can be leveraged to provide resources that can be used in learning (within activities). Contemporary authoring tools (e.g., Adobe Flash, HTML5 and MIT App Inventor) allow a designer to bring interactivity and visualization together into a digital resource for learning that, for example, allows the manipulation of parameters and relationships, or access to data and information.

Important
Activities are not built-in or integral parts of the design of digital resources for learning, rather, these are planned by teachers based on intended learning outcomes. The most effective digital resources for learning are tools that mediate learning activities.

The most effective digital resources for learning are those designed for use (and reuse) in the context of learning-centered activities.[2] In this context, and for this book, activities are not built-in or integral parts of digital resources for learning. Rather, activities are planned by individual teachers based on the intended learning outcomes of their curriculum. This proposition is the central cornerstone of the ideas presented in this book—the most effective digital resources for learning are tools that mediate learning activities.

In this book, the author places central emphasis upon an activity that creates an experience and an opportunity for learners to (a) construct and (b) use knowledge and, at the same time, (c) develop New Literacies and other generic skills for 21st century participation. Digital resources for learning are tools used in these activities. This thinking brings about that the central role of a teacher is no longer planning of instructional sequences; rather, it is the design of activities, that is, learning design.[3]

Important
A learning activity must provide an experience and an opportunity for learners to (a) construct and (b) use knowledge and, at the same time, (c) develop New Literacies and other generic skills for 21st century participation.

The author hopes that this book will provide a unique strategy to advance digital learning, not just teaching in schools, universities and other formal education contexts, but also in the contexts of consumer and corporate training, professional development and private tutoring. The approach to the classification of digital resources for learning presented in this book is a unique strategy, which has never been explored before commercially or within a large educational system.

1.2 Digital Resources and Learning-Centred Education

Education in the contemporary world requires that teachers transform their traditional pedagogical practices, and become learning designers, that is, to embrace learning-centered pedagogy. Some aspects of teacher-centered practice are contrasted to learning-centered practice in Table 1.1.

[2]Learning-centered activities are designed to engage students in working on tasks and experience processes of knowledge construction and use. An example of an activity is a troubleshooting task, a design task or a case study. Later charters will provide more in-depth discussion of activity and examples, as well as how digital resources for learning are used to mediate activities.

[3]Learning Design refers to a strategy for teachers' instructional planning based on learning-centered pedagogy.

Table 1.1 Some aspects of teacher-centered and learning-centered practice

Focus of teacher-centered	Focus of learning-centered
• Learning of facts and declarative knowledge	• Learning of conceptual knowledge
• Memorizing information	• Working with information
• Teacher is central to learning	• Activity is central to learning
• Passing the test/exam and achieving the grade	• Applying knowledge, theoretical thinking and demonstrating generic skills
• Drilling of right answers and routines	• Problem-solving, design, project work and inquiries
• Learning to pass exams	• Learning how to learn
• Focus on information presentation to passive leanings	• Focus on how learning occurs within an activity
• Technology as a media channel	• Technology as intellectual partner in learning
• Learning from resources and technology	• Learning with resources and technology

Transition to learning-centered practices is essential for reforms of education in-line with the needs and demands of the 21st century. The following are some of the key requirements for this transition:

- Overall approaches to teaching practice need to change away from the instructivist and teaching-centered towards learning-centered. We need to ensure that our graduates are competent lifelong learners, knowledge workers and creative innovators, not just walking libraries with information passed to them through instruction. Such goals cannot be achieved through traditional teaching and learning practices.
- Curricula need to be written explicitly to encounter three forms of knowledge including (a) declarative, (b) procedural knowledge, and most importantly (c) conceptual. Furthermore, curricula must be explicit about how these forms of knowledge should be used in the context of specific courses. Uses can range from (a) recalling, (b) explaining, (c) applying, to (d) innovating. Traditional models are based on information transfer and reproduction, while today this is not sufficient for education. Societies need graduates who are able to construct and work with knowledge, not just know a lot.
- As the world is becoming more technologically sophisticated, there is a growing need to learn more disciplinary knowledge. While we need to teach more to learners, the time available remains the same. The challenge, therefore, is how to teach more in shorter time—not just curriculum content, but also knowledge use skill, as well as other knowledge and skills required for modern day living, working, learning and socializing.
- At the same time, education must consider knowledge and skills essential for today's and tomorrow's generations to be effective participants in society. These are New Literacies and other generic skills and practices, such as, creativity,

Fig. 1.1 New literacies for 21st century's information society

problem solving, thinking skills, lifelong learning, and collaboration skills. Shorter time for teaching disciplinary knowledge content might be needed in order to allow new literacies and knowledge uses to enter the curriculum in any effective way. In this context, we need to seriously rethink about the forms of educational content and their uses (activities), how to teach more in a shorter time and yet at greater depth of understanding, and how to minimize material but maximize learning through effective design and uses of resources. Figure 1.1 presents various aspects of New Literacies that are more specifically related to today's information society.

There is a need for a practical framework and a guiding model for teachers how to best utilize digital resources for learning and achieve learning outcomes of the multidimensional curriculum.[4] Such a framework is to serve as a powerful intervention, aligning education professionals to transform traditional practices and promote a learning-centered culture. This framework is elaborated in the later parts of this book. The book proposes such a framework in the later chapters. How do digital resources for learning, as presented in this book, assist transition to learning-centered education? Here are some key issues to consider:

- Digital resources for learning should be designed according to the three types of curriculum knowledge content, that is, these resources can not only be designed to support the learning of declarative and procedural knowledge, rather, and more importantly, digital resources for learning can be designed to support the development of fundamental concepts that contribute to an essential base of disciplinary and cross-disciplinary knowledge.

Important
Digital resources alone are not sufficient for full achievement of learning outcomes. In addition to Resources, when developing a learning design, teachers need to consider Activity, Support and Evaluation (RASE).

- Digital resources for learning should be designed in a way that supports activities where knowledge is created and used, not just for the transfer of knowledge content. In this context, digital resources for learning can serve as tools that mediate activities where learning occurs, and shape learners' thinking and decision-making. In other words, digital resources for learning can be practically useable knowledge representations within activities where learners engage in (a) analytical processes to generalize and abstract concepts and ideas based on affordances of digital resources for learning, and (b) the application of any cognitive residue emerging in that processes.
- Digital resources for learning should be designed to support activities leading to development of New Literacies. In this sense, digital resources for learning should not simply present information in a convenient manner. Rather, these should require learners to apply their literacies, such as visual, media and critical literacy in order to extract meaning. Furthermore, digital resources for learning should be designed to support activities that facilitate New Literacy practices

[4]The multidimensional curriculum focuses on three dimensions: (a) *knowledge content*—declarative, conceptual and procedural, (b) *knowledge use*—recalling, explaining, applying and innovating, and (c) *new literacies* as essential practices in knowledge creation and uses with the deployment of emerging technologies and practices.

and developments, such as those related to the productive utility of emerging technologies in developing digital essays.

- Digital resources for learning can be designed to allow presentation maximizing the amount of content, often in a small and temporally limited screen space through the use of effective visual, other multimodalities, and interactivity.

Important
Teachers should play a key role in the design of learning-centered activities and the facilitation of learning, rather than being transmitters of ready-made knowledge to passive learners.

Traditional thinking about digital resources for learning as a replacement to teachers and books is not helpful at all for today's education. Instructional multimedia, computer-based tutorials, computer-managed instruction, programmed instruction, reusable learning objects etc., all assume that learning occurs when learners are studying information on the screen of a computer device, and reinforce remembering that the same content through an interactive drill and practice questions or similar reinforcement mechanisms. Actually, it is not evident if such an approach has ever been effective except in scenarios where teachers were not available to students at all, such as in distance learning programs, cooperate training where a company's offices are distributed all over the world and require just-in-time information, or in a case where customers receive a computer based package together with a product they purchased (e.g., an interactive tutorial how to use fire safety equipment). However, such an understanding of the role of digital resources as an information container presenting information in a convenient way for remembering, appears to be wide spread even in the context of formal education and training. In this context, (a) teachers should be playing central roles in the design of learning activities and facilitation of learning, rather than just being transmitters of ready-made knowledge to passive learners, and (b) where students should be engaged and learn through experiences and opportunities created by these activities. It is somehow disturbing to witness that even top scientific journals are continuing to promote the understanding that technology is just a medium for the transfer of information to passive learners. For example, the image in the article by Kellogg (2013), published in the top-ranked journal *Nature*, depicts a computer as a surrogate teacher, and students sitting in rows, passively watching, reading and listening to the content being displayed, and occasionally answering questions posed by a machine.

Therefore, there is a significant need for this book to contribute to the transformation of a wide misunderstanding of the roles of digital resources for learning in the context of formal education, primarily at schools, but also in higher education and corporate training. Digital resources for learning, at least in the context of formal education, must serve different purposes than being the media for the transfer of explicit curriculum content and information. These resources should in

no way be seen as a replacement to teachers or other resources, either digital (e.g., web sites or e-books) and traditional (e.g., books).

So what roles should these digital resources for learning serve? Here are some of the important points:

- Digital resources for learning should supplement, not replace, a teacher.
- Digital resources for learning should supplement other resources, including the traditional resources, not necessary to replace them, and
- Digital resources for learning should supplement and mediate activities where learning is to occur, not replace activities or be activities on their own.

Activity 1.1

What is a digital resource for learning? You will find that there are a number of repositories of resources for learning (often called learning objects) available on the Internet. The following are some examples of those:

- *Merlot (Multimedia Educational Resources for Learning and Online Teaching) at* https://www.merlot.org/
- *Open Learning Initiative at Carnegie Mellon University* http://oli.cmu.edu/
- *MIT Open Courseware at* http://ocw.mit.edu/
- *Cal Poly Pomona Multimedia Learning Objects* https://elearning.cpp.edu/learning-objects/objects.php
- *The Orange Grove Florida's Open Educational Resources Repository* https://www.floridashines.org/orange-grove

Explore these repositories and attend to the following:

- *Which one of these collections contains most useful resources? How useful are these collections? What criteria you used to determine what might be the best resource?*
- *How are resources organized in these collections (e.g., by disciplines, or types)?*
- *What is the difference between a digital resource for learning and a learning object?*
- *How can resources from these collections be used in teaching and learning?*
- *Identify one good example of what a digital resource for learning might be.*

1.3 Classification of Digital Resources for Learning

As it is understood by now, digital resources for learning are technology-based representational media specifically designed for educational purposes. This is a very important definition as it separates digital resources designed with a specific purpose to facilitate learning, from all other available digital media on the Internet and elsewhere, that has been designed for different purposes (e.g., entertainment, news, digital art, commerce or marketing).

Important
The most effective digital resources for learning are designed to be used and reused as mediating tools in learning-centered activates.

Digital resources for learning have often been classified according to media types. Thus, the literature and practitioners refer to digital videos, interactive multimedia, e-books, web pages, simulations and other forms of technology-based media as forms of digital resources for learning. This approach to the classification of digital resources for learning is less than useful in the context of planning, designing, developing, using and reusing digital resources for learning. An alternative classification might provide a useful framework to support teachers and designers of digital resources for learning.

Rather than classifying digital resources for learning according to the media and other formats (e.g., educational videos, animation, simulation, web pages, multimedia, or podcasts), a more effective approach is to consider forms of curriculum content knowledge, and what kinds of digital resources may be the most effective to represent each of these forms. Disciplinary curriculum content must include multiple knowledge forms, not just declarative and procedural knowledge, but also, most importantly, conceptual knowledge. Conceptual knowledge is what forms one's foundation of intellectually activity and theoretical thinking within and across disciplines. Without an appropriate level of conceptual knowledge, it would not be possible for an individual learner to effectively think in a discipline, solve problems and learn further. Hence, a curriculum must include conceptual in addition to declarative and procedural knowledge. Thus, this book reflects an attempt to articulate and present a classification of digital learning resources that is aligned with an effective approach to curriculum design. Potentially useful classification would lead to a more acceptable definition of learning resources, and will promote generally a more aligned understanding of what digital resources for learning may be. Better understanding of this could lead to improved standards and quality indicators for the design of educationally useful and reusable digital material and activities for their utility. At the same time, appropriate classification could lead to the development of a strategy that provides support to people involved in the reuse of these resources. Having a classification that synthesizes a variety of forms of digital learning resources would also support different pedagogical models while

Table 1.2 Classification of digital resources for learning according to curriculum knowledge content forms primarily intended to represent

Types of resources	Curriculum content		
	Declarative	Procedural	Conceptual
Information display resource	X		
Presentation resource	X		
Practice resource		X	
Concept representation resource			X
Data display resource			X

providing a variety of education material that might be designed and reused for the purpose of achieving diverse curriculum outcomes.

Therefore, in the context of this book, the question is what kind of digital learning resources can support different forms of curriculum knowledge? What kind of digital learning resources can be designed to represent declarative, procedures and conceptual knowledge from a disciplinary curriculum content? In the context of these questions, this book proposes a classification that contains five distinct types of digital resources for learning, each of which is designed to represent a specific form of content/curriculum knowledge (see Table 1.2). This classification classifies digital resources for learning into five fundamental types including: information display resources, presentation resources, practice resources, conceptual representation resources and data display resources.[5] A brief introduction to each of these types is given in this section of the chapter. Later chapters will provide in-depth discussions of each of these types of digital resources for learning.

Here is a brief description of each of the types of digital resources for learning discussed in this book. More detailed discussion about each of these types will follow in the later sessions.

- *Information Display Resources*—These digital resources for learning display information in a variety of modes,[6] use various organizers and innovative interfaces to facilitate information presentation and uses. These are not specifically designed to instruct about some of the content we want learners to remember, as is more of the case with the design of presentation resources (see the next category). Rather, these are creative and effective ways to organize and present information that can be used in learning (e.g., comparison table, a

[5]In the author's previous work, a term learning object was discussed as an adequate representation of digital resources for learning (Churchill 2007). However, due to extensive debates and unresolved differences in the literature of what a learning object is, this term has been abounded in this book, and a substitute term of digital resources for learning is adopted. See Chap. 4 for discussion of learning objects as a specific form of digital resources for learning.

[6]Modes of representations can be textual, graphical, pictorial, auditory, animated, special effect, etc., and when several modes are mixed or mashed into a single representation, the terms 'multiple representation,' and sometimes 'multimodal text' are used for such resources.

concept map with pop-up information, a case story about some event, and even an e-book and a digital version of a journal article). In learning, learners are using information to assist their completion of an activity, for example, extracting information from an interactive periodic table, or a trigonometric table to solve a certain problem-based task. Contemporary digital technologies allow easy creation and the presentation of information, such as scanning a text or taking a photograph with a mobile device. However, in this case, we are not talking only about how information can be digitized and delivered via technology. We are concerned with a strategy of how information can be presented in the most effective way supported by the affordances of contemporary representation technologies so that it can find effective use in activities leading to learning.

The simple example of an information object presented in Fig. 1.2 contains textual and visual information about native and non-native animals found in Australia. Information about animals is accessed by rolling a mouse pointer over the text comprising the name of an animal and through decisions which include the dragging of an animal's name into a corresponding area indicating the animal's origin. The initial story line about Australian native animals was converted through content analysis into an interactive representation that allows learners to explore this information space within the context of some learning activity. The essence of the story was preserved in the information object; however, long lines of texts have been reduced in order to shorten key statements that are delivered to a learner randomly.

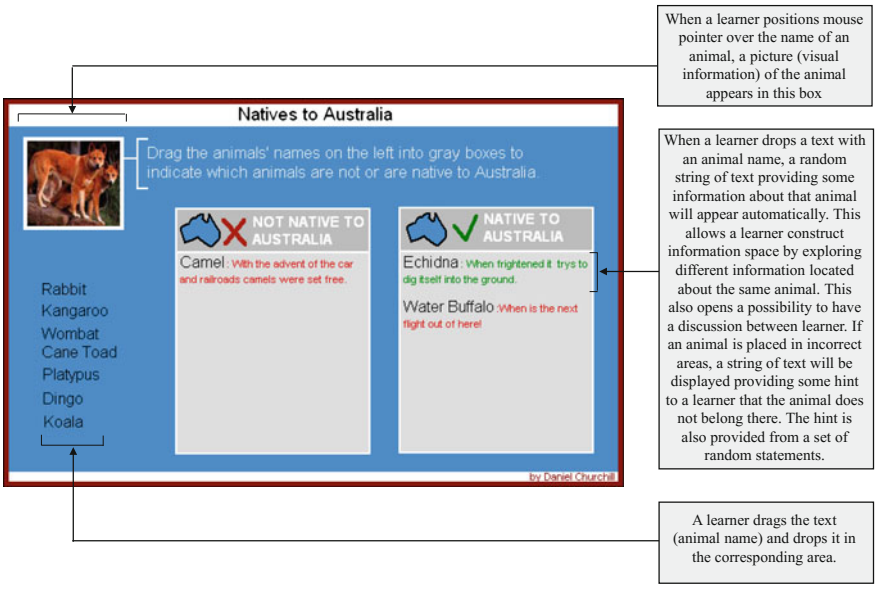

Fig. 1.2 An example of an information display resource

- *Presentation Resources*—These resources are designed to present certain information with the purpose of instructing learners and often expecting them to remember and/or understand the content presented. With the difference from the information display resource, these resources explicitly present specific declarative curriculum content (e.g., PowerPoint presentation slides, a recorded computer screen activity with audio or annotated explanations, a recorded lecture with a voice-over and slides, a computer based tutorial). Often, these are designed with an assumption that information can be passed from a resource or a teacher to a student through a medium rather than serving the purpose of an activity that leads to learning. For learning-centered practice, an activity is essential for learning to happen, therefore, any resource should be designed to support it. Resources not designed for such purposes explicitly, and might still be used within an activity when carefully integrated to mediate it. Figure 1.3 presents an example of a screen of presentation resources. This resource allows a learner to view different slides, read content and listen to voice over explanations recorded by a teacher.
- *Practice Resources*—These digital resources for learning are designed to allow a learner to practice certain procedures, often repetitively, providing some form of feedback leading to an increase in understanding and performance (e.g., a drill and practice question item, educational game, a puzzle). Presentation objects can have such resources integrated in their structure to provide reinforcement and/or practice tools for learners. This is usually the case with more comprehensive computer-based instructional packages. However, having these as separated resources will have the benefits of allowing them to be reused in a variety of other digital resources for learning, in a variety of learning-related situations and for different purposes related to the completion of an activity. Figure 1.4 presents an example of a practice item. A learner is presented with a

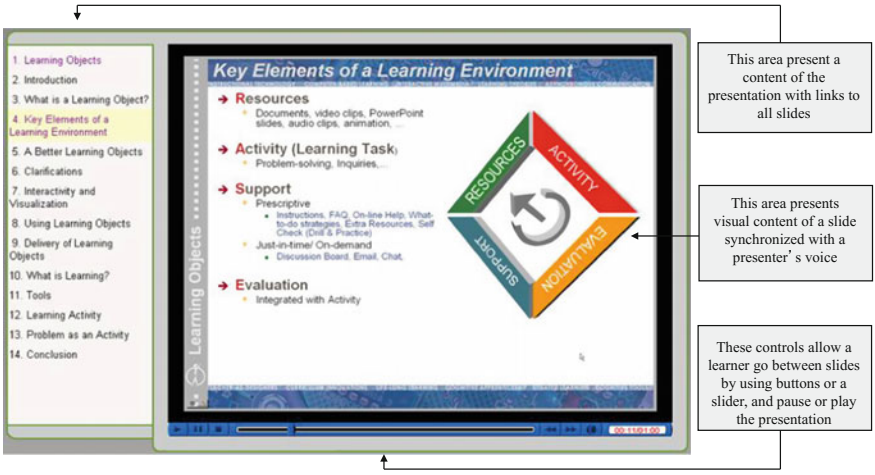

Fig. 1.3 An example of a presentation resource

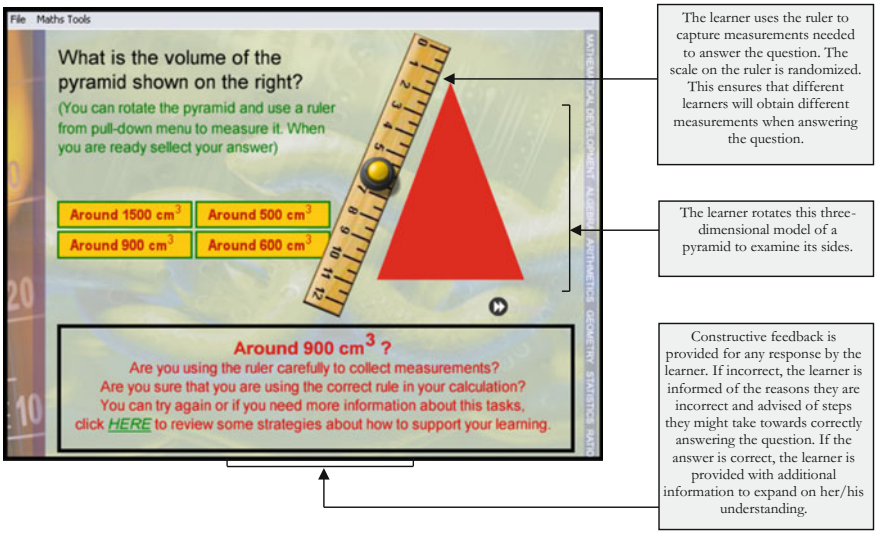

Fig. 1.4 An example of a practice resource

question to approximate the area of a pyramid displayed in the resource. Then, the learner rotates the polyhedral and uses the provided interactive ruler to measure its sides and calculate the answer. In this way, a learner practices a procedure of obtaining measurements and calculating the volume of a pyramid. The size of object and answers are randomized, so every time the practice resources are presented from the beginning, different configurations of the parameters of the question will be presented. Feedback is provided based on the learner's answer.

- *Concept Representation Resource*—This book holds this form of digital resources for learning as the most important category for learning-centered activities. These are designed to represent disciplinary concepts from a curriculum, their properties, parameters and relationships that underline generalizations to be made or articulated by learners in their learning-centered activities. For example, a concept of velocity, inflation, reaction time, or right-angled triangles can all be used to assist learners to complete some learning activity (e.g., a problem to be solved), and through this activity, some conceptual change in learners' knowledge should occur.

  An example of a conceptual representation resource, "Exploring Trigonometry", is presented in Fig. 1.5. This resource is an interactive representation of a key concept from trigonometry: a trigonometric circle. A subject matter expert, a mathematics teacher in this case, identified this concept as one of the key concepts in the mathematics curriculum knowledge content. Learners can input different values for angle x and observe changes in the values of sine and cosine as they conduct an inquiry. The changes in the values of sine and cosine are presented in multiple representation formats:

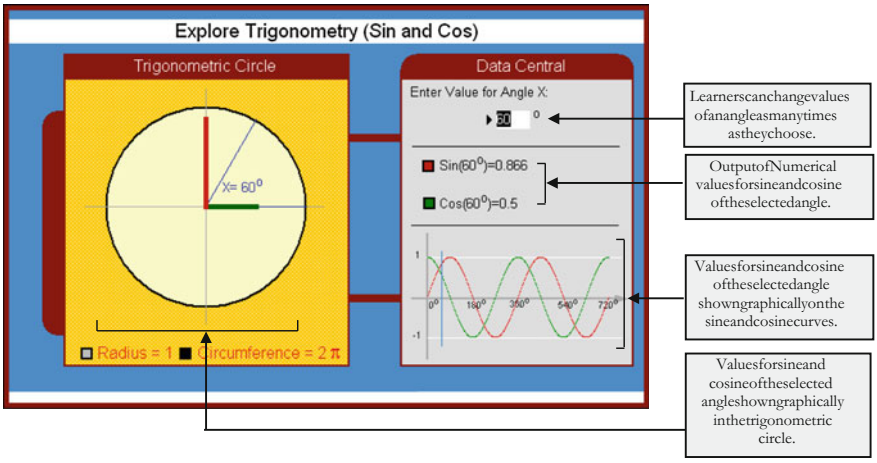

Fig. 1.5 An example of a conceptual representation resource

- Numerically, as numbers between 0 and 1;
- Visually, as projections of an arm of an angle along the x-axis (for value of cosines) and along the y-ordinate (for value of sine x) of a trigonometric circle (a circle with radius one unit long); and
- As points along the sine and cosine lines on the graph.

- *Data Display Resources*—These digital resources for learning are displays of data that can be used as mediating tools in activities leading to learning. Usually, there are two elements of such resources: data records or some logic for articulation or capture of data, and an interface used to retrieve that data. Some analytical functionalities can be included for more effective and useful presentation and processing of data. Usually, a scenario, not just an interface, is designed to allow learners to gain some experiences of, not just accessing and manipulating data, but also collecting that data in an authentic context, e.g., by using simulations of data measurement tools and instruments to capture data from an environment.

Figure 1.6 shows a screen from a "Water Experiment" data display resource. This digital resource for learning allows learners to collect data on factors affecting the quality of water of the imaginary lake presented in the scenario. This data can be used in a problem-solving activity that directs learners to act as an environmentalist, investigate a problem situation (e.g., algae infestation) and propose a solution to a problem in the form of a report to an environment protection agency.

Another way to consider classification of digital learning resources is as those designed to represent data, information or knowledge representations. That is, certain learning objects can be designed to represent each of these forms, such as

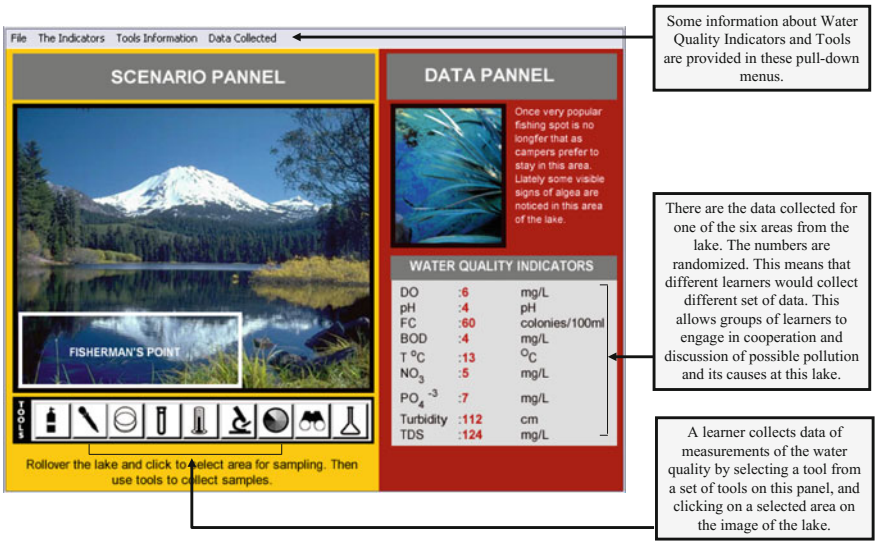

Fig. 1.6 An example of a data display representation

conceptual representations are designed to represent knowledge, information and presentation resources represent information and data displays represent data. Nevertheless, in the context of a formal education curriculum, it is much more appropriate to adopt declarative-procedural-conceptual knowledge classification as a way of classifying digital learning resources. This can significantly support later management and the reuse of digital resources for learning.

A digital resource for learning of one format might result in other knowledge forms than those initially planned by designers, e.g., a presentation resource might result in conceptual knowledge changes if used in an activity for this purpose. However, a digital resource for learning should initially always be designed to represent a specific form of curriculum content, and this is a strategy for the effective articulation of a systematic collection of digital resources to cover a certain curriculum discipline.

Education authorities such as Ministries of Education should assist education publishers to articulate and develop digital learning resources in a way that can support classroom teachers in their everyday instructional planning and teaching. Teachers are not to be replaced with digital learning resources. Contrary, they are empowered with these digital resources to more effectively design, develop and implement learning-centered activities. The teacher's role in this sense is that of a facilitator; someone who is at the center of learning design, rather than on the periphery of a classroom. To achieve the maximum outcome for education, there is a need for a concerted effort to identify systematic collections of digital learning resources for different disciplines. Developing isolated digital learning resources for a specific topic, while omitting other parts of a curriculum should not be an option

for the maximum effect on education to be achieved through a digital media resource strategy. The connection that teachers and students build between these resources is an important dimension in overall learning within disciplines.

Further chapters in this book will discuss each of the forms of digital learning resources in more details, provide illustrative examples and suggest activities for readers.

Activity 1.2

Design a single PowerPoint, Keynote or Prezi slide to tell us everything you want us to know about what a digital resource for learning is, and how such resources are classified. Try to provide links to some examples of resources you identified in your Individual Task 1.1. Attend to these conditions:

- *You can create only a single slide to tell us the maximum of what you want us to know about digital resources for learning.*
- *You should not have any sentences; rather tell us about a digital resource for learning with images, diagrams and other graphical representations.*
- *Use text only for labels, hints and pointers.*

References

Churchill, D. (2007). Towards a useful classification of learning objects. *Education Technology Research and Development, 55*(5), 479–497.

Kellogg, S. (2013). Online learning: How to make a MOOC. *Nature, 499*(18 July), 369–371. Retrieved from http://www.nature.com/nature/journal/v499/n7458/full/nj7458-369a.html