[Software Review]

Articulate Storyline 360

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Introduction

Articulate Storyline 360 (Articulate Global Inc.) is an authoring tool designed for the creation of interactive e-learning resources. Unlike other software reviewed in this journal, it is neither a language learning app (Armstrong, 2019) nor a language course (Shibata, 2020), but a means for teachers and designers to create materials. Storyline has been used to produce e-learning resources for a diverse range of fields, including academic integrity (Benson et al. 2019), water management (Cortes Arevalo et al., 2019), and parasitology (Peña-Fernández et al., 2020). Resources created with Storyline are popular in flipped classroom models (Elledge et al., 2018) and remotely delivered asynchronous courses (Muke et al., 2019).

COVID-19 has disrupted established media and methods of education and, as many courses are moved wholly or partially online (Hodges et al., 2020), it is likely that teachers who previously made materials only for the live classroom may now be required to create materials for classes that are either completely online or as a component of blended or flipped classrooms. Some teachers have reported difficulties reaching students who may have irregular or poor internet access, preventing them from attending live online sessions (Hazeae et al., 2021). The interactive features available through the program make an engaging alternative to pre-recorded video lectures (Philips, 2015). For teachers in these scenarios, Articulate Storyline 360 is a potentially powerful tool for creating a wide variety of online, self-access materials.

Overview

In Storyline 360, teachers create and edit .story files, that can only be opened with Articulate Global products. Each file consists of slides, which can be grouped into scenes to aid the organisation. Teachers add design and interactive features to their slides and, when the material is complete, export the .story file as a new format for access by learners. Though it depends on the format in which the project has been exported exactly how the materials are accessed, learners need only a web browser to view the activities that the teacher has created.

Interface

The interface is clear and easy to navigate and will feel familiar to anyone who has used other popular presentation software (Figure 1). Design features and tools can be

accessed in the bar at the top. As Storyline is software for making interactive activities, rather than presentations, many of the design features and tools will be initially unfamiliar to teachers who are used to presentation software. However, these tools are clearly labelled and intuitively grouped under the top layer menus.

The main space shows the slide that the teacher is working on. To the right are menus where triggers and layers can be accessed. These menus can be popped out and expanded, however, their normal location is somewhat cramped. At the bottom of the display is an area showing the timeline of that slide, an area to edit the 'state' of each object, and a space for notes.

Figure 1
Menus from the Articulate Storyline Interface
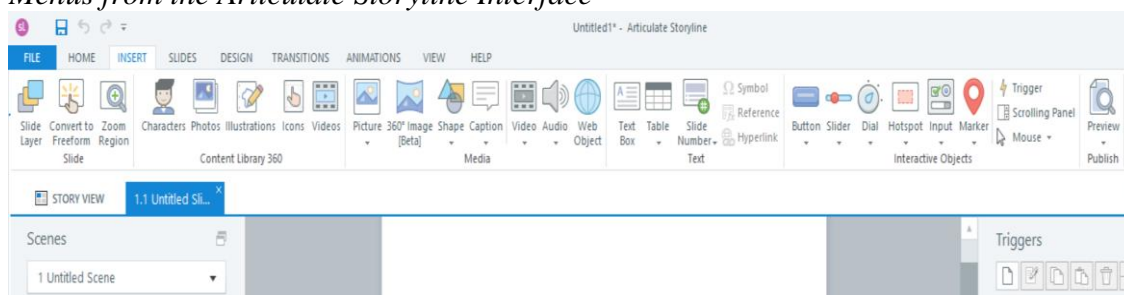
Design Tools

The program has a basic set of design tools. Elements such as shapes, text boxes, images (including 360° images), video, and audio can all be added to a slide. There are limited editing capabilities for images, video, and audio. Image cropping is limited to square shapes, and the recolouring tools are basic. Video and audio can only be trimmed or, in the case of video, cropped. This reviewer recommends video, audio or bespoke images be prepared outside of Storyline and then added to a Storyline project.

Images can be animated and connected to triggers such as a learner selecting an item. Elements can have multiple states assigned to them. A state is a change in the appearance of an element in response to learner behaviour. For example, an element can be set to change colour when a learner hovers over or selects it.

A subscription to Storyline includes access to a large content bank of images and video. This bank includes an increasing number of human figures, either photographs or illustrations, known as characters. Each character is available in a variety of different poses and with different facial expressions. They are organised by gender, age or occupation/dress, and come in a range of skin tones. They are especially useful for materials that follow a narrative, as the same characters can appear repeatedly in different situations and scenarios. Narratives have been shown to increase student engagement and achievement in online learning scenarios (Lindgren & McDaniel, 2021) and are useful in creating case studies or scenarios as, for example, part of a Task-Based Learning approach.

Complexity can be added to the design of each slide through the use of layers. A layer is effectively a transparent slide that can be placed over the main slide and which can be made to appear or disappear in response to a learner's actions. These can be used to keep the information or interactive elements hidden until a learner triggers the layer to

appear. Layers are convenient for showing the learner extra information when they click on something they are interested in.

A project can be previewed through a button at the top of the screen. One useful element of the preview tool is that it can toggle between displaying as different devices and orientations, allowing a teacher at work on a desktop to experience the resource as a learner on a smartphone or tablet.

Exported files are accessed, usually through a web browser, in a frame called a player. The colour, size, and style of the player are customizable and the teacher can decide whether the player's *next*, *back* and *submit* buttons (to prevent or allow learners to move through at their own pace), the tab for resources (links or files uploaded by the teacher), and a glossary (particularly useful for reading activities) are hidden or shown to the learner.

Activities

Storyline 360 has a number of templates for question slides. These come with a variety of options, including limits to the attempt, layers that can be used to give immediate feedback, and the ability to collate scores and to randomize answer options. Question sets can be created to show learners a number of random questions from a set. These pre-loaded forms come in three types – graded, survey or freeform. Graded questions affect the learner's score for the activity, whereas survey questions are ungraded and designed to gather learner input. Freeform question types are those without a form or template for the teacher to build on. They allow teachers to build entirely new question types without the limitations of the templates.

Table 1
Question Types Available in Storyline 360

Graded	Survey	Freeform
- True/False - Multiple Choice - Multiple Response - Fill-in-the-blank - Wordbank (text-based drag-and-drop) - Matching drag-and-drop - Matching dropdown - Sequence drag-and-drop - Sequence dropdown - Numeric - Hotspot	- Likert Scale - Pick One - Pick Many - Which Word (learners choose the best word to match their feeling) - Short Answer - Essay - Ranking drag-and-drop - Ranking drop-down - How Many (numeric response to a survey question)	- Drag and Drop - Pick One - Pick Many - Text Entry - Hotspot

One frustrating feature of the form-based questions is that only one question can be added to a slide. It is not possible to have two fill-in-the-blank questions on a slide, for example. For this reviewer, the form-based questions quickly became limiting. While many teachers will be content with the form questions, the possibilities offered by combining freeform questions with other interactive elements are fascinating and open the way to the gamification of materials. Gamification is the practice of using elements or features of game design in a non-game context (Deterding et al., 2011). In the case of Storyline, this can involve adding scorecards, timers, or rewards to activities. Further, teachers can create actual games for students to play. Available on the Articulate online forums are, for example, designs for simple platform games and racing games, that are either already suitable for an EFL context or can be adapted to one.

Figure 2

Gamification Features: A Customizable Template
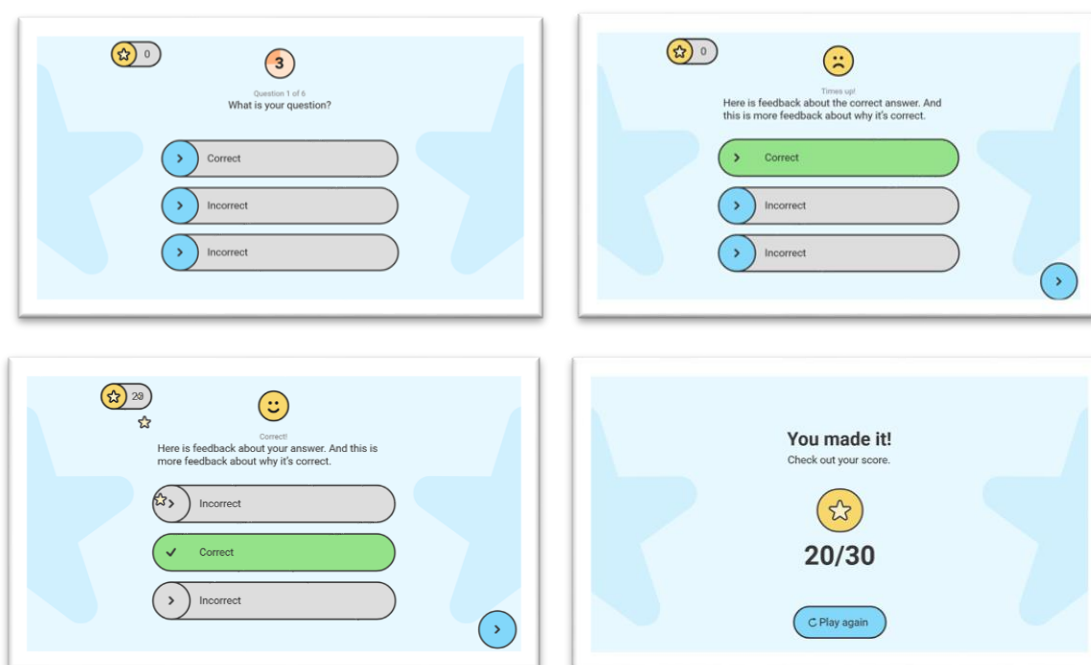
From *Storyline: Gamified Quiz Template with Timer,* by Hodge, (n.d.), (https://community.articulate.com/download/storyline-gamified-quiz-template-with-timer)

Interactivity

Beyond the activity and question types, teachers can create other forms of interactivity for their learners. Branching, the practice of sending learners down different routes according to their responses or choices, is simple to set up and manage. This can allow for either differentiation controlled by the teacher or by the learner.

The three forms of variable – text, numeric, and Boolean - also offer the chance for increasing student engagement. Variables are used to collect and store information that can then be used throughout the activity on multiple slides. For example, learners could enter their names and then be addressed by name throughout the activity. Learners

can engage with these variables through customizable and easy-to-use textboxes, buttons, sliders, and dials.

These features, coupled with the accessibility options described below, allow for increased learner agency and personalization of learning. Learner agency refers to giving learners the chance to make choices that have a meaningful impact on their learning (Lindgren & McDaniel, 2021). Storyline 360 can help teachers and learners leverage agency by offering learners choice not only about where, when, and at what speed to study, but also by providing learners different options and routes throughout an activity. Personalized learning is an approach in which the teacher takes a leading role in helping students reach a pre-determined goal while taking into account student preferences and differences (Kukulska-Hulme, 2011). Materials created through Storyline can offer learners multiple paths to the same goal, for example, the teacher can create materials that respond to learners' language learning needs by providing remedial or extension material. For this reviewer, this is a major advantage of materials designed in Storyline. Differentiation in an online learning scenario can be difficult for teachers due to the difficulty of assessing student needs or wants, and of managing the different tasks given to different students. The storyline can help teachers considerably with this. For example, a reading text could be preceded by a shorter co-text with questions. Students who perform well on these questions could be presented with more difficult tasks on the main text, while students who struggle could receive easier tasks. Alternatively, students can be asked to self-assess and decide for themselves whether they would prefer the easier or harder task.

One major weakness of activities designed with Storyline is that there is very little scope for free-response items. Though one of the question types ('survey') provides a large space for free written input, student input may disappear when the activity closes. Certain formats do give the teacher the ability to see what students have written if the activity is hosted on an LMS such as Moodle. However, there is no space for giving feedback to students' written work. Web objects can be embedded in a slide, and it is, therefore, possible to have learners access a space held elsewhere where they can write and where feedback can be provided. Alternatively, under the trigger menu, Storyline has an option to execute Javascript, allowing learners to print answers or email the contents of a textbox to submit to a teacher.

Likewise, spoken input is not possible with any of the native functions that the teacher can select. Javascript can be used to add voice recognition through the Google Web Speech API. This is not a simple step and does require considerably more advanced technical knowledge and experience. It is also not an option for teachers who want their learners to produce spontaneous original language. There is no tool for learners to record their voice for feedback from the teacher, without sending students elsewhere through an embedded object. For this reviewer, this is the largest concern regarding language learning materials created through Storyline. Though there is scope for many different forms of language input, Storyline is not suitable for creating practice materials for language production. As such, Storyline cannot be the only tool a teacher uses when making a fully online language course. Materials created through Storyline need to be supplemented with another forum for speaking and writing, either online or in person.

Figure 3

An Example of Text Variables in Use

From *Storyline:MadLibs Love Letter,* by Gomez, (n.d.), (https://community.articulate.com/download/storyline-mad-libs-love-letter)

Accessibility

To ensure that as many learners as possible can access materials, Storyline 360 has a number of features that improve accessibility for the learner. Firstly, exported materials are dynamic; they resize according to the size of the screen the learner is using. This feature is particularly useful for teachers whose learners may be accessing the materials on a variety of devices, and it gives greater affordances for mobile learning. If the teacher is designing materials specifically for access on mobile devices, the slide shape and size can be changed to match the aspect ratio of a smartphone. It should be noted that the teacher should still follow good design principles for m-learning materials by, for example, not overcrowding a slide with small text. As mentioned above, previewing the activity allows the teacher to check how the materials will look on different displays.

For learners with poor vision or dyslexia, teachers can add make text accessible with the click of a button. The accessible text allows the learner to change the font and font size of the text to increase readability. All the necessary adjustments are made by Storyline and do not require any work on the part of the teacher. Furthermore, Storyline gives the opportunity for teachers to add alternative text to images, and it supports the

screen reader technologies NVDA, JAWS, VoiceOver, and TalkBack. For learners with hearing problems or who are unable to play audio due to technical or environmental constraints, the video editing suite includes well-designed and easy-to-use closed-captioning tools.

Output

Completed projects can be exported in a number of different formats. For schools or institutions that maintain an LMS such as Moodle, the most useful format may be SCORM (Shareable Content Object Reference Model). SCORM is a set of e-learning industry standards that are is recognised by many LMS, allowing activities made for Moodle to be used on, for example, Blackboard. SCORM activities can report a large quantity of data to the LMS, allowing for detailed tracking of student performance and progress. Student answers points awarded, time spent on a question, time spent on the activity in total, a final score that can include weighted and grouped items are all recorded and can be accessed through the LMS. For teachers without an LMS, Articulate can be used to create HTML content. Alternatively, a subscription to Storyline allows teachers to publish to Rise 360, a cloud LMS maintained by Articulate that allows teachers some tracking of learner progress. Other export options include video and .pdf.

Stability and Support

The stability of the .story files is poor and the program may crash after sustained use. Complaints about corrupted files are common on the Articulate support forums. Some practices seem to be connected to a higher likelihood of corruption – long file names or attempting to edit a file stored remotely for example – but even good practice is not a guarantee of safety. Saving multiple copies of each file as backups is recommended. The stability of the output files that students access is not problematic.

For the individual teacher, there are detailed FAQs and tutorials on the Articulate homepage. For teachers on a "Teams Plan," the package includes live chat support and priority email support. There is also an active and friendly public forum where other users and staff answer questions and share templates, instructions, and sample activities. The forums are mainly in English, though other languages can be found. The use of Articulate Global products among educational designers is widespread, and many share tips and tricks through the above forum, on their blogs, and YouTube.

Cost

The cost of Storyline 360 is quite high. A "Teams Plan" for multiple users costs $1,299 per user per year. An individual user on the "Personal Plan" will pay $999 per year, but will not have access to some of the collaborative elements, such as template sharing and live chat support. There is a discount of 50% for people working in k-12 institutions or some higher education institutions. Furthermore, Articulate offers a 60-day free trial, with limited access to the content library but no limitation on functionality, with no need to cancel at the end of the trial. At the end of 60 days, any files that the teacher has will still be usable by another Articulate user, and any files that have been exported will still work without issue. These prices seem reasonable when placed next to other e-

learning authoring tools such as Avallain Author (€1500/month for three users), Composica ($99/month per user), or Lectora ($899/year per user), though they are higher than Adobe Captivate ($33.99/month per user).

Table 2
Requirements

Memory	2GB minimum
Available Disk Space	1GB minimum
Display	1,280 x 800 screen resolution or higher
Multimedia	Sound card, microphone, and webcam for recording
Operating System	Windows 10 (32-bit or 64-bit) Windows 8.1 (32-bit or 64-bit) Mac OS X with Parallels Desktop or VMware Fusion

Conclusions

Articulate Storyline 360 is recommended by this reviewer as an accessible and powerful tool for creating aesthetically pleasing, interactive e-learning materials for students that are likely to be compatible with an institution's LMS. While some teachers may find it frustrating that content designed in Articulate cannot be edited in a different authoring tool, most teachers are unlikely to need more than one such tool. The accessibility options, ability to design for multiple device types, branching function, and variables allow the teacher to create adaptive tasks for their learners. More adept teachers will be able to experiment with gamification and the opportunities provided by Javascript. However, as the opportunities for language production from the learner are limited, materials made in Storyline 360 are best for delivering content rather than eliciting output and therefore should be used in conjunction with other tools, such as forums or video conferences, in a fully online course, or as the self-access element of a blended or flipped course. The poor stability of files is a concern but can be managed by careful practice, and the cost, though high, compares favourably to similar software tools.

References

Adobe Captivate. (n.d.). *https://www.adobe.com/products/captivate/buying-guide.html*.
Armstrong, W. (2019). Word Engine. *CALL-EJ, 20*(1), 209-213.
Articulate Global Inc. (n.d.). *Articulate 360.* Retrieved from https://articulate.com/360

Avallain. (n.d.). *https://www.avallain.com/product/author-authoring-tool/#pricing_author*.

Benson, L., Rodier, K., Enström, R., & Bocatto, E. (2019). Developing a University-wide Academic Integrity E-learning Tutorial: A Canadian Case. *International Journal for Educational Integrity, 15*(5), 1-23. doi:10.1007/s40979-019-0045-1

Composica. (n.d.). *https://composica.com/*.

Cortes Arevalo, V. J., Verbrugge, L. N., den Haan, R.-J., Baart, F., van der Voort, M. C., & Hulscher, S. J. (2019). Users' Perspectives About the Potential Usefulness of Online Storylines to Communicate River Research to a Multi-disciplinary Audience. *Environmental Communication, 13*(7), 909-925. doi:10.1080/17524032.2018.1504098

Deterding, S., Dixon, D., Khaled, R., & Nacke, L. (2011). From Game Design Elements to Gamefulness: Defining Gamification. In A. Lugmayr, H. Franssila, C. Safran, & Hammouda, I. *MindTrek 2011* (pp. 9-15).

Elledge, R., Houlton, S., Hackett, S., & Evans, M. J. (2018). "Flipped Classrooms" in Training in Maxillofacial Surgery: Preparation Before the Traditional Didactic Lecture? *British Journal of Oral and Maxillofacial Surgery*(56), 384-387. doi:10.1016/j.bjoms.2018.04.006

Gomez, A. (n.d.). *Storyline: MadLibs Lover Letter.* Retrieved from E-Learning Heroes: https://community.articulate.com/download/storyline-mad-libs-love-letter

Hazeae, A., Bin-Hady, W. R., & Toujani, M. M. (2021, January). Emergency Remote English Language Teaching in the Arab League Countries: Challenges and Remedies. *CALL-EJ, 22*(1), 201-222.

Hodge, S. (n.d.). *Storyline: Gamified Quiz Template With Timer.* Retrieved from E-Learning Heroes: https://community.articulate.com/download/storyline-gamified-quiz-template-with-timer

Hodges, C., Moore, S., Lockee, B., Trust, T., & Bond, A. (2020, March 27). *The Difference Between Emergency Remote Teaching and Online Learning*. Retrieved from Educause Review: https://er.educause.edu/articles/2020/3/the-difference-between-emergency-remote-teaching-and-online-learning

Kukulska-Hulme, A. (2011). *Personalization of Language Learning Through Mobile Technologies.* Cambridge: Cambridge University Press.

Lectora. (n.d.). *https://www.elearningbrothers.com/create-learning/lectora-pricing*.

Lindgren, R., & McDaniel, R. (2021). Transforming Online Learning through Narrative and Student Agency. *Journal of Educational Technology & Society, 15*(4), 344-355.

Muke, S. S., Shrivastava, R. D., Mitchell, L., Khan, A., Murhar, V., Tugnawat, D., Naslund, J. A. (2019). Acceptability and Feasibility of Digital Technology for Training Community Health Workers to Deliver Brief Psychological Treatment for Depression in Rural India. *Asian Journal of Psychiatry*(45), 99-106. doi:10.1016/j.ajp.2019.09.006.

Peña-Fernández, A., Acosta, L., Fenoy, S., Magnet, A., Izquierdo, F., Bornay, F. J., Del Aguila, C. (2020). Evaluation of a Novel Digital Environment for Learning Medical Parasitology. *Higher Education Pedagogies, 5*(1), 1-18. doi:10.1080/23752696.2019.1710549

Philips, J. A. (2015). Replacing Traditional Live Lectures with Online Learning Modules: Effects on Learning and Student Perceptions. *Currents in Pharmacy Teaching and Learning, 7*, 738-744.

Shibata, N. (2020). The Usefulness of Busuu Online Courses for Foreign Language Learning. *CALL-EJ, 21*(2), 197-203.