Course Builder Tool Tutorial

TA at

Online Education Development Office (OEDO)

Center for Innovative Teaching and Learning (CITL)

Tokyo Institute of Technology, Japan

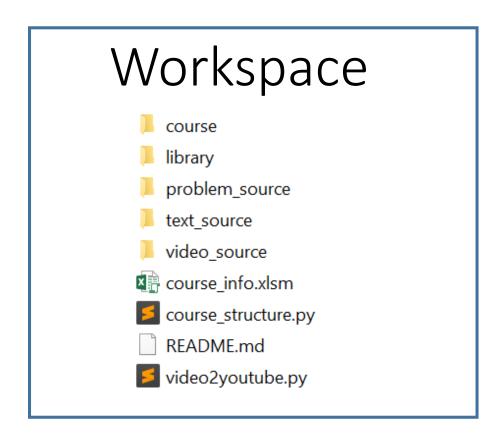
Contents

- Tool summary
- Definition of materials and outline
- Materials preparation
- How to fill data in macro-excel
- Built course with Python

Tool Overview

edX STUDIO Overview **Download Upload full**no-content course content course **Text contents** HTML files **Video contents** exported - video URLs - Transcript (srt files) course TAR.GZ python" edX uploadable **Assessment contents** format - excel sheets

- The tool's workspace is available on GitHub
- https://github.com/KeNopphon/edx-course-builder



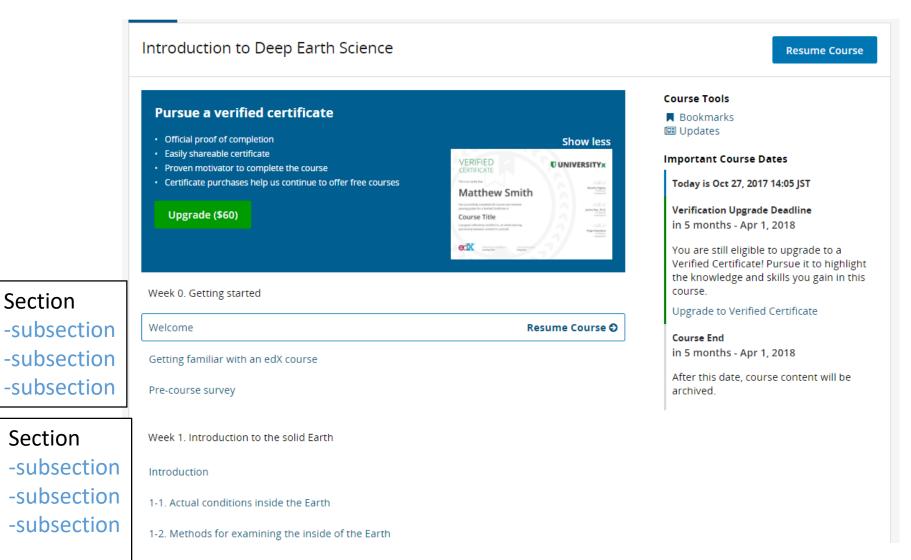
Flowchart Move content's source file into workspace Download course Move text Download workspace instance & put it contents into folder in workspace workspace Design course by Move assessment Move transcript filling metadata in contents into into workspace "course info.xlsm" workspace Obtain a full-Execute tool: run content course Python script instance

Definition of materials and outline

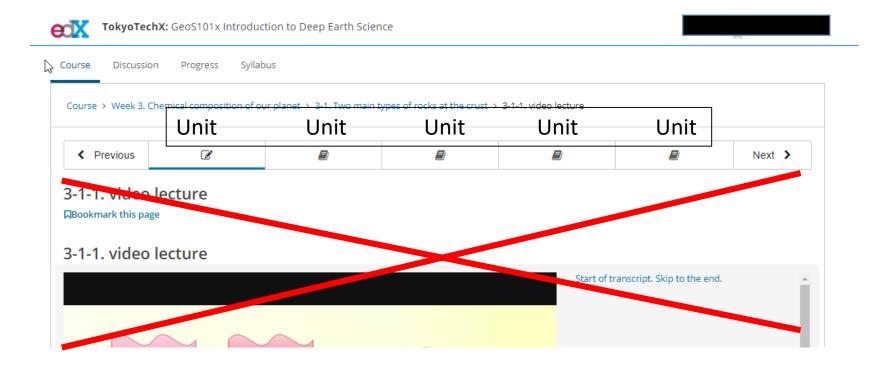
Course outline

Section

Section



Course outline



Text materials

3-1-3. Supplement: Granite and Basalt

□Bookmark this page

First, let's review a bit about basalt and granite (1-4-2).

	Granite	Basalt
Photo	Photo by Der Messer	Photo by James St. John
Appearance	Lighter colors	Darker colors
Magma temperature	Low (1,100 to 1,200 K)	High (1,300 to 1,500 K)
Where they are found	Continental crust	Oceanic crust
Where they are formed	Mainly along subduction zones	Mainly mid-ocean ridges
Density	Around 2.7 g/cm ³	Around 2.8 g/cm ³

About igneous rock

Igneous rocks are classified as volcanic or plutonic according to the differences in their structures when observed under a microscope. Volcanic rocks are rocks formed when magma cools rapidly, and when their structures are observed with a microscope crystalline and non-crystalline or amorphous portions can be seen. The crystalline portions are called phenocrysts and the other part the matrix.

(There are also some rocks such as basalt whose phenocrysts are subtle to the point of being hardly noticeable.)

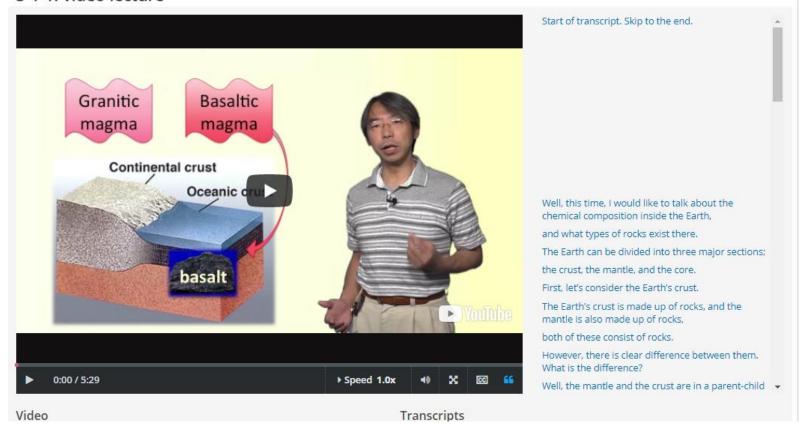
On the other hand, plutonic rocks are rocks formed deep in the Earth's interior when magma cools slowly, and have relatively large grains because all their components are formed through crystallization. Volcanic rocks are classified according to their chemical compositions, particularly how much SiO₂ they contain.

Where do igneous rocks form?

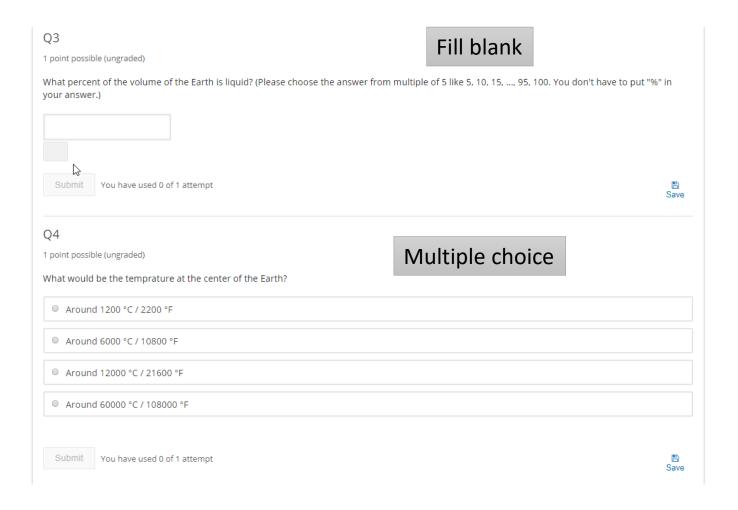
It is understood that igneous rocks' composition reflects the conditions at the time they formed. We will consider where igneous rocks are formed from this point on

Video materials

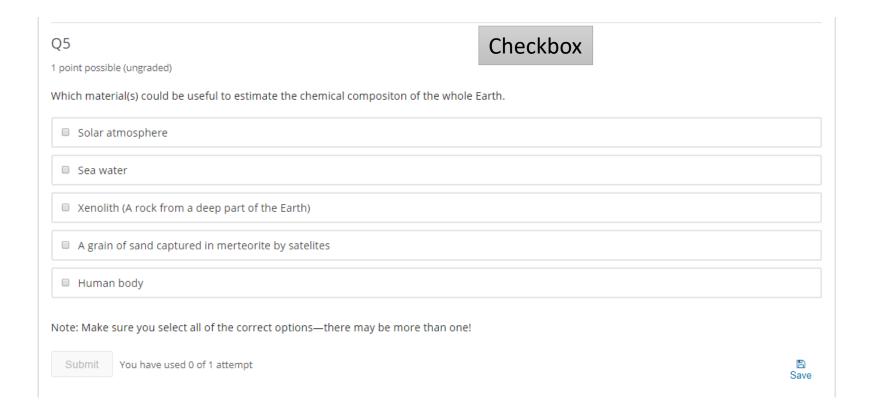
3-1-1, video lecture



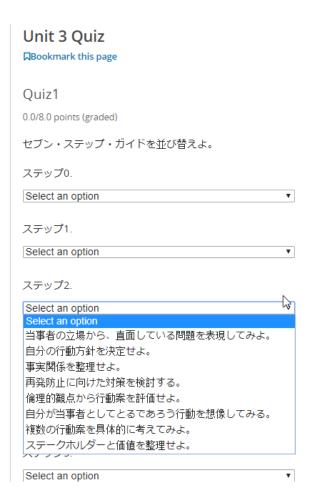
Assessment material



Assessment material



Assessment material



So far, handle only 4 types of assessment

Droplist

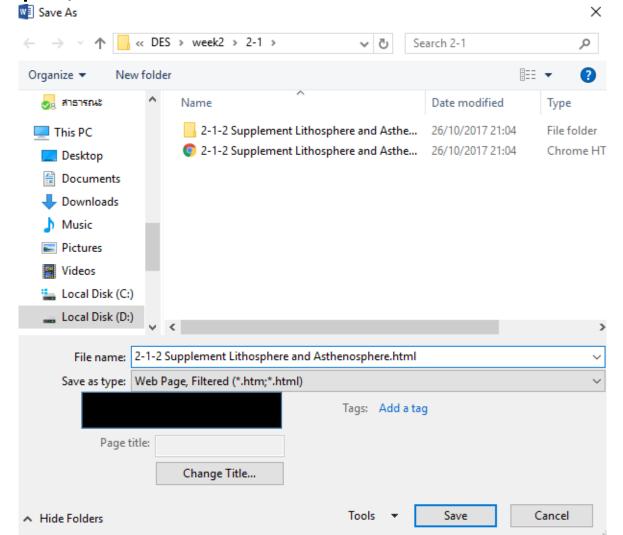
Material preparation

Text material preparation

- Prepared in any editor (Word, WordPad, notepad, etc.)
- But it needs to be converted to HTML file

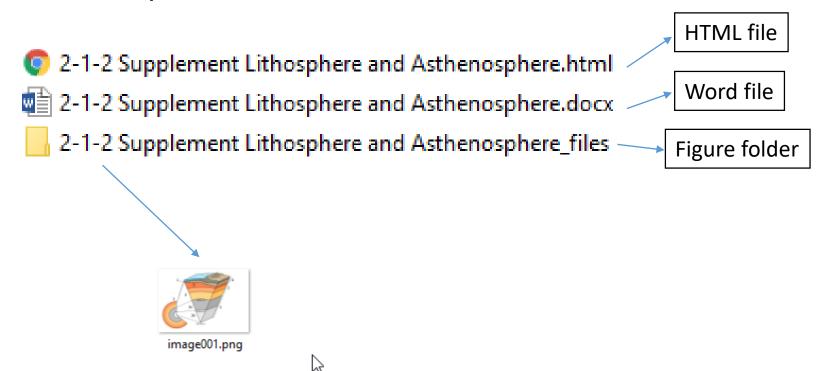
Text material preparation

- For example, Word → HTML



Text material preparation

- For example, Word → HTML



Video material preparation

- Video link (Youtube)
 - required URL format (https://youtu.be/f4JzqlwBLO8)

• Transcript (srt file) optional

```
0
00:00:04,710 --> 00:00:10,920
As stated in the previous subsection, the fate awaiting plates which are produced at

1
00:00:10,920 --> 00:00:16,490
mid-ocean ridges is different in Atlantic Ocean and Pacific Ocean.

2
00:00:16,490 --> 00:00:23,070
In this subsection, we will learn about the mid-ocean ridge in the Atlantic Ocean, as

3
00:00:23,070 --> 00:00:26,480
well as plates produced there.

4
00:00:26,480 --> 00:00:33,670
When looking at a bathymetric chart, you can see that the Mid-Atlantic Ridge is distributed

5
00:00:33,670 --> 00:00:33,629
```

Assessment material preparation

- XML format is required (but difficult)
- Assessment-formatted excel file is prepared
 - Format.xlsx → prepared in workspace folder

Fill blank

analdana diamban mana			la time		
problem_display_name	grade_weight	max_attempts	nint	subquestion	answer
				(Please choose the answer from multiple of 5 like 5, 10	,
What percent of the volume of				15,, 95, 100. You don't have to put "%" in your	
the Earth is liquid?		1		answer.)	80

Drop list

	grade_w	max_atte				
problem_display_name	eight	mpts	hint	subquestion	droplist	answer
What percentage of global volcanic activity occurs at mid-						
ocean ridges?					25%	f
					50%	f
					75%	t
					100%	f

Assessment material preparation

Multiple choice

problem_display_name	grade_we max_atterhint		subquesti choice		answer	
Which material(s) could be useful to estimate the chemical compositon of the whole Earth.		1			Solar atmosphere	f
					Sea water	f
					Xenolith (A rock from a deep part of the Earth)	t
					A grain of sand captured in merteorite by satelites	f
					Human body	t

checkbox

Same excel-based structure but

Multiple choice → SINGLE correct answer

Checkbox → MULTI correct answer

problem_display_name	grade_we	max_atter	hint	subquesti	choice	answer
Which material(s) could be useful to estimate the chemical compositon of the whole Earth.		1			Solar atmosphere	f
•					Sea water	f
					Xenolith (A rock from a deep part of the Earth)	t
					A grain of sand captured in merteorite by satelites	f
					Human body	t

Assessment material preparation

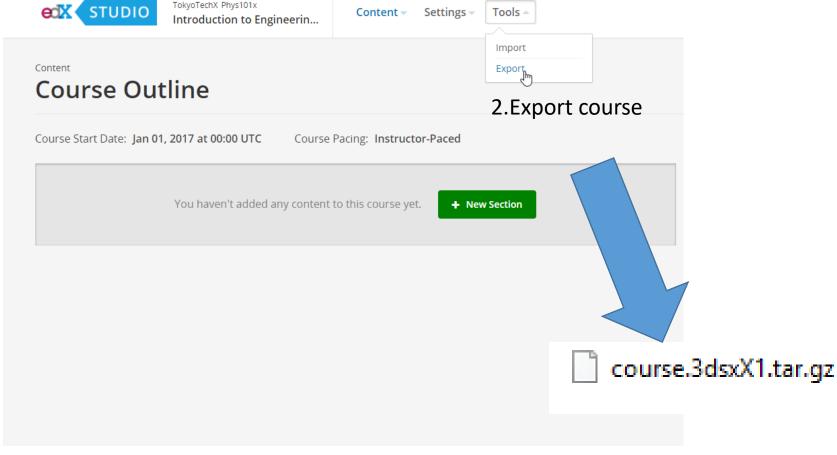
- Grade_weight : the number of points each problem is worth
- Max_attempts: number of times a student can try to answer

Source: Problem component setting in edx.studio

Fill data in macro-excel

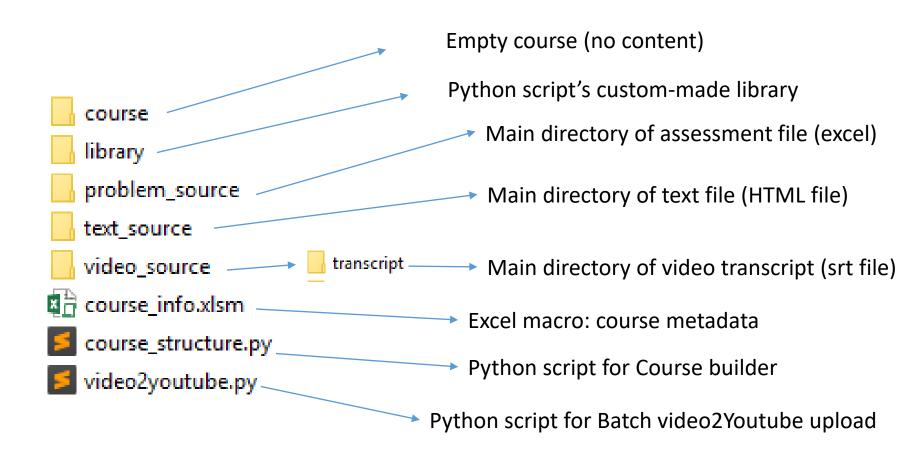
Export an empty course instance

1.Create a new course instance



3. Unzip and place in workspace folder(see next slide)

Workspace folder



Course_info.xlsm

Sheets

- coursestructure
- text
- video
- problem
- upload_list
- caption_list
- thumbnail_list
- metada

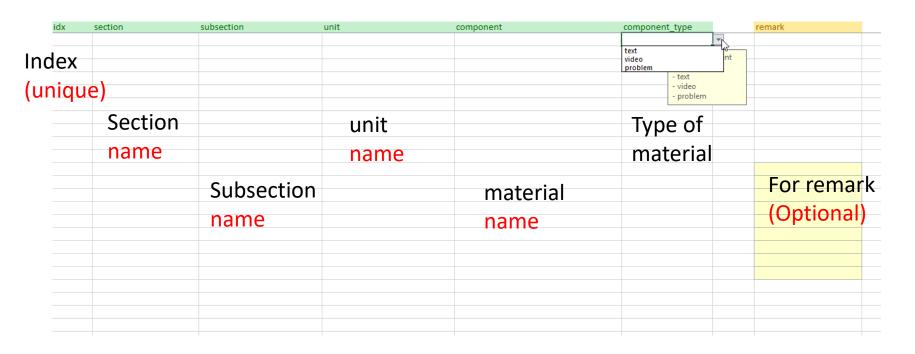
Course builder

Batch video2Youtube upload

leave it there, no need to consider

Coursestructure sheet

Course overview



Coursestructure sheet

example

dx	section	subsection	unit	component	component_type	remark
	Week 1. Introduction to					
	1 the solide Earth	Introduction	Introductory Video	Introductory Video	video	1st week
	Week 1. Introduction to					
	2 the solide Earth	Introduction	Introductory Video	Random Video	video	1st week
	Week 1. Introduction to	¢				
	3 the solide Earth	Introduction	Welcome Quiz	Q2	problem	1st week
	Week 1. Introduction to					
	4 the solide Earth	Introduction	Welcome Quiz	Q3	problem	1st week
	Week 1. Introduction to					
	5 the solide Earth	Introduction	Welcome Quiz	Q5	problem	1st week
	Week 1. Introduction to		About EARTH-LIFE SCIENCE	About EARTH-LIFE SCIENCE INSTITUTE		
	6 the solide Earth	Introduction	INSTITUTE "ELSI"	"ELSI"	text	1st week
	Week 1. Introduction to		About EARTH-LIFE SCIENCE			
	7 the solide Earth	Introduction	INSTITUTE "ELSI"	ELSI Introductory Video	video	1st week
	Week 1. Introduction to	1-1. Actual conditions inside				
	8 the solide Earth	the Earth	1-1-1. video lecture	1-1-1. video lecture	video	1st week
	Week 1. Introduction to	1-1. Actual conditions inside				
	9 the solide Earth	the Earth	1-1-1. video lecture	quiz	problem	1st week
	Week 1. Introduction to	1-1. Actual conditions inside	1-1-2. Summary: Data on the	1-1-2. Summary: Data on the three layers		
	10 the solide Earth	the Earth	three layers of the earth	of the earth	text	1st week
	11 Week 2. Plate Tectonics	2-1. What are plates?	2-1-1. video lecture	2-1-1. video lecture	video	2nd week
	12 Week 2. Plate Tectonics	2-1. What are plates?	2-1-1. video lecture	Quiz	problem	2nd week
			2-1-2. Supplement: Lithosphere	2-1-2. Supplement: Lithosphere and		
	13 Week 2. Plate Tectonics	2-1. What are plates?	and Asthenosphere	Asthenosphere	text	2nd week
		2-2 Where plates are				

coursestructure sheet

Update/reset button

component_type	remark	
video	1st week	Update data into other material sheets
video	1st week	with respect to material type
problem	1st week	
problem	1st week	update compoenent
problem	1st week	
text	1st week	
video	1st week	Remove data at all material sheets
video	1st week	
problem	1st week	reset component
rs text	1st week	
video	2nd week	

text sheet

Directory inside text_source folder

before

(section	subsection	unit	text_name	file_dir /	file_name
	Week 1. Introduction to		About EARTH-LIFE SCIENCE			
	6 the solide Earth	Introduction	INSTITUTE "ELSI"	About EARTH-LIFE SCIENCE INSTITUTE "ELSI"		
	Week 1. Introduction to	1-1. Actual conditions	1-1-2. Summary: Data on the	1-1-2. Summary: Data on the three layers of the		
1	0 the solide Earth	inside the Earth	three layers of the earth	earth		
			2-1-2. Supplement:	2-1-2. Supplement: Lithosphere and	Directory of	HTML
1	3 Week 2. Plate Tectonics	2-1. What are plates?	Lithosphere and	Asthenosphere	5.1.6666.7.6.	
	6 Wook 2 Plata Tastoniss	2-2. Where plates are	2.2.2 Supplement: Dating	3.3.3 Supplement Dating	HTML file	filename
1	6 Week 2. Plate Tectonics		2-2-2. Supplement: Dating	2-2-2. Supplement: Dating	11111121110	meriani
1	8 Week 2. Plate Tectonics	2-3. Plates produced at Atlantic Ocean	2-3-2. Supplement: Hot Spots	2-3-2. Supplement: Hot Spots		
		2-3. Plates produced at	2-3-3. Supplement: Formation	2-3-3. Supplement: Formation Of The Atlantic		
1	9 Week 2. Plate Tectonics	Atlantic Ocean	Of The Atlantic Ridge	Ridge		

after

idx	section	subsection	unit	text_name	file_dir	file_name
	Week 1. Introduction to		About EARTH-LIFE SCIENCE			
6	the solide Earth	Introduction	INSTITUTE "ELSI"	About EARTH-LIFE SCIENCE INSTITUTE "ELSI"	text_source\DES\week1\intro	About EARTH.html
	Week 1. Introduction to	1-1. Actual conditions	1-1-2. Summary: Data on the	1-1-2. Summary: Data on the three layers of the		1-1-2 Summary Data on the three layers c
10	the solide Earth	inside the Earth	three layers of the earth	earth	text_source\DES\week1\1-1	earth.html
			2-1-2. Supplement:	2-1-2. Supplement: Lithosphere and		2-1-2 Supplement Lithosphere and
13	Week 2. Plate Tectonics	2-1. What are plates?	Lithosphere and	Asthenosphere	text_source\DES\week2\2-1	Asthenosphere.html
		2-2. Where plates are				
16	Week 2. Plate Tectonics	produced	2-2-2. Supplement: Dating	2-2-2. Supplement: Dating	text_source\DES\week2\2-2	2-2-2 Supplement Dating.html
		2-3. Plates produced at				
18	Week 2. Plate Tectonics	Atlantic Ocean	2-3-2. Supplement: Hot Spots	2-3-2. Supplement: Hot Spots	text_source\DES\week2\2-3	2-3-2 Supplement Hot Spots.html
		2-3. Plates produced at	2-3-3. Supplement: Formation	2-3-3. Supplement: Formation Of The Atlantic		2-3-3 Supplement Formation Of The Atlar
19	Week 2. Plate Tectonics	Atlantic Ocean	Of The Atlantic Ridge	Ridge	text_source\DES\week2\2-3	Ridge.html
				ሪን		

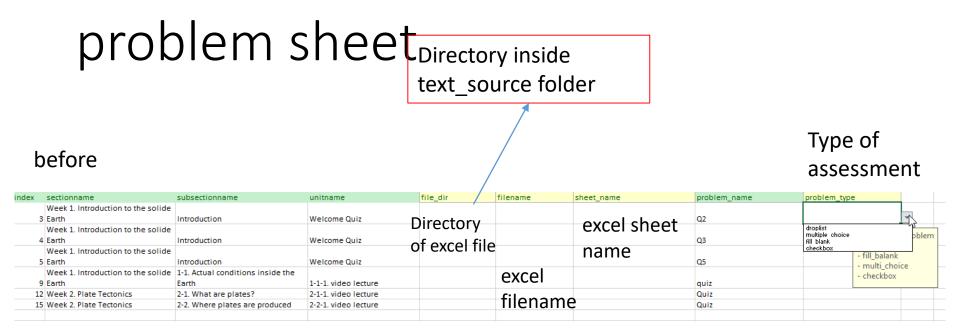
video sheet

video_source folder before subsection video_url video_name file_dir Week 1. Introduction to Introduction 🗘 1 the solide Earth Introductory Video Introductory Video Week 1. Introduction to 2 the solide Earth Random Video Introduction Introductory Video Youtube Directory About EARTH-LIFE Eng srt Jp srt Week 1. Introduction to SCIENCE INSTITUTE ELSI Introductory Video 7 the solide Earth "ELSI" Introduction of srt file filename filename url 1-1-1, video Week 1. Introduction to 1-1. Actual conditions inside 8 the solide Earth 1-1-1, video lecture lecture 11 Week 2. Plate Tectonics 2-1. What are plates? 2-1-1. video lecture 2-1-1. video 14 Week 2. Plate Tectonics 2-2. Where plates are 2-2-1, video lecture 2-2-1. video **Optional** 2-3. Plates produced at 2-3-1, video 17 Week 2. Plate Tectonics Atlantic Ocean 2-3-1. video lecture lecture

Directory inside

after

dx	section	subsection	unit	video_url	video_name	file_dir	en_sub	jp_sub
	Week 1. Introduction to			https://youtu.be/35g4l				
	1 the solide Earth	Introduction	Introductory Video	VKXx8I	Introductory Video	video_source\transcript	01-TKTGEOS1T116-V012100-35g4IVKXx8I_en.srt	
	Week 1. Introduction to			https://youtu.be/CzJN				
- :	2 the solide Earth	Introduction	Introductory Video	MhDY8jo	Random Video	video_source\transcript	No_06_Week6-06-en.srt	No_01_Week6-01.srt
			About EARTH-LIFE					
	Week 1. Introduction to		SCIENCE INSTITUTE	https://youtu.be/12-	ELSI Introductory			
7	7 the solide Earth	Introduction	"ELSI"	QvVorggg	Video	video_source\transcript	02-TKTGEOS1T116-V007600-12-QvVorggg_en.srt	
	Week 1. Introduction to	1-1. Actual conditions inside		https://youtu.be/dMU	1-1-1. video		03-TKTGEOS1T116-V016900-	
8	8 the solide Earth	the Earth	1-1-1. video lecture	RWt7hAOM	lecture	video_source\transcript	dMURWt7hAOM_en.srt	
				https://youtu.be/aaUz	2-1-1. video		02-TKTGEOS1T116-V013400-	
11	1 Week 2. Plate Tectonics	2-1. What are plates?	2-1-1. video lecture	pFu6SAc	lecture	video_source\transcript	aaUzpFu6SAc_en.srt	
		2-2. Where plates are		https://youtu.be/v-	2-2-1. video			
14	4 Week 2. Plate Tectonics	produced	2-2-1. video lecture	<u>LEBtzKMIU</u>	lecture	video_source\transcript	03-TKTGEOS1T116-V013600-v-LEBtzKMIU_en.srt	
		2-3. Plates produced at		https://youtu.be/ gy-	2-3-1. video			
17	7 Week 2. Plate Tectonics	Atlantic Ocean	2-3-1. video lecture	77dxeoE	lecture	video_source\transcript	05-TKTGEOS1T116-V013500gy-77dxeoE_en.srt	



after

index	sectionname	subsectionname	unitname	file_dir	filename	sheet_name	problem_name	problem_type
	Week 1. Introduction to the solide							
	3 Earth	Introduction	Welcome Quiz	problem_source	DES_problem.xlsx	intro_quiz2	Q2	multiple_choice
	Week 1. Introduction to the solide							
	4 Earth	Introduction	Welcome Quiz	problem_source	DES_problem.xlsx	intro_quiz3	Q3	fill_blank
	Week 1. Introduction to the solide							
	5 Earth	Introduction	Welcome Quiz	problem_source	DES_problem.xlsx	intro_quiz5	Q5	checkbox
	Week 1. Introduction to the solide							
	9 Earth	1-1. Actual conditions inside the Earth	1-1-1. video lecture	problem_source	DES_problem.xlsx	week1-1-1	quiz	droplist
1	2 Week 2. Plate Tectonics	2-1. What are plates?	2-1-1. video lecture	problem_source	DES_problem.xlsx	week2-1-1	Quiz	multiple_choice
1	5 Week 2. Plate Tectonics	2-2. Where plates are produced	2-2-1. video lecture	problem_source	DES_problem.xlsx	week2-2-1	Quiz	droplist
						droplist multiple_ol fill_blank checkbox		
								- multi_cho - checkbox

Built course with Python

• Python 3

Test environment: Windows 10

- Dependencies
 - xlrd, xlwt, lxml, pysrt

First, create course outline

Run in terminal

python course_structure.py

Select tasks

```
enter [1-3]
1.Create course outline
2.Add course contents
3.Upload video to Youtube
```

Type 1 and hit enter

 Course outline are created in course folder

```
section: "section02"" in course. Add link to course.xml
 idded new section: "section01.xml" file at chapter directory
        added new subsection link subsection01 "" in section:section01.xml added new subsection link subsection02" in file: section01.xml
added new section: "section01.xml" file at chapter directory
        added new subsection link"subsection03", in file: section02.xml
added new subsection link "subsection04"" in file: section02.xml added new subsection link "subsection05"" in file: section02.xml added new section: "section02.xml" file at chapter directory added new subsection: "subsection01.xml" file at sequential directory
        added new unit link "unit01"" in subsection:subsection01.xml
        added new unit "unit02"" in file: subsection01.xml
        added new unit "unit03"" in file: _subsection01.xml
added new subsection: "subsection01.xml" file at sequential directory
added new unit "unit04"" in file: subsection02.xml
added new unit "unit05"" in file: subsection02.xml
added new subsection: "subsection02.xml" file at sequential directory
        added new unit "unit06"" in file: subsection03.xml
added new unit "unit07"" in file: subsection03.xml
added new subsection: "subsection03.xml" file at sequential directory
added new unit "unit08"" in file: subsection04.xml
added new unit "unit09"" in file: subsection04.xml
added new subsection: "subsection04.xml" file at seguential directory
        added new unit "unit10"" in file: subsection05.xml
added new unit "unit11"" in file: subsection05.xml
added new unit "unit12"" in file: subsection05.xml
 dded new subsection: "subsection05.xml" file at sequential directory
 added new unit: "unit01.xml" file at vertical directory
 added new unit: "unit01.xml" file at vertical directory
 dded new unit: "unit03.xml" file at vertical directory
added new unit: "unit04.xml" file at vertical directory
added new unit: "unit05.xml" file at vertical directory
 dded new unit: "unit06.xml" file at vertical directory
 added new unit: "unit07.xml" file at vertical directory
added new unit: "unit08.xml" file at vertical directory
added new unit: "unit09.xml" file at vertical directory
 dded new unit: "unit10.xml" file at vertical directory
 dded new unit: "unit11.xml" file at vertical directory
 dded new unit: "unit12.xml" file at vertical directory
```

Then, add course material

Run in terminal

python course_structure.py

Select tasks

enter [1-3] 1.Create course outline 2.Add course contents 3.Upload video to Youtube

Type 2 and hit enter

Type 1 and hit enter

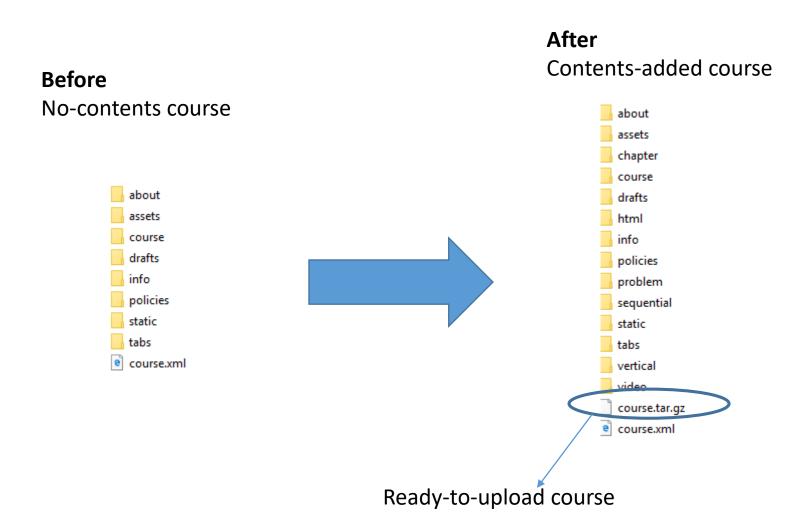
 Course materials are added in course folder

 Ready-to-upload course (tar.gz) is created at..

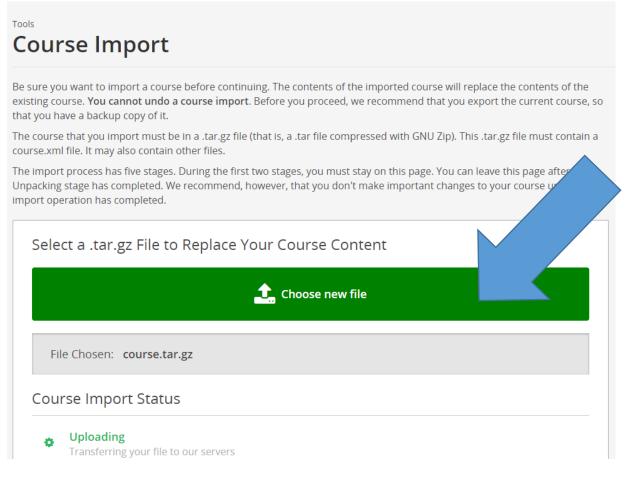
```
o 4
ivitTA tmp¥demo¥course_builder¥workspace
iound section: Week 2. Plate Tectonics in the exported course
iound subsection: 2-2. Where plates are produced in the exported course
iound unit: 2-2-2. Supplement: Dating in the exported course
added text link: text_content16
crate a new html component: 2-2-2. Supplement: Dating in the exported course
iound unit: 2-2-2. Supplement: Dating in the exported course
iound in the exported course
1.2 TA tmp¥demo¥course_builder¥workspace
found section: Week 2. Plate Tectonics in the exported course
found subsection: 2-3. Plates produced at Atlantic Ocean in the exported course
found unit: 2-3-1. video lecture in the exported course
added video link: video17
    ate a new video: 2-3-1. video lecture in the exported course
  o:\text{YTA tmp}\text{demo}\text{course_builder}\text{workspace}
ound section: Week 2. Plate Tectonics in the exported course
ound subsection: 2-3. Plates produced at Atlantic Ocean in the exported course
ound unit: 2-3-2. Supplement: Hot Spots in the exported course
added text link: text_content18
   rate a new html component: 2-3-2. Supplement: Hot Spots in the exported course opy text content: 2-3-2. Supplement: Hot Spots to the exported course
    gure sources are all modified
  300
IVYTA tmp¥demo¥course_builder¥workspace
ound section: Week 2. Plate Tectonics in the exported course
ound subsection: 2-3. Plates produced at Atlantic Ocean in the exported course
ound unit: 2-3-3. Supplement: Formation Of The Atlantic Ridge in the exported course
             added text link: text_content19
   rate a new html component: 2-3-3. Supplement: Formation Of The Atlantic Ridge in th
   opy text content: 2-3-3. Supplement: Formation Of The Atlantic Ridge to the exporte
```

le is being compressed as tar.gz

Course folder (before/after)



Import a modified course



course.tar.gz

Modified course

