

## Research on Self-Directed Learning and Motivation from MOOCs and Open Education

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**May 26, 2020**

## Remember the MOOCs? After Near-Death, They're Booming

Steven Lohr, The New York Times

<https://www.nytimes.com/2020/05/26/technology/moocs-online-learning.html>

*Remember the MOOCs? After Near-Death, They're Booming*

The plummeting online learning numbers after last year's boom have been replaced with a sharp rise in new enrollments.



Coursera added 10 million new users from mid-March to mid-May. Credit...Jessica Chou for The New York Times

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**August 27, 2020**

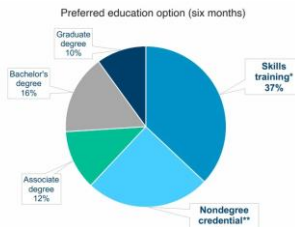
## Alternative Credentials on the Rise Paul Fain, Inside Higher Ed

<https://www.insidehighered.com/news/2020/08/27/alternative-credentials-online-credentials-will-it-be-audited>

Google IT Professional Certificates



edX Expands MicroMasters Programs With Data Science, Digital Leadership and More



Shasta Center for Consumer Insights Public Viewpoint survey, April 15-Aug. 6. Base: adults ages 18 and older, n=1,272. \*Courses for skills training or personal development. \*\*Certificate, microcredential, or license.

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## MOOCs Stats

Most Followed Subjects

class central

Pre-Pandemic	Post-Pandemic
1 Computer Science	1 Personal Development +3
2 Programming	2 Business +1
3 Business	3 Art & Design <i>new entry</i>
4 Personal Development	4 Management & Leadership -1
5 Management & Leadership	5 Self Improvement <i>new entry</i>
6 Data Science	6 Humanities <i>new entry</i>
7 Artificial Intelligence	7 Computer Science -6
8 Information Technology	8 Communication Skills <i>new entry</i>
9 Career Development	9 Health & Medicine <i>new entry</i>
10 Entrepreneurship	10 Foreign Language <i>new entry</i>

**December 14, 2020**

**The Second Year of the MOOC: A Review of MOOC Stats and Trends in 2020, Dhawal Shah, Class Central**

<https://www.classcentral.com/report/the-second-year-of-the-mooc/>

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**December 14, 2021**

## A Decade of MOOCs: A Review of MOOC Stats and Trends in 2021

Dhawal Shah, Class Central

<https://www.classcentral.com/report/moocs-stats-and-trends-2021/>

**220M**  
Students

**950**  
Universities

**19.4k**  
Courses

**1670**  
Microcredentials

**70**  
MOOC-based degrees

class central

By the Numbers: MOOCs in 2021  
Statistics do not include China

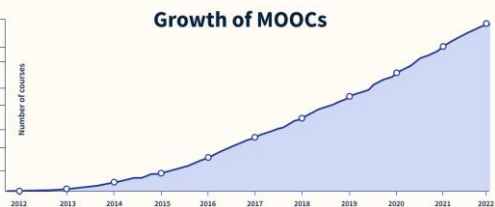
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## A Decade of MOOCs: A Review of MOOC Stats and Trends in 2021

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class central

By the Numbers: MOOCs in 2021  
Statistics do not include China

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## December 14, 2021 A Decade of MOOCs: A Review of MOOC Stats and Trends in 2021

Dhawal Shah, Class Central  
<https://www.classcentral.com/report/mooc-stats-and-trends-2021/>

New Registered Users	2019	2020	2021	Total
<b>coursera</b>	8M	31M	<b>21M</b>	97M
<b>edX</b>	5M	10M	<b>7M</b>	42M
<b>swayam</b>	NA	6M	<b>6M</b>	22M
<b>Future Learn</b>	1.3M	4M	<b>2M</b>	17M

class central

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## MOOC books (2020) and (2015)

MOOCs and Open Education in the Global South: Challenges, Successes, and Opportunities

EDITED BY  
KEITH GARRISON, GUY B. BROWN,  
THOMAS C. WATTS,  
AND PATRICK C. WATKINS

MOOCs and Open Education  
AROUND THE WORLD

MOOCs and Open Education

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## October 22, 2021 Wanted: Billions of Self-Directed Learners

<https://www.peoplematters.in/article/training-development/the-era-of-self-directed-learning-hr-s-new-role-and-strategy-24348>



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## Benefits of Self-Directed Learners

<https://discoverpraxis.com/reasons-not-to-go-to-college/>

### THE BENEFITS OF SELF-DIRECTED LEARNING

- ✓ Teaches you to take initiative and create value
- ✓ Builds self-confidence
- ✓ Teaches perseverance and flexibility
- ✓ Kindles intrinsic motivation
- ✓ Promotes self-awareness
- ✓ Helps you find a career you find personally fulfilling
- ✓ Allows you to learn skills more holistically
- ✓ Teaches social skills
- ✓ Lets you explore a wider range of interests
- ✓ Gives you the practical experience to execute what you've learned

PRAXIS

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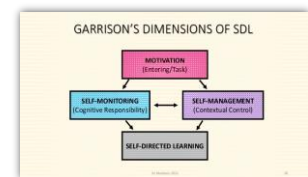
## Study #1 MOOCs Instructional Design to Facilitate Participants' Self- directed Learning

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## Key Terms

### Self-directed learning (SDL) (Garrison, 1997)

- (1) self-management
- (2) self-monitoring
- (3) motivation



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## Research Background

- **Learners need self-directed learning skills and strategies to be successful in MOOCs** (Halawa, Greene, & Mitchell, 2014; Littlejohn & Milligan, 2016), as there is a lack of personalized interaction with teachers.
- **Self-directness of a learner might vary in different learning environments which means that the learners could be more self-directed in one learning environment than another** (Hiemstra, 1994).

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## Research Background

- **Instructional design can greatly influence students' interaction and engagement** (Garrison & Cleveland-Innes, 2005) **and success in online learning** (Song, Singleton, Hill, & Koh, 2004; Swan, 2001).
- However, few studies have examined instructional design and the delivery of instruction using MOOCs from instructor perspectives (Margaryan et al., 2015; Watson et al., 2016); **especially lacking is research on instructors' perception of SDL and how they design MOOCs to facilitate students' SDL.**

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## Research Purpose

- **The purpose is to inform instructors or instructional designers and MOOC providers of the current practices of designing MOOCs to facilitate learners' SDL.**



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## Research Questions

1. **How do MOOC instructors perceive participant SDL skills?**
2. **How do MOOC instructors perceive their facilitation of participant SDL skills?**
3. **How do instructors design and deliver MOOCs to facilitate participant SDL skills?**
  - a. How is technology being used by MOOC instructors to support the development of participant SDL skills?
  - b. What technology features or functions do MOOC instructors want to have to improve their facilitation of MOOC participant SDL skills?

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## Research Design

### Explanatory sequential mixed methods design

(Creswell & Clark, 2017)



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## Data Collections

### Survey:

- Volunteer sampling (Creswell & Clark, 2017)
- 198 instructors responded to the survey (10% response rate)

### Interview:

- Homogeneous purposeful sampling (Creswell & Clark, 2017; Patton, 2002)
- Maximal variation sampling (Creswell & Clark, 2017)
- 22 interviewees

### MOOC review:

- Reviewed 22 interviewees' MOOCs



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Pseudonym	Country	Subject area	Platform	Gender	No. of O/B	No. of M	Mode of the M
Lucas	US	Social science	edX	M	0	1	I without T
Branden	US	Education	Udacity	M	0	5 or more	Self-paced
Logan	US	Literacy and Language	Coursera	M	5 or more	5 or more	I with T
Emma	US	Literacy and Language	Coursera	F	2	1	Self-paced
Jason	US	Science	edX	M	1	1	I with T
Jackson	US	Medicine and health	Coursera	M	5 or more	1	Self-paced
Samuel	US	Education	FutureLearn	M	4	3	Self-paced
Hannah	US	Education	Blackboard	F	5 or more	1	I with T
Ashley	US	Education	EdX	F	0	5 or more	I with T
Andrew	UK	Art	FutureLearn	M	0	3	I with T
Emily	UK	Medicine and health	FutureLearn	F	2	2	I with T
Aiden	UK	Social science	FutureLearn	M	0	1	Self-paced
Henry	UK	Social science	FutureLearn	M	0	1	Self-paced
Joseph	UK	Medicine and health	FutureLearn	M	1	1	Self-paced
Joshua	UK	Literacy and language	FutureLearn	M	2	2	I with T
Mason	Australia	Education	Coursera	M	5 or more	1	I with T
Ethan	Australia	Business	Coursera	M	3	1	I without T
Ben	Australia	Social science	edX	M	1	1	I with T
Paul	France	Computer Science	Coursera	M	1	1	I with T
Fernando	Belgium	Research methods	Blackboard	M	5 or more	3	I with T
Jacob	Netherlands	Science	Coursera	M	0	1	I with T
Dylan	Israel	Science	Coursera	M	5 or more	3	I without T

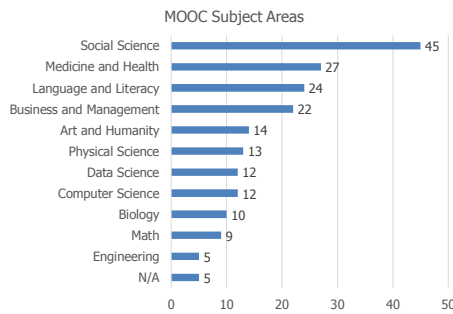
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## Data Analysis

RQs	Data Sources	Data analysis	Tools
RQ1	Survey	Descriptive statistics	SPSS
	Interview	Content analysis (Elo & Kyngäs, 2008)	NVivo
RQ2	Survey	Descriptive statistics	SPSS
	Interview	Content analysis	NVivo
RQ3	Interview	Content analysis	NVivo
	Course review	Content analysis	NVivo

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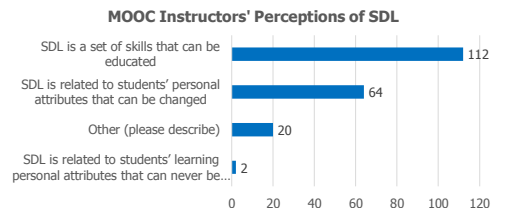
## Research Context



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## RQ1 Perceptions of SDL

- A majority of the MOOC instructors thought that these skills or attributes are not static, and that SDL as a set of skills can be educated or students' personal attributes that can be changed.



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## RQ1 Interview Results

- Emma's understanding of SDL is more related to self-management and motivation. She said:  
 "When I think about self-directed learning, I think about students **managing their time and managing the coursework on their own, and how it fits into their schedules and their lives, how they interact with materials, what's going to keep them engaged.**"

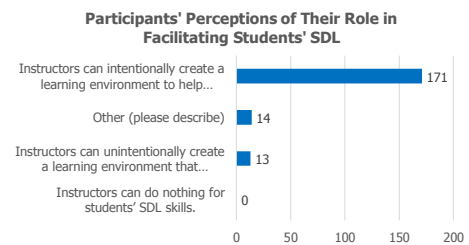


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## RQ2 Perceptions of Facilitation of SDL

- Most of MOOC instructors thought that they can intentionally or unintentionally facilitate students' SDL.



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### RQ2 Interview Results

- Ashely emphasized the importance of both instructors' facilitation and students' SDL skills. She said:

"The participant has a lot of flexibility on how they approach the content. I mean, obviously, we have things like assignments. We have things like online forums. And there're ways that we scaffold the learning experience. But there still is a lot of choice for the learner."



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### RQ3 Strategies to Facilitate SDL

- Students' intrinsic motivation plays an important role. However, extrinsic motivation provided by the MOOCs might help transfer extrinsic motivation to intrinsic motivation.

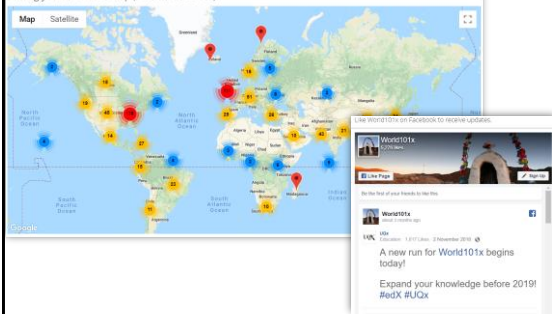
Motivations	Strategies
Entering motivation	MOOC instructors helped students <b>identify the needs and goals of learning</b> and sense of achievement.
Task motivation	MOOC instructors motivated students through instruction, learning materials, feedback, and learning community.

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### RQ3 Learning Community

Putting yourself on the map (External resource)



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### RQ3 Strategies to Facilitate SDL

- Both internal feedback and external feedback were provided to help students' self-monitoring.

Self-monitor	Strategies
Internal feedback	Cognition: MOOC instructors provided quizzes for self-assessment, tutorial on technology use, learning advice, navigation of the course, progress indicators, resources, and instructional modeling, etc.
	Meta-cog: MOOC instructors encouraged students to reflect and think critically by providing reflection questions and building learning community.
External feedback	MOOC instructors, teaching assistants, and peers were involved in providing external feedback.

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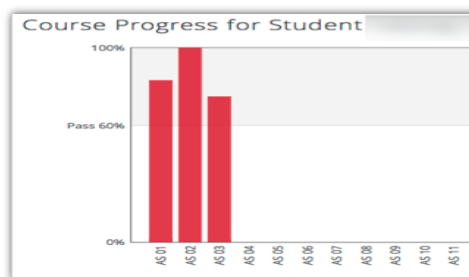
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### RQ3 Self-assessment (i.e., embedded quizzes)

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### RQ3 Progress Indicators



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### RQ3 External Feedback: Peer-assessment (e.g., 3 peers assigned to review each assignment)

REQUIRED	GRADE	DUE
<b>Quiz</b> Module 2 Review Quiz 20 min		Nov 19
<b>Peer-graded Assignment</b> Critical Evaluation of the 2 Approa... 2h		Nov 22
<b>Review Your Peers</b> Critical Evaluation of the 2 Approa...		Nov 25

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### RQ3 Strategies to Facilitate SDL

- They helped students' self-management concerning setting learning goals, time management, resources and support management although among the three elements of SDL, MOOC instructors had less control over students' management.

Self-management	Strategies
Enactment of learning goals	Providing discussion questions, reflections, survey, and appreciation students' learning goals.
Time management	Providing time frame, progress indicator, short learning units, and flexible timeline.
Management of resources and support	Providing flexible learning resources, peer-assessment, accessibilities, clear expectations, and short learning units.

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### RQ3 Time Management (e.g., time advisories and estimates)

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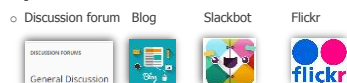
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### RQ3-a. Tech Used for SDL

- **Synchronous communication technologies**



- **Asynchronous communication technologies**



- **Multimedia** (e.g., video and graphics)
- **Feedback technologies**

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## Discussion

- **SDL can be Changed**
- **MOOC Instructors can Facilitate SDL**
- **Strategies to Facilitate SDL:** A variety of strategies can be used to facilitate student SDL skills in terms of motivation, self-monitor, and self-management.
- **Tech for SDL:** Tech plays a vital role in facilitating SDL skills.
- **Tech expectations:** Adaptive learning systems, artificial intelligent systems, and learning analytics were expected to have to support SDL.

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## Implications

- **For MOOC instructors and Instructional Designers**

- Build learning community
- Inspire intrinsic motivation
- Personalize learning



- **For MOOC providers**

- Create a personalized learning environment
- Provide learning analytics to support learning and teaching

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### Top 10 Strategies to Facilitate SDL in MOOCs

1. Helping students set their own learning goals.
2. Building learning community.
3. Offering immediate feedback.
4. Embedding quizzes for self-assessment.
5. Providing progress indicators.
6. Providing reflection questions.
7. Designing short learning units.
8. Providing flexible timelines.
9. Highlighting estimated time frames.
10. Making available optional learning materials.



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### Top 10 Strategies to Facilitate SDL in MOOCs

1. Helping students set their own learning goals.

#### Example:

"I have asked, at the first page of course, why they're taking the course. So that is the goal. A lot of people say, 'I'm a teacher. And I want to do the stuff with my kids. Or I want to update my knowledge. Or I'm retired and I want to learn this.'"



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### Top 10 Strategies to Facilitate SDL in MOOCs

2. Building learning community.

Joshua from the UK mentioned: We use a lot of resources that already exist. And then we use the MOOC discussion board as a place to where they, kind of, point out and say, "I've seen this. And this is useful. Well, I use this, and this is good. I created this."

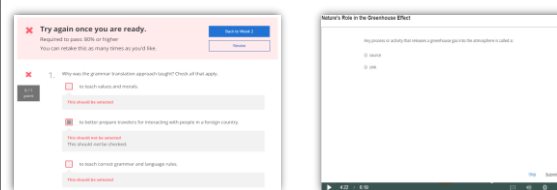


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### Top 10 Strategies to Facilitate SDL in MOOCs

3. Offering immediate feedback.
4. Embedding quizzes for self-assessment.

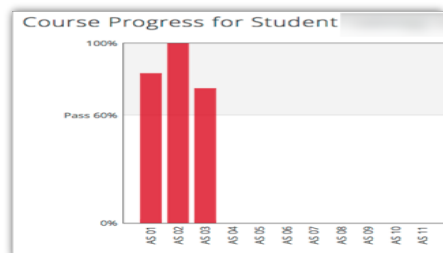


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### Top 10 Strategies to Facilitate SDL in MOOCs

5. Providing progress indicators



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### Top 10 Strategies to Facilitate SDL in MOOCs

6. Providing reflection questions.

We introduced kind of moments that video was stopped and there was a question. The student had to think of it a bit. Sometimes it was kind of a rhetorical question. There wasn't even no answer required. But it was just a pause for a while to let the student reflect. (Jacob)



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## Top 10 Strategies to Facilitate SDL in MOOCs

### 7. Designing short learning units.

- ✓ **Video:** Introduction to Regression 6 min
- ✓ **Video:** Introduction: Basic Least Squares 6 min

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## Top 10 Strategies to Facilitate SDL in MOOCs

### 8. Providing flexible timelines.

You've already completed 71% of your course! Reset your deadlines so you can finish the rest!

[Reset my deadlines](#)

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## Top 10 Strategies to Facilitate SDL in MOOCs

### 9. Highlighting estimated time frames.

- ✓ **Video:** 1.2 - Popular Music and Classical Music Compared 6 min
- 🕒 **Quiz:** Popular Music and Classical Music Compared 2 questions Overdue Jun 27, 2:59 AM EDT
- ✓ **Video:** 1.3 - Music and Emotions 4 min
- ✓ **Video:** 1.4 - How Do We Hear Music? Sound Waves and the Ear 6 min
- 🕒 **Quiz:** How Do We Hear Music? Sound Waves and the Ear 5 questions Overdue Jun 27, 2:59 AM EDT

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## Top 10 Strategies to Facilitate SDL in MOOCs

### 10. Making available optional learning materials.

📖 **Reading:** BASIC: A Blanket Around the Earth 10 min

📖 **Reading:** ADVANCED: A Blanket Around the Earth 10 min

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## 10 More Strategies to Facilitate SDL in MOOCs

### 11. Structure continued...objectives, time to course completion, syllabus, number of modules, titles, etc. Graphic or visual organizations for essential material. The text on screen matched the narration enforcing the redundancy principle.

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## 10 More Strategies to Facilitate SDL in MOOCs

### 12. On completion of modules participants get a certificate.

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## 10 More Strategies to Facilitate SDL in MOOCs

**13. Week overview.** The course is divided into week-long segments, and each week is chunked into manageable parts. Very importantly for the participant to be able to anticipate what can get done in one sitting, the length of each video is included.

The screenshot shows a 'Week 2' overview page. It lists several video segments with their durations: 'Video: Part 1 - Good job' (10 min), 'Video: Part 2 - Why?' (10 min), 'Video: Part 3 - Awareness' (10 min), 'Video: Part 4 - The Science of Well-Being' (10 min), 'Video: Part 5 - The Science of Well-Being' (10 min), 'Video: Part 6 - The Science of Well-Being' (10 min), 'Video: Part 7 - The Science of Well-Being' (10 min), 'Video: Part 8 - The Science of Well-Being' (10 min), 'Video: Part 9 - The Science of Well-Being' (10 min), 'Video: Part 10 - The Science of Well-Being' (10 min). It also includes a 'Why We Have Misconceptions' section and a 'Week 2 Overview' section.

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## 10 More Strategies to Facilitate SDL in MOOCs

**14. Lecture recorded and captions added.**

The screenshot shows a video player interface. The video title is 'KINDNESS SOCIAL CONNECTION TIME AFFLUENCE MIND CONTROL HEALTHY PRACTICES'. The video content shows a woman speaking. To the right of the video player, there are two small thumbnail images. The top one is labeled 'Caption added to video' and the bottom one is labeled 'Video of student audience'.

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## 10 More Strategies to Facilitate SDL in MOOCs

**14. Continued...Lecture video transcripts.**

The full transcript of each video recording is shown below the video player, with the current point in video highlighted as it plays:

The screenshot shows a video transcript. The text is as follows: 'taking in these reference points that are kind of crazy? What's my reference point for what my salary should be as a Yale professor? I could look to Paul Bloom, who's my colleague, who also teaches Coursera courses, he's in the psychology department, he might be a good reference point. That might be okay for me to compare myself to. But it would be bad if I was comparing my salary against Beyoncé because that's just crazy. I'm not going to be Beyoncé. I'm not going to make her money. I'm not going to be as beautiful as her. So we would assume that our minds don't do that. They seem to take in anything around us as a reference point, and given that I'm watching Beyoncé videos, this could be messing me up. And so this is what O'Guire and Schrum looked at. They wanted to see whether people who were exposed to cruder and cruder reference points, more unrealistic standards of salaries and incomes, actually got messed up. And here was their hypothesis. People who watched lots of TV are faced with people with crazy salaries, crazy incomes, crazy beauty levels, crazy stuff. Is that messing people up in other words, just watching a lot of TV where you see things like the Real Housewives and Empire and all this stuff, does that'.

Figure 7: Video Transcript Example

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## 10 More Strategies to Facilitate SDL in MOOCs

**15. Quick check tasks.**

The video lectures contain one or two "quick check" pop-up questions to assess understanding (and attention):

The screenshot shows a 'Part 2: Money' quick check task. It contains a list of questions: 'Which of the above video clips aligns with what O'Guire and Schrum hypothesized?', 'There is no significant correlation between emotional well-being (GWB) and income level.', 'Emotional well-being (GWB) rises with increases in income up to one month, then declines, after which further increases in income do not significantly affect it.', 'Emotional well-being (GWB) rises with increases in income up to one month, then declines, after which further increases in income do not significantly affect it.', 'Emotional well-being (GWB) is not significantly affected by income level and watching 47 minutes of emotional well-being (GWB) is not significantly affected by income level.' The user is asked to 'Select the correct answer(s)'.

Figure 8: Quick Check Example

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## 10 More Strategies to Facilitate SDL in MOOCs

**16. Providing students with self-selection options.**

There is the choice to watch all of the videos, read all of the materials, and submit all of the assignments, or there are choices all along the way to "cut corners" and take in only what the participant wants to.

The screenshot shows a 'Question & Answer' section. It includes a question: 'Not sure if you want to watch the entire video? If you want to skip around, here is the list of questions covered in this segment along with their [Timestamps]'. Below the question, there are two options: 'Question 1 (1:04:46) Is statistically we're looking at the medium right? But there is a single, what about the more extreme people in the data set? How do I know I'm not the more extreme one that do get violently affected by metrics?' and 'Question 2 (1:53:57) How much of people's happiness is dependent on the context in which the person is situated, as in the perception that other people around them are happier or less happy? Relative Happiness: I guess.' There is also a 'Continue' button.

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## 10 More Strategies to Facilitate SDL in MOOCs

**17. Visuals showing tasks completed.**

The screenshot shows a dashboard titled 'What do you want to learn?'. It displays a message: 'You have completed all of the assignments that are currently due.' Below this, there is a table showing the status of various tasks.

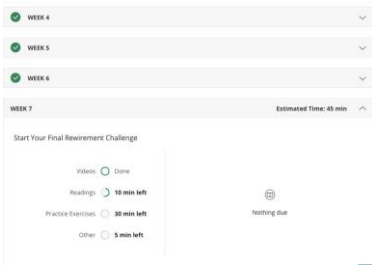
Item	Status	Due	Weight	Grade
Week 2 Quiz	Passed	Apr 20 2:00 AM EDT	10%	100%
Week 3 Quiz	Passed	Apr 27 2:00 AM EDT	10%	100%
Week 4 Quiz	Passed	May 4 2:00 AM EDT	10%	83.33%
Week 5 Quiz	Passed	May 11 2:00 AM EDT	10%	100%
Week 6 Quiz	Passed	May 18 2:00 AM EDT	10%	100%

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## 10 More Strategies to Facilitate SDL in MOOCs

## 18. Visuals showing work progress.



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## 10 More Strategies to Facilitate SDL in MOOCs

## 19. Rewirements (assignments) for putting the material to practice (e.g. Random Acts of Kindness, Make A Social Connection, Let's Get Physical, Meditate!, Sleep!, Gratitude Letter/Visit, Savoring, etc.)

## Daily Gratitude Journal

Gratitude is a positive emotional state in which one recognizes and appreciates what one has received in life. Research shows that taking time to experience gratitude can make you happier and even healthier. **For the next seven days, you will take 5-10 minutes each night to write down five things for which you are grateful.** They can be little things or big things. But you really have to focus on them and actually write them down (Again, try to develop a tracking method works for you and utilize a note on your phone, a daily calendar, a special notebook, etc.). You can just write a word or short phrase, but as you write these things down, take a moment to be mindful of the things you're writing about (e.g., imagine the person or thing you're writing about, etc.). This exercise should take at least five minutes. Do this each night for the whole week.

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## 10 More Strategies to Facilitate SDL in MOOCs

## 20. Offer community support and help.

## Help Articles

Course Help Center (https://edx.org/help-center) or MOOCs (https://edx.org/help-center/moocs) or Communication (https://edx.org/help-center/communication)

## Community Mentors

Mentors are learners who generously give their time to help others work through courses they have already completed. Not all courses have mentors.

## Community Mentor responsibilities:

- Answer learner questions in the discussion forums.
- Post new threads to spark discussion.
- Provide feedback to Course staff.

## Become a Community Mentor

When a course needs Mentors, Coursera will send email invitations to learners who we think would be good candidates.

To qualify as a good candidate you need to:

- Pass the course with a good grade
- Be active in the course by helping other learners in the forums

If you get an invitation to become a Mentor, you will be invited to take a short training course. Once you pass the training course, you will be enrolled as a Mentor in the course we invited you for.

## Support for Mentors

If you're selected to be a Mentor, you'll get training materials and direct support from Coursera to help you.

If you're already a Mentor and you're having a problem or you have questions, please check our Mentor training materials.

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## 10 More Strategies to Facilitate SDL in MOOCs

## Bonus Item: Peer-graded assignments.

Opportunities for student-student interaction and social learning are provided in discussion forums and in the final assignment, a peer-graded reflection.

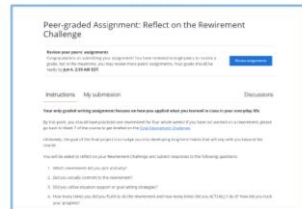


Figure 10: Peer-Graded Assignment and Reflection

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## MOOC Study #2

## MOOC Learners and SDL

Zhu, M., Bonk, C. J., & Berri, S. (2022). Fostering self-directed learning in MOOCs: Motivation, learning strategies, and instruction. *Online Learning*



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## Research Questions

1. What motivated individuals to enroll in MOOCs?
2. What were the learning strategies that helped learners' SDL in MOOCs?
3. What were the design and instructional elements of MOOCs that facilitated learners' SDL?

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## MOOC Study #2

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Table 1

Fifteen Interviewees' Demographic Information

Pseudonyms	Gender	Countries	Occupations
Abdulrahman	M	Turkey	Teacher
Ali	M	Yemen	Student
Alina	F	The UK	Student
Betty	F	Albania	Engineer
Chang	M	Canada	Athlete
Dan	M	Mexico	Professor
Helen	F	Indonesia	Administrative assistant
Jacob	M	The US	Retired management consultant
Jane	F	The US	Educator
Joe	M	The UK	Retired engineer
Melena	F	Germany	Student
Mostapha	F	Egypt	Student
Sandy	F	The US	Student
Sarah	F	The US	Between jobs
Sophia	F	The Netherlands	Retired office manager

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Table 2

Coding Themes

Themes	Sub-themes
1. Motivation	Intrinsic motivation Extrinsic motivation
2. Learning strategies	Task strategies Self-monitoring Self-management
3. Instructional elements that support SDL	Self-assessment The discussion boards and instructors' involvement The flexibility of the courses Clear learning goals The authenticity of the content Small learning units

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## RQ1. Intrinsic Motivation

Jacob, a retired management consultant from the US, expressed his motive behind enrolling in MOOCs as strictly intrinsic, "there's no reward. **I'm retired. It's really just [that] I get very interested in topics. I realize holes in my knowledge and try to fill the holes.**"

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## RQ1. Extrinsic Motivation

Besides educational purposes, **some participants enrolled in MOOCs to help with their career development.** For example, Sarah, who received her Ph.D. degree and was in between jobs at the time, selected topics such as anatomy, MatLab software, oncology, biology, and neuroscience. Sarah explained the purpose for taking these types of MOOCs was:  
**To acquire and improve my knowledge as a medical physicist...I consider my resume when selecting MOOC. I choose courses related to my professional field to add them to my curriculum; otherwise, there would be a period without being in contact with my profession.**

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## RQ2. Learning Strategies

### RQ2: What were the Learning Strategies that Helped Learners' SDL in MOOCs?

Dan considered the progress bar to be a good indication of his progress, and it also created a healthy competition among the learners. Seeing where he was at in the course compared to the other learners gave him a push. He stated,

**"All the progress bar with milestones, with a small quiz that doesn't count for the evaluation, but they're good for you to check if I'm really learning. And, for example, I like when you have these kinds of nice competition[s], right. Everyone starts a MOOC at the same time, but you see that these weeks you progress faster than other members in the MOOC."**

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## RQ2. Learning Strategies

### RQ2: What were the Learning Strategies that Helped Learners' SDL in MOOCs?

**Note taking:** Dan stated that his main learning strategy was notetaking: "I always have my little notebook for the MOOC that I'm working on or I'm studying. **And whatever videos or whatever exercise that I was doing, I was always taking notes...**"

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## RQ2. Self-monitoring

To help her self-monitoring, Melena noted how enriching her knowledge and knowing new things that she did not know before, along with doing well on the quizzes and tests, were vital indications of her progress. She explained, "**Usually, there is a test after each week. Performing it, I can see in which topic I have the biggest gaps, or I got it well.** Moreover, if I apply it in other areas of my life and it can also be seen then."

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## RQ2. Self-management

Dan, the participant that enrolled in MOOCs as a learner and also taught MOOCs, described how **he dedicated a certain time to work on MOOCs.** For the most part, **he allocated the mornings for reading and the afternoons for writing:** For me, I'm a researcher. I'm better at writing papers in that afternoon and reading in the morning... Also, I try to schedule my time for the MOOC as everyone scheduled. This is time to go to the gym or whatever.

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## RQ3. Design Elements

**RQ3: What Design and Instructional Elements of MOOCs Facilitate Learners' SDL from the Student's Perspective?**

Alina believed that having worksheets or a set of questions after each module was the most helpful strategy to evaluate her learning step by step. **Being able to answer the questions after each module** gave her a sense of how much knowledge she retained before starting the next module. Similarly, Sandy elaborated upon how quizzes and tests were helpful, but she wished they were more advanced and included questions and answers rather than only multiple-choice questions.

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## RQ3. Design Elements

**Design Element: Clear Goals**

As Dan explained: "**Some tips at the opening** of your MOOC saying: 'hey guys, this is a MOOC that requires you a certain **amount of hours per week.** And there is a strong deadline for delivering homework and during your quizzes.'"

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## RQ3. Design Elements

**Design Element: Authentic Examples**

One participant, Helen, believed that **authentic examples, resources, and visuals that some instructors demonstrated in their courses helped maintain her curiosity.** In our interview, she explained: When I studied the brain, **the professor showed the real brain.** Like, she took us to the laboratory and showed us how the brains, how they did it, they did things in the laboratory. So, I find it fascinating. I find it very interesting. Even though for the test I try to read, but for understanding and looking at the real thing, the visualization is very good.

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## RQ3. Design Elements

**Design Element: Flexibility**

Sandy, a former perfectionist, **described her MOOC experience as life-changing.** In this situation, the learner felt more comfortable directing her own learning rather than being pressured to follow a stricter schedule. When asked to describe her MOOCs experience, she explained,

**"It helped me realize that I enjoy learning a lot more when I can just be a little more casual about it. I just find it a lot more enjoyable to learn.** I think when I'm enjoying it more, I probably actually learn a lot more."

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### RQ3. Design Elements

Design element- small learning units

As Joe explained:

**I think what's really good is keeping it into small chunks. I'm going to say, roughly speaking, 3 to 7 minutes long because that makes it easy for you to put it down and pick it up again in small bits.**

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### RQ3. Responsive Feedback

Design Element: Discussion board and feedback.

Jacob sadly acknowledged that: "I'll ask [the professor] a question today. I'll type in a question on my computer in the forum. It may be 2 to 3 weeks before I get a reply." Ali expressed that "it would be great to communicate with professors." Similarly, Sarah explained that what affected her experience the most was the "lack of real-time interaction with the teacher."

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### Study #3: Self-Directed learning in MOOCs: Exploring the Relationships among motivation, self-monitoring, and self-management, Zhu, Bonk, & Doo, 2020, ETR&D (SEM: Survey of 322 MOOC Learners)



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### Research Questions

- H1: Motivation positively affects self-monitoring of MOOC students.
- H2: Motivation positively affects self-management of MOOC students.
- H3: Self-monitoring positively affects self-management of MOOC students.
- H4: Self-monitoring mediates the relationship between learning motivation and self-management of MOOC instructors.

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Table 7 Direct and indirect effects of each variable in the research model

Paths	Total effect	Direct effect	Indirect effect
H1: Motivation → Self-monitoring	.647	.647***	
H2: Motivation → Self-management	.561	.137	.424*
H3: Self-monitoring → Self-management	.655	.655***	

\*\*\* $p < .001$ , \*\* $p < .01$ , \* $p < .05$

Fig. 5 The results of hypothesis testing



Note. 4. \*\*\* $p < .001$ , \*\* $p < .01$ , \* $p < .05$

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### Any Questions?



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