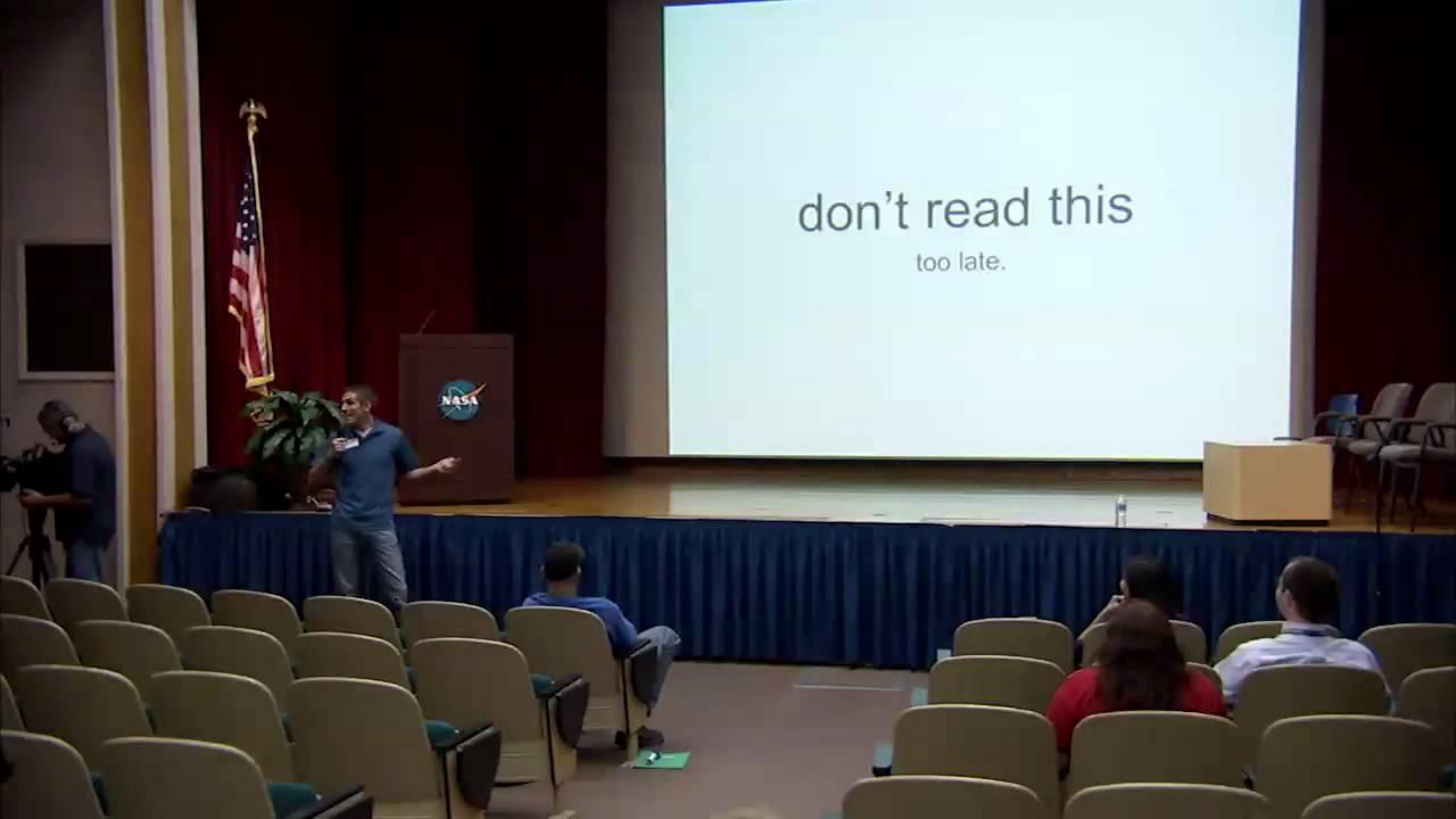
don’t read this
too late.
NASA

1
00:00:01,470 --> 00:00:07,360
\h Announcer: Please welcome Ace Glenn, vice president of business development for learn everywhere.

2
00:00:07,360 --> 00:00:12,360
\h Ace Glenn: Hi, everybody. That's my name, and there's been a lot of really wonderful

3
00:00:12,360 --> 00:00:19,070
\h talks here today about innovation, and most of them focusing on the different processes and formats,

4
00:00:19,070 --> 00:00:22,300
\h different systems that you can use within your own business to innovate,

5
00:00:22,300 --> 00:00:26,890
\h and I'm going to take a little bit of a different approach today and just going to tell you a story that's

6
00:00:26,890 --> 00:00:34,010
\h really simple, do it really fast and tell you how we innovated within the education landscape.

7
00:00:34,010 --> 00:00:38,880
\h We're an education technology
company, and my goal by the

8
00:00:38,880 --> 00:00:43,220
\h end of this, I do have a mission being here today.

9
00:00:43,220 --> 00:00:48,780
\h I want to you walk out of this room and have your perception of education radically

10
00:00:48,780 --> 00:00:52,490
\h shifted in probably the opposite direction of where it is right now.

11
00:00:52,490 --> 00:00:58,940
\h I believe that where we've come and the different ways that, different pieces of the puzzle that we've pu

12
00:00:58,940 --> 00:01:03,560
\h together about the learning process and how it actually happens sheds a lot of light on a lot of the

13

00:01:03,560 --> 00:01:07,760
\h problems that we've had over the past three decades within the education landscape,

14
00:01:07,760 --> 00:01:12,890
\h so my goal here today is to inspire a new sense of optimism, every time you think about learning and

15
00:01:12,890 --> 00:01:16,400
\h education and hopefully the entire future of where we're heading.

16
00:01:16,400 --> 00:01:19,930
\h I just want to get started here.

17
00:01:19,930 --> 00:01:25,430
\h When you think about the history of education, and where we've come over the past couple of decades,

18
00:01:25,430 --> 00:01:31,990
\h it's received more criticism and more reform, more standardization,

19
00:01:31,990 --> 00:01:37,890
\h more time and money and energy than really anywhere else, and after a while you got to ask yourself, w

20
00:01:37,890 --> 00:01:46,310
\h How could we possibly spend this much time focusing on a single problem and have vague results,

21
00:01:46,310 --> 00:01:51,360
\h incremental improvements, things that are hard to track and are pretty controversial,

22
00:01:51,360 --> 00:01:58,470
\h and when you take a look at what we've snowballed into, you have school budgets that are suffering fro

23
00:01:58,470 --> 00:02:04,990
\h severe reductions, and school budgets are even tied to how well students do on standardized exams no

24
00:02:04,990 --> 00:02:10,300
\h It's no longer an incentive to perform well, it's a threat, almost an assault.

25
00:02:10,300 --> 00:02:15,680
\h Teachers' salaries are impacted by student performance now, some of you may or may not know that.

26
00:02:15,680 --> 00:02:21,800
\h If your class does poorly on these end of course exams, you don't get paid as much.

27
00:02:21,800 --> 00:02:25,160
\h That's an assault. That's a threat. That is not an incentive.

28
00:02:25,160 --> 00:02:32,930
\h That's where we've come and more importantly, now that school budgets and teachers salaries are tied

29
00:02:32,930 --> 00:02:41,100
\h performance, this past year's algebra end of course exam, 59% of students passed,

30
00:02:41,100 --> 00:02:44,970
\h and we celebrated because the year before that, it was 46%.

31
00:02:44,970 --> 00:02:51,510
\h That's a fail percentage, you know, in education, and we celebrated that.

32
00:02:51,510 --> 00:03:03,450
\h I find that really odd, and so when you think about all of the problems that have persisted over such a lo

33
00:03:03,450 --> 00:03:07,700
\h period of time, they all boil back down to one main factor, and that's learning.

34
00:03:07,700 --> 00:03:13,990
\h If it wasn't for the fact that students have a difficult time learning, none of these problems would exist,

35
00:03:13,990 --> 00:03:17,880
\h if you're involved in education, some of these might look familiar but this is pretty much the past three

36
00:03:17,880 --> 00:03:21,160
\h decades of reform that education has received, so how has this gone on for such a

37
00:03:21,160 --> 00:03:24,750
\h long period of time and we've seen such little results?

38

00:03:24,750 --> 00:03:28,400
\h There's only two possible explanations if you zoom out and go from a really high level.

39
00:03:28,400 --> 00:03:34,990
\h Either we have a lack of ability, inherent like we can't process information any faster, or we missed

40
00:03:34,990 --> 00:03:38,940
\h something, there's a piece of the puzzle that we have yet to discover about how the

41
00:03:38,940 --> 00:03:43,910
\h learning experience happens, and so let's explore both sides of that.

42
00:03:43,910 --> 00:03:50,600
\h Lack of ability. Plausible option. So let's think about where learning happens, it's in the brain.

43
00:03:50,600 --> 00:03:53,280
\h Let's think about how powerful our brain is.

44
00:03:53,280 --> 00:04:00,670
\h The human brain is made up of 100 billion neurons which forms over 125 trillion synapses.

45
00:04:00,670 --> 00:04:05,920
\h Think about that for a second.There are more neural connections in the brain than there are

46
00:04:05,920 --> 00:04:13,470
\h computer switches, connections, and internet routers on the entire earth, in one human brain.

47
00:04:13,470 --> 00:04:17,540
\h So this is probably the most important part of all of this.

48
00:04:17,540 --> 00:04:24,530
\h What that ends up as a result is that humans have an unlimited capacity to store information inside of ou

49
00:04:24,530 --> 00:04:29,560
\h Did you know that? That's how powerful our neural processing is.

50
00:04:29,560 --> 00:04:34,010
\h It's unbelievable, and we have an unlimited capacity to store information.

51
00:04:34,010 --> 00:04:40,750
\h We were obviously built and designed as a human being to process information at an extraordinary rate

52
00:04:40,750 --> 00:04:45,260
\h yet learning is something we find incredibly difficult and in comparison of the rest of the things the brain

53
00:04:45,260 --> 00:04:51,290
\h allows us to do it doesn't make any sense at all, doesn't add up so then it's on to the next option.

54
00:04:51,290 --> 00:04:56,990
\h Maybe we missed something. Learning being difficult makes no sense. It makes no sense at all.

55
00:04:56,990 --> 00:05:00,720
\h It's a simple task in comparison to everything else that we are able to do,

56
00:05:00,720 --> 00:05:02,480
\h so maybe we missed a pieces of the puzzle here.

57
00:05:02,480 --> 00:05:08,570
\h So in order to answer that, and find that piece of the puzzle, you have to dig deeper into the learning

58
00:05:08,570 --> 00:05:16,140
\h process and really learning is just memory, it's just your entire knowledge base is comprised of individua

59
00:05:16,140 --> 00:05:20,200
\h memories that you put together to form concepts, ideas and opinions.

60
00:05:20,200 --> 00:05:26,280
\h And so one thing that most people don't know about memory and about the learning process is that it wa

61
00:05:26,280 --> 00:05:31,900
\h designed to do two functions, two different processes, it's not just learning.

62
00:05:31,900 --> 00:05:35,890
\h Our brain was also designed to forget information on purpose.

63

00:05:35,890 --> 00:05:40,750
\h The only time you've ever forgotten anything is because your brain intentionally got rid

64
00:05:40,750 --> 00:05:43,990
\h Of that information, remember, we have unlimited capacity.

65
00:05:43,990 --> 00:05:47,440
\h The brain only eliminates information it doesn't think are important and it has

66
00:05:47,440 --> 00:05:51,000
\h a framework for how it evaluates that information.

67
00:05:51,000 --> 00:05:53,610
\h So let's take a look at learning and how that happens.

68
00:05:53,610 --> 00:05:59,070
\h Learning, we focus so much on a term called the learning process, right?

69
00:05:59,070 --> 00:06:04,930
\h When you think about learning, and you actually analyze it for what it s it's not very much of a process a

70
00:06:04,930 --> 00:06:08,390
\h It happens instantly. We absorb information even when we don't want to.

71
00:06:08,390 --> 00:06:12,610
\h Have you ever been at a bar and didn't see the bull's game that night and you close your ears so you do

72
00:06:12,610 --> 00:06:19,180
\h hear the score because you can't help but listen to information and take it in immediately.

73
00:06:19,180 --> 00:06:24,760
\h So for instance right now, if I were to tell everybody the magic number today is 56, and then I wait a few

74
00:06:24,760 --> 00:06:29,990
\h seconds and I ask everybody what the magic number is, what are you going to tell me? 56, right?

75
00:06:29,990 --> 00:06:34,100
\h It's really easy. The learning experience doesn't take very much time at all,

76
00:06:34,100 --> 00:06:38,260
\h as long as there's not an issue with comprehension, as long as you understand what's in front of you,

77
00:06:38,260 --> 00:06:41,360
\h we absorb information instantly.

78
00:06:41,360 --> 00:06:46,700
\h It's almost to the point of being involuntary. I'll challenge you all to do this really fast.

79
00:06:46,700 --> 00:06:51,500
\h I'll put a slide up here and I want to you look at the words but I don't want you to read it.

80
00:06:51,500 --> 00:06:57,750
\h Just look at the words, don't read it. See if you can do it. You can't. We can't help it.

81
00:06:57,750 --> 00:07:01,260
\h Our brain devours everything around us.

82
00:07:01,260 --> 00:07:09,290
\h And so that brings us to the final piece here and what's less emphasized than anything in the learning e

83
00:07:09,290 --> 00:07:12,930
\h That's forgetting, the process of forgetting.

84
00:07:12,930 --> 00:07:19,320
\h That is where all the complication resides and it's hilarious to me because it's totally ironic but the key

85
00:07:19,320 --> 00:07:24,580
\h to learning resides in the process of forgetting and I'll show you why. It's much more complex.

86
00:07:24,580 --> 00:07:29,370
\h Now we're not talking about do you understand it, can you repeat and regurgitate information, with we're

87
00:07:29,370 --> 00:07:34,580
\h talking how long is it going to take for you to forget that information?

88

00:07:34,580 --> 00:07:40,670
\h How many days, how many months will you not be able to tell me the magic number today was 56?

89
00:07:40,670 --> 00:07:46,040
\h That's going to happen eventually but that's a much less explored side of the learning process.

90
00:07:46,040 --> 00:07:51,940
\h But it turns out that all of that happens according to a specific pattern, and we've known this by the way

91
00:07:51,940 --> 00:08:05,240
\h since 1885, a guy named Ermine Hibingus made the learning curve and there's actually a specific time f

92
00:08:05,240 --> 00:08:11,610
\h everything that you know that if you were to review it, the best time for you to do so is right when you're

93
00:08:11,610 --> 00:08:16,630
\h on the verge of forgetting, think of it just like a muscle, when you go to the gym, you don't work your

94
00:08:16,630 --> 00:08:22,480
\h biceps out seven days a week. You work them out, heal and work them out again.

95
00:08:22,480 --> 00:08:26,860
\h The same with the brain. The most
important thing here is that the

96
00:08:26,860 --> 00:08:29,460
\h most important time for you to review information,

97
00:08:29,460 --> 00:08:32,630
\h the way that you can solidify that into your long-term memory and the most effective

98
00:08:32,630 --> 00:08:35,960
\h way possible is right when you're on the verge of forgetting it.

99
00:08:35,960 --> 00:08:40,670
\h It's essential. And this is above the time that we have today,

100
00:08:40,670 --> 00:08:46,850

\h but this is a basic representation of how the forgetting process happens, so if you take a look at this red

101
00:08:46,850 --> 00:08:50,820
\h line, could you see the y axis represents how strong a memory is and the x

102
00:08:50,820 --> 00:08:53,880
\h axis represents how long that memory stays strong.

103
00:08:53,880 --> 00:08:59,490
\h When you initially learn information, your brain gets rid of it rapidly, very, very fast,

104
00:08:59,490 --> 00:09:04,260
\h within a matter of 24, 36 hours, two
days, it's because we devour so

105
00:09:04,260 --> 00:09:08,200
\h much information the brain has to get rid of it.

106
00:09:08,200 --> 00:09:11,190
\h Like you're going to go home and in the next two days you won't

107
00:09:11,190 --> 00:09:13,920
\h remember what the color of the walls in this room were.

108
00:09:13,920 --> 00:09:18,820
\h The reason is because it's meaningless and the brain has a specific way that it evaluates all this

109
00:09:18,820 --> 00:09:25,730
\h information that we're absorbing right now, and it only keeps the things that it is told are important and

110
00:09:25,730 --> 00:09:29,670
\h everything that we do right now, everything that we communicate to the brain inside of the learning brain

111
00:09:29,670 --> 00:09:36,660
\h and education environment contradicts that completely, it's totally wrong and we built the education syst

112
00:09:36,660 --> 00:09:42,750
\h in a way that is opposed to how we're designed to absorb information.

113
00:09:42,750 --> 00:09:47,720
\h And it's called the spacing effect, Google it, if you have your smartphones I won't get offended, type it

114
00:09:47,720 --> 00:09:50,140
\h in, click on any of the first links on the front page.

115
00:09:50,140 --> 00:09:55,770
\h This has been around for a very, very long time and you never hear about it from teachers, from anythin

116
00:09:55,770 --> 00:10:02,610
\h within education but this is the pathway to long-term memory, this is how long-term memory was discov

117
00:10:02,610 --> 00:10:08,380
\h Our brain is going to take in short term information and if we don't tell it that it should be kept, we're

118
00:10:08,380 --> 00:10:13,820
\h going to get rid of it, and remember we have an unlimited capacity.

119
00:10:13,820 --> 00:10:18,550
\h Think about that. Do you remember who your teachers were when you were in the eighth grade?

120
00:10:18,550 --> 00:10:24,930
\h I can't think of one. I'm a young 'un. I can't remember, and much less the information I learned.

121
00:10:24,930 --> 00:10:28,730
\h We have an unlimited capacity to store information.

122
00:10:28,730 --> 00:10:32,330
\h There are frontiers about education that are totally unexplored and

123
00:10:32,330 --> 00:10:35,430
\h we're extremely excited about the future of that.

124
00:10:35,430 --> 00:10:42,940
\h So coming to a close here, we believe that mobile technology is the answer to all of this.

125

00:10:42,940 --> 00:10:47,980
\h You think about traditional tools, there's a lot of things wrong with them and how they're designed from a

126
00:10:47,980 --> 00:10:53,560
\h functional perspective, because textbooks, when you take notes down on paper, flash cards, they're all

127
00:10:53,560 --> 00:10:59,230
\h built, number one, to be used inside of a stationary environment and when you think of going and sitting

128
00:10:59,230 --> 00:11:04,590
\h down at a desk, you don't go for five minutes at a time in small little bits as you go on.

129
00:11:04,590 --> 00:11:08,750
\h You go there for five or six hours, review the same pieces of information over and over again,

130
00:11:08,750 --> 00:11:11,570
\h take a test and on to module two.

131
00:11:11,570 --> 00:11:16,990
\h Do we have a revisit module one? Not really, not until the final exam comes around a long time later.

132
00:11:16,990 --> 00:11:22,420
\h Everything about what we're doing right now is learn, learn, learn, learn, learn, learn, as we forget,

133
00:11:22,420 --> 00:11:26,410
\h forget, forget, forget, and review right before the test.

134
00:11:26,410 --> 00:11:31,580
\h That is wrong. That's not right. That's not how we learn so mobile technology can change all of that.

135
00:11:31,580 --> 00:11:35,740
\h I'll show you how. The company that I'm with is called learn everywhere,

136
00:11:35,740 --> 00:11:39,660
\h and I have the most simple diagram ever to describe this.

137
00:11:39,660 --> 00:11:46,020
\h So what we do is we have cloud

technology that hosts and

138
00:11:46,020 --> 00:11:49,060
\h adaptive algorithm that can emulate human memory patterns.

139
00:11:49,060 --> 00:11:52,290
\h Remember the graph we saw? We can calculate that.

140
00:11:52,290 --> 00:11:58,430
\h We track all of your interactions and right when you're about to forget any item of information, we use pu

141
00:11:58,430 --> 00:12:05,800
\h technology to tell you you're about to forget so it's calculating the exact time you're supposed to learn

142
00:12:05,800 --> 00:12:10,830
\h everything that you know right now, so that you never forget anything, that's really the key to education,

143
00:12:10,830 --> 00:12:14,670
\h isn't it, it's longevity, it's becoming a lifelong learner.

144
00:12:14,670 --> 00:12:17,400
\h And when that happens, you launch the push notification.

145
00:12:17,400 --> 00:12:21,860
\h It doesn't take to you an update in the iTunes store for angry birds to version 2.5.

146
00:12:21,860 --> 00:12:27,200
\h It takes you to the specific learning item you need to learn at that very moment in time.

147
00:12:27,200 --> 00:12:29,950
\h And that's what learn everywhere is,
and so what we did is kind of

148
00:12:29,950 --> 00:12:31,880
\h the opposite of what everybody else is focused on.

149
00:12:31,880 --> 00:12:38,430
\h Lot of people are focused on okay, how can we improve the content, how do we make the content bette

150
00:12:38,430 --> 00:12:40,880
\h how do we make inside of the classroom more engaging.

151
00:12:40,880 --> 00:12:42,020
\h Inside the classroom isn't the problem.

152
00:12:42,020 --> 00:12:47,710
\h Teachers are literally telling you exactly how to comprehend the information.

153
00:12:47,710 --> 00:12:50,110
\h The problem is what happens outside.

154
00:12:50,110 --> 00:12:56,290
\h Right now everything about learning outside of the classroom is very, very -- it's not good, so we built a