Effective Use of Slack and Short Video to Scale Online Learning Communities

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Abstract - Online courses are increasingly popular, giving students the opportunity to study from anywhere in the country or the world. Many online students work full-time, have families, and other personal time constraints which makes online learning ideal for them. A drawback of online courses is that students do not have a feeling of community as in on-campus classes. Further, lecture videos and material are often reused from semester to semester, so students do not feel courses are individualized for them. This paper is an experience report of the advantages and disadvantages using Slack compared to conventional discussion forums. Further, to enhance individualizing courses to student needs, we discuss advantages of weekly introduction, assignment, and feedback videos. These steps have led to a better teaching and learning experience, and a feeling of community for students.

Keywords: online education, pedagogy, Slack, video

1 Introduction

Online courses in Software Engineering at Arizona State University (ASU) are very popular. ASU has a fully ABET-accredited Bachelor of Science program for Software Engineering delivered both online and on-campus. Online students from all over the U.S., and even students from Europe, Australia, and Asia enroll in this program. Currently over there are over 1100 active students in the program, compared to roughly 275 on-campus students. Many of the online students are older (roughly 30 years of age), have full-time jobs, family responsibilities, and busy private lives. Many students reside locally in the Phoenix metro area and still enroll in the online program for the flexibility the online program provides.

The typical faculty fear is that a lack of direct synchronous face-to-face interaction with students reduces the ability to guide them in their learning. And while this sometimes may be the case, the more significant issue we have found is the lack of peer-to-peer interaction and student-faculty communication. Students need to feel part of the academic environment to be successful. Based on student feedback we see two main things missing in the online environment.

First, students miss community and the ability to know their peers and instructors better. The online community is often anonymous which makes it hard for students to communicate with the instructor and/or peers. Often, they feel it is hard to approach an instructor and classical discussion forums as most Learning Management Systems (LMS) offer (e.g. Blackboard) or open forums like Piazza are too formal. Even posting discussion questions on these forums for students and encouraging students to ask and communicate through it often led to quiet forums with not much participation.

Second, students desire a course that is individualized for them, yet typically lecture videos and content is re-used. Re-using videos makes sense since the content is often the same until a revision needs to be made due to new state of the art. But this leads to students feeling that the instructor only re-uses material and does not base it on the current students as is often done in face-to-face where questions from students lead to instructors adapting material or adding information to answer these in class. This does usually not happen in online courses since redoing lecture videos does take a lot of time.

Since we always try to give our students the best learning experience we possibly can, we took this feedback and tried to improve their experience. To enhance the feeling of community and make the online course personable we introduced Slack, a tool used in industry for team communication [1]. We also started to introduce short weekly introduction, assignment, and feedback videos. These are in addition to our lecture videos, which are done in a green screen room. These short videos are created by the instructor informally as s/he sees fit. This helps giving students for this particular course feedback and information and lets the students see that the course is not just reused but that the instructor individualizes the course for them.

In this paper we present lessons learned scaling communication to community in large online classes of a heavily subscribed accredited software engineering program. Section II will introduce Slack and will analyze the advantages and disadvantages of using Slack versus a common discussion forum, and present student responses to switching to Slack in one of our course offerings. Section III explains how different short videos can be used to enhance the individualization of the course while not significantly
increasing the work load for the instructor. At the end of this chapter we present student feedback showing that these videos significantly enhance the students experience and give the students a better understanding of the course. In Section IV we summarize our findings and give an overview of ideas which can further improve student learning. In the short time since we have offered this program, many of our practices have become conventions at Arizona State University.

2 Enhancing Communication via Slack

In any learning environment it is important to be able to communicate. Students need to be able to communicate with the instructor, the instructor needs to be able to reach the students and students need to be able to communicate with each other. Often discussion forums are used for this purpose, provided by an LMS or a platform such as Piazza. These forums often have a more formal feel but topics are easy to organize. We propose Slack here as an alternative, which is a team-based chat tool.

In the following section we review Slack experiences appearing in the recent literature, then discuss the differences between Slack and traditional discussion forums. We then discuss Slack advantages and disadvantages. We will then consider from instructor, student, and researcher points of view how switching to Slack has changed the learning environment.

2.1 Related work on Slack

As Slack is just less than 6 years old, there is not a significant body of prior work. However, others have experimented with the tool in various situations.

[2] describes an experience utilizing Slack in a 21-student capstone experience in machine design at Ohio University. The benefits noted by the authors were increased communication from teams that performed well, and a reduced reliance on face-to-face meetings for the on-campus class. The authors noted a drawback that increased instructor activity on Slack channels led to an implicit expectation that instructional support would be available 24/7 (something we have noticed as well).

[3] notes several of the same strengths that we have discovered with Slack in the context of a global design project. These benefits include file-sharing, searching, smartphone apps, the use of multiple channels to dynamically organize communication, and the use of third-party integrations and slackbots. In particular we have seen the benefits of the last 3 extensively in our experience. Some weaknesses were also noted by their students in a questionnaire, mostly due to a desire for additional features such as polls, to-do lists, marking whether a message is read, and videoconferencing. We would caution against feature-bloat in the tool, as Slack has a clean and simple interface. We have used polls however, and videochats have been integrated as well. We would find to-do lists and message marking to be contrary to Slack’s purpose however.

[4] describes an online experience in a graduate-level public relations course for roughly a dozen students. The dynamic segmentation of conversations offered by Slack channels, the organization of conversations, and the web-based interface were listed as the main benefits, while drawbacks included some reluctance in adoption amongst older team members in group projects. The paper is perhaps more valuable in its overview of Slack compared to traditional tools like LMSs and email.

2.2 Slack compared to discussion forums

The typical approach in teaching online and on-campus is to use a discussion forum. Discussion forums usually have sub-forums and threads, which makes it easy for an instructor to structure the forum for assignments, project work, and content organization. Students or instructors can then post a question or comment and others can add comments to this thread. A good and often used discussion forum for teaching is Piazza [5]. Based on their website "Piazza Q&A is the classroom discussion product that 50,000 professors have used since 2011 in over 1,500 universities and 90 countries."

The Software Engineering (SER) faculty at ASU has also often used Piazza as a discussion forum since it has some good features which help in a course. Piazza offers the possibility that students mark a question as answered, mark an answer or question as good, sort posts by week or topic, distinguish between questions and notes, enable search by topics, and show statistics - thus making it a good discussion forum for teaching.

However, in the online environment, we received feedback that not a lot of students like Piazza or other discussion forums (such as in our Blackboard LMS). They are bulky, the smartphone apps are not usable, and they do not like the navigation.

Slack on the other hand is a chat tool for teams. Slack allows members to join a team, create private and public channels, pin messages and write direct messages. It is easy to use, has good apps and support for computers and smartphones, and is widely used in our online student population already.

Particularly for Software Enterprise project courses [6][7], we focus on group projects in which students communicate frequently. To communicate students usually chose Slack, which also means that our students had to use multiple tools - an LMS, Piazza, and Slack. Reducing the number of tools was another motivator. These are the main reasons why we started using Slack, even though we did not know when we started if it would be better. What we found
that we did not anticipate, was the dynamic community-
formation aspect of a tool like Slack enabled students to self-
determine the topics and groups they wanted to discuss and
form; a forum-based tool required a top-down structure that
limited this community aspect.

2.3 Analysis and Discussion

Slack has rapidly become the proxy for the online
embeddedness feeling that inevitably leads to students
identifying her/himself as a student, sharing an experience
with their peers worldwide. Students going through an online
degree program while dealing with the unique personal
constraints discussed above benefit from a shared experience
that only their fellow online students can provide. In this
subsection we analyze the advantages and disadvantages of
Slack and discuss these points from student and instructor
perspectives.

2.3.1 Advantages of Slack

Slack is already widely used in industry (based on their
webpage) and many students know Slack and have the app
installed, which makes the setup really easy.

It seems there is a certain barrier for students to ask a
question on a discussion forum. It feels formal and students
might be too shy or think the question is stupid and thus not
ask and get stuck in their course work. Even encouraging
students did not seem to work and in some online courses
using Piazza we heard that students stopped looking at
Piazza because they did not like it or there was not much
going on.

Slack had a completely different dynamic. Students signed
up as soon as we send the invites, they started introducing
themselves right away, students knowing each other started
talking and others chimed in. Before the course even really
started there was already a feel of comradely and not being
alone in the course. Slack is less formal, so students usually
are less embarrassed to ask questions. Answers are usually
given really fast and students help each other out a lot.

There is an informality to Slack, where users can post
jokes, giphys, emojis, and generally feel more at ease with
posting, reducing the "threat of embarrassment" some
students feel when asking a question in a public forum
(classroom and discussion forums included). The typical
means to get around this phobia is to directly email the
instructor, but this causes a significant 1-to-N scalability
communication problem for the instructor. We have noticed
that Slack has greatly reduced the number of direct emails to
instructors and TAs during online courses. Students have an
easy way to contact the instructor team and get help in an
easy and fast manner and it is more like a conversation,
which the students seem to value.

2.3.2 Disadvantages of Slack

Slack can get disorganized and crowded really fast. Without
creating proper channels, moderating and monitoring them it gets hard for students to find the right
information. If it gets too disorganized students might get
frustrated with the many new messages. It is thus important
to keep off-topic conversations in separate channels, which
can be muted. It is also important to pin important messages,
so students can find answers fast. These things are easier in
discussion forums like Piazza. In these questions and the
answers belonging to the questions are well organized. In
Slack sometimes many discussions take place at the same
time which makes it harder to organize.

2.3.3 Instructor point of view

From an instructor point of view, it was interesting to
see the dynamic in the course through using Slack. It was
mandatory for all students to sign up on Slack for general
communication and for communication with their team
members. Students started introducing themselves and
discussions of where they are from and what they are
working on started almost right away. During the course
students tended to help each other, point to given answers
and material. While the instructor was not present there were
always students online to help (in courses of about 100
students). They helped and discussed things, presented extra
material they found, even made tutorial videos for others, did
peer reviews etc. But we never saw that solutions were given,
just hints on how to start finding a solution. Many students
participated a lot on Slack, were very active and as an
instructor it was easy to see how well they understood certain
topics and to jump in when they were headed in a wrong
direction.

As instructor it is important to be active on Slack, especially
at the beginning, so students see that this is an active
communication platform. Students need to be encouraged to
participate on Slack; meme and random channels helped
getting students involved and not being embarrassed to write
something. Keeping some things light and fun in these teams,
seemed to be a good thing. We introduced a feedback
channel in which students were encouraged to provide
feedback about the course in general, the material and the
project. When doing this it is important to read the provided
feedback carefully and give students a reason why something
cannot be changed or if it is a good and valid idea to change
it. This shows students that the instructor cares.

Overall, from the viewpoint of an instructor we think that
Slack introduces some more work, since the instructor/TA
needs to be active in order to make it work. But seeing the
participation, seeing in real time where students struggle,
where they thrive and being able to talk to them, makes the
class interactive, less anonymous and overall engaging.
2.3.4  Student point of view

In this section we discuss the student feedback received from multiple courses in which Slack was used instead of a discussion forum. Below is a collection of some of the written feedback from course evaluations:

“The use of slack is fantastic, makes it so easy to talk to the teacher and fellow students.”

“I also really liked using Slack in this course. I feel it is superior to the blackboard forums and piazza. I think it should be incorporated into more courses. It really makes the course feel more like an on-campus course and encourages participation because it can be used for formal and informal communication with the instructors and other students.”

“One of the single best aspects of this course was the use of slack for communication. It is far superior to blackboard, piazza, or any other form of communication used in previous classes.”

“I would love to see this Slack chat idea taken to all of the other classes in the SER curriculum.”

“I’m not the biggest fan of a class-wide Slack channel for all communications. I like the idea of Piazza for questions so that there are headings to skim through. (abbrev.) Sometimes I would have dozens or hundreds of unread messages after only a short amount of time (like driving home from work).”

“...it just becomes infuriating every time a useless message wastes some of our time. After getting dozens or hundreds a day, it made me resent the entire class.”

Four out of the six statements above are positive regarding Slack. The two negative opinions were the only negative ones found in 155 surveys (3 different courses with approximately 250 students overall). While 25 of these 155 had similar views as the first four student feedbacks seen above. Not all students said something about Slack but valued the constant communication, which was one of the main reasons to switch to Slack. Anecdotally, during conversations with students it seemed like the majority or students appreciate Slack, they have it on their phone, they check in regularly and like the informal feel of it. They feel more connected to their peers and to the instructor. Many said they do feel like in a real classroom and not just like an anonymous person that no one knows.

2.3.5  Researcher point of view

Communication patterns among students, particularly in team-centric project-based courses, is an active area of education research. The potential of Slack to capture records of student communication, as well as encourage more dynamic and open communication patterns, enables researchers to understand a tremendous amount about the way students learn. Researchers are just starting to utilize these capabilities. [7] presents an agile-like team experience called StandUp, where communication is facilitated in this highly collaborative process using Slack. StandUp is implemented on top of Slack, and the paper references many ways in which Slack’s communication logs are leveraged to gain insights into student interactions. [8] provides a more theoretical approach to the use of Slack in a management of big data course in an IT program in China. The authors tie the use of Slack to engagement theory and create a model of engagement and apply structured analysis approaches. While the results regard Slack per se are limited due to the research methods employed and the somewhat overly structure way in which Slack was prescribed to student teams, it nonetheless shows that rich dynamic communications with student buy-in can provide great potential in educational research. In our own work we are looking at Slack alongside other communication platforms in software engineering to gain a comprehensive picture of the way in which teams communicate [9][10].

2.4  Conclusions using Slack

Slack is a great way to enhance communication, student participation and learning. But we also learned that just creating a Slack team does not lead to these advantages and that we as instructors need to make sure that we follow some rules to make using Slack a success:

- The Slack team needs to be organized. It is necessary to use different channels for different topics, so things are easier to find.
- Enforce that channels are used for the specified purpose. Students tended to write in the general channel, which meant this channel was full of messages and it was hard for students to find what they are looking for. Students should be redirected to the correct channel in case this happens.
- Important questions and answers should be pinned so students can find them and do not ask the same questions again or get frustrated because they cannot find the answer.
- Grade appeals, grades, grade feedback and similar formal things should be done over email or the LMS of the course. Slack tends to be more informal than email but certain things and communications should be formal and thus done via a different system.
- Make sure students still respect the instructor and talk/write appropriately. Since Slack is informal students might tend to talk more informal with the instructor, which can be nice but it is a fine line to walk. Students might think the instructor can be talked into things and not be taken seriously. The students should not forget that this is still a teacher-student relationship and only because the instructor is answering informally does not mean the instructor can be disrespected.
• Announcements should be done over the LMS. Again, due to the informal nature and the many messages on Slack it might be hard for students to keep track of everything. Thus, it is imperative that important information is given in a “formal” way. We did try a Slack “announcement” channel but this did not work well.

• The instructor needs to be involved in the conversations. Students need to learn that Slack is the main communication “vehicle” in the course. They need to be encouraged to ask, discuss things and not be embarrassed.

• If there are questions or feedback, give a reason why something is done a certain way.

• Be open to constructive feedback and change things if possible. Students provide valuable insight into their view of the course and often do have good ideas or saw something in other courses and can help to improve the course.

• Teaching Assistants should answer questions on Slack as well and start discussions. Students get to know the TA this way and feel comfortable asking for help.

Based on all the above, we believe that using Slack is a big advantage in the online environment. It does greatly increase communication and creates a feel of community and belonging for the students.

3 Individualization via Short Videos

Lecture videos for online courses are often created when the course is designed and then in regular intervals when the content needs to be changed or the state of the art changed. This is in our opinion not a problem, since if the videos are done well, the content can stay the same for as long as the content still represents the state of the art.

Our online students however let us know that the courses feel pre-recorded and not really individualized to their needs and the instructor is not as involved. Of course, the students are correct in assuming that the course is pre-recorded but it does not per default mean that the instructor is not involved or takes the individuals of the course into account.

One main difference to on-campus courses is that for these the lectures slides, class material the in-class communication is individualized to the particular students in the course. This does not work with pre-recorded videos for the online students.

Based on the feedback we evaluated it makes sense to decrease the interval time in which course videos are created. This however would only help if the videos are recorded while teaching the course and thus being able to individualize the videos for the students of the particular course. This would cost too much time, especially if videos are done with a team in a green screen room as we are doing.

We came up with an approach to create different short videos. These are not professionally done but are done by the instructor when the instructor feels clarifications, further information or material is needed. These short videos are done only for a particular course and set of students. In these we address current topics, problems and questions. We usually try to keep these videos in a range of 2-10 minutes, so it is not time consuming for the instructor nor for the students.

During different courses we came up with various types of videos to show students we as instructors take their concerns seriously and try to help them learn as effectively as possible.

Following we discuss different types of short videos and their advantages. We will then evaluate these videos based on our views as instructors and from the viewpoint of our students.

3.1 Different short video types

We realized that there are many kinds of videos that help students during a course and help us individualize a course for them with little to no overhead for us as instructor.

3.1.1 Weekly introductions

At the beginning of each week, we suggest creating a short (3-5min) video going over the current weeks learning material. This video should contain all the due dates and should motivate the topics of the weeks, explain how the topics are related to the other weeks and why it is important.

With such a video, students understand why the weeks content is important and what they need to do. It is individualized for the current schedule and is done each week for every online course.

3.1.2 Feedback on assignments

Sometimes several students make similar mistakes in an assignment or do really well on specific things. In these assignments an instructor can see how well students understood the topic. If we see that something was misunderstood or not clear, we create feedback videos on the assignments to give students more information on how to do better.

If it seems that many students made the same mistake we also re-evaluate the lecture videos and assignments in case these need to be updated. But a short video gives a good possibility for the current course to help the students understand.

These videos can even be done while students are still working on the assignments to clarify things. It is often easier to explain something in a video then to write a document.
3.1.3 Formative feedback

Online courses often have a lot of students at ASU and it is not always possible to give students feedback on their assignments or projects fast enough. We realized after grading some assignments/projects that we usually have a good overview of where the students stand and what was misunderstood, not well done, or missing. We started creating short videos with feedback about what we have seen so far, including good and bad things. This gives students insight in usually less than 24 hours and they can incorporate these things into their next assignment/project even if they have not received their official grading yet.

3.1.4 Video companion to Slack

Often discussions or questions happen on Slack but only writing answers makes it sometimes hard to explain concepts in Software Engineering. Thus, we started to create short videos answering questions or explaining things in detail.

3.1.5 Videos about assignments

Videos explaining and highlighting the important parts of an assignment have proven to help students a lot. Especially, if assignments are complicated and students need to figure out some parts on their own a video giving some more hints and pointing the students to these parts can help them to prepare for the assignment and understand what they need to do.

3.2 Perspectives on short videos

In this section we discuss the perspective of instructors, and students on the use of short videos for online courses.

3.2.1 Instructor point of view

From an instructor point of view short videos are often less time consuming than trying to answer everything in written form, adjust material and have 1:1 discussions with students. Doing a short video of about 5 minutes does not really take much more time then these 5 minutes, only starting the software and uploading and linking the video are things that still need to be done.

As an instructor we think these videos should be done as seen fit and if they help students, to avoid making a mistake in an assignment/project, understanding a concept better or understanding where to find important material or help. We think these videos can save a lot of time since we need to correct less mistakes later on, we do not see the same mistakes done again, we avoid students being stuck and frustrated and we individualize the course to a particular set of students.

For an instructor these videos have a lot of benefits without any disadvantages we can think of.

3.2.2 Student point of view

Below is a collection of some of the written feedback from course evaluations:

“The instructor made videos every week explaining what was expected that particular week and anything else that we might need to know.”

“The supporting information and videos that were provided were excellent.”

“I’m thankful for the lecture videos, the weekly update videos, and the optional reading material.”

“I also appreciated her weekly videos; they helped me know what to expect and feel better prepared.”

(abbrev.) “I especially appreciated the short (3-8 min) week overview and wrap up videos. In general, it felt more like a classroom setting.”

In the feedback above we see that students appreciated the short videos. The videos helped organize, understand content and gave students a classroom feeling.

Based on talking with students we heard that these videos show that the instructor is involved and cares for the student’s problems, interests and helps out if needed. We did not receive any negative feedback on these videos. Since it is not mandatory to watch these videos it does not burden the students in case they do not want to watch them. But especially from students who learn better by listening then reading we heard only positive things about these videos.

3.3 Conclusions using short videos

These videos in general do not take up a lot of time for the instructor. The idea is to create a short video in case the instructor sees that a problem arises, students have questions or doubts to create such a video.

These videos should be kept short and can basically be recorded anywhere. Students appreciate them even if they do not have a high quality. It is more important to briefly (3-10min) explain something important and a short informal video shows the student that we are actively keeping track of everything and providing additional support if needed. Students usually have enough material and videos to watch, so we do not want these videos to be a burden but to lessen their and our workload while increasing their learning and course experience. We saw a decrease of emails with questions because of these videos. Also, students tended to not mind as much if grading of an assignment or project took longer than expected.

A pitfall might be to try to keep material up to date or correct errors in videos through these short videos. This should be
avoided. Of course, it might happen that we realize that a video, an assignment or other material contains an error. In such a case a short video might help in the current course to explain things and set it right. But such mistakes should be corrected by making a new lecture video and not by creating short videos, since otherwise things would get too cluttered in time with videos explaining other videos.

The main thing for these videos is: keep the videos short and relevant. Creating more videos than needed can lead to students not watching them but if every video does help them, they will appreciate it and you as instructor have a possibility to help your students without increasing your workload and maybe even decreasing your workload.

4 Conclusions

Using Slack in an online course environment can greatly improve the communication with students. If the instructor or teaching team is involved on Slack students have a better course experience and feel heard, valued and taught. It is important to organize Slack through different channels and stick to some rules with the students to make it a good experience and lessen the workload for everyone.

Using short videos to go over weekly material, give students feedback and discuss relevant topics can help making the course more individualized for students. It also helps us as instructor to communicate important information to our students based on what we see in assignment/projects or general discussions. This also gives us the opportunity to keep already recorded lecture videos without giving students the feeling we are only reusing old material and do not keep things up to date.

Overall ratings of online courses significantly increased when we started using Slack together with short individualized videos while keeping the lecture videos, assignments and projects the same as before. This leads us to believe that Slack and short videos, if used correctly, are great ways to enhance students experience and learning in online environments).

5 References


