

Effective Strategies for Using Asynchronous Online Discussion Forums in Educational Curriculums

Bhaskar Sinha¹, Douglas P. Roberts², Courtney Jane³

¹National University, San Diego, California, USA

²Emery-Riddle Aeronautical University Worldwide, Daytona Beach, FL, USA

³Dr Courtney Jane.com, USA

*Corresponding Author: Bhaskar Sinha¹

ABSTRACT: *Online teaching and learning has grown exponentially in the past decade, with asynchronous online courses emerging as one of the more popular modes of online learning. This evolution has only accelerated over the past couple of years due to COVID-19. With the move to online education, the in-person discussions of the traditional classroom have been replaced by Online Discussion Forums. Amendments to The Higher Education Act of 1965 [1] led to the advent of Online Program Management providers creating on-line asynchronous courses for higher education, which uniformly utilized a “discussion” forum each week as an assigned activity to meet the Higher Education Act guidelines; wherein Regular and Substantive Interaction [2] emerged as a significant guideline that distinguished distance education from correspondence education, and thus, Regular and Substantive Interaction became a key determinate for students' ability to access Title IV funds. The unanswered question is if these forms of interactions enrich and improve the learning process. This paper analyzes trends in asynchronous Online Discussion Forum assignments in terms of what could make them more robust, intentionally relevant, and in alignment with the 21st-century scholar.*

KEYWORDS –Asynchronous, communications, e-learning, interactive learning, LMS, online discussion forums, online learning.

I. INTRODUCTION

The last few decades have ushered in many advances in technology that have become critically important attributes of the higher education landscape. To improve the effectiveness of teaching and learning, educational establishments are continuously evaluating and integrating different available technical tools and platforms [3]. In addition, a hallmark of traditional face-to-face learning is discussions between the teacher and fellow students in an academic environment, which improves learning effectiveness, critical thinking, and understanding of different perspectives. The learning experience and the robustness are enhanced by regular participation in discussions [4]. The importance of discussions for learning to be more permanent is integral to student achievement and expectations [5-6]. In the asynchronous online learning environment, a technological tool called an Online Discussion Forum (ODF) was developed to: (a) mimic a live classroom discussion to augment interactive learning, peer collaboration, and instructor-learner communications; and (b) meet the evolving Higher Education Act of 1965 guidelines; wherein Regular and Substantive Interaction (RSI) emerged as a significant guideline that distinguished distance education from correspondence education, and thus, Regular and Substantive Interaction became a key determinate for students' ability to access Title IV funds. In these Online Discussion Forums learners do an assignment that responds to a prompt with answers that the whole class can view and respond to, thus holding a virtual discussion session among peers around a given educational topic. The ODF is intended to be a dynamic and lively communication and interactions among students in the asynchronous classroom. These ODFs, typically contained within a Learning Management System (LMS), have been a prominent part of the course delivery for the past few decades. They are being used as a tool to augment and improve collaborative learning and communication between fellow students and the instructor. Growing rapidly are faster technologies, networks, and applications, and thus the availability of online courses. As a result, there has been an exponential proliferation of higher education institutions in the United States (US) offering online education [7-8]. This is more relevant now during the COVID pandemic, when online education is being considered as a serious and required alternative to the traditional in-person teaching and learning paradigm. This trend of using the technology-based online platforms is expected to continue, and this capability will enable more programs to be offered online. A study by the National Centre of Educational Statistics found that 90% of higher education institutions in the US offered asynchronous online delivery methods [9]. This translates into (pre-pandemic) more than three million students enrolled in online asynchronous education [9]. So, due to the current widespread use of online asynchronous education and the expected future expansions, it becomes important to understand the effectiveness of each aspect of the online education paradigm [10]. This research analyses one aspect, the ODF in asynchronous online offerings.

II. HISTORY OF ONLINE DISCUSSION FORUMS AS PART OF REGULAR AND SUBSTANTIVE INTERACTIONS

This section presents an overview of the history of the development and the use of the Online Discussion Forum (ODF) in asynchronous higher education online courses. The US Department of Education (DOE) has concerned itself with quality and consumer protection in higher education. This concern intensified as more students entered higher education in settings other than the traditional classroom (held on-ground and face-to-face). Most impactful were amendments to the Higher Education Act (HEA) that was originally established in 1965. These amendments incorporated the central guideline that online courses must contain “Regular and Substantive Interaction” (RSI) [11-12] between instructors and learners. Lowenthal (2019) asserts that these guidelines put into action the emphasis on Discussion Boards and ODFs for delivering synchronous and asynchronous online courses to encourage collaborations, social exchanges, interactions, and discussions of course concepts [11].

Timeline Leading to Regular and Substantive Interaction (RSI):

1965: As part of President Lyndon B. Johnson's Great Society domestic agenda, the 1965 Higher Education Act (HEA) was a legislation signed into US law on November 8, 1965 [12].

1992: The 1992 Higher Education Amendment to the 1965 HEA, reauthorized various programs included in the HEA. (Pub.L. 102-325) [13]

1998: The 1998 Higher Education Amendments further amended the 1992 HEA and put in place adjustments to address the emerging field of distance education. The amendments created the Distance Education Demonstration Program, making distance education students eligible for federal financial aid Title IV. (Pub.L. 105-244) [14]

2002: The further amendment enacted in 2002 removed the 12-hour rule of weekly instructions. Prior to this amendment, in distance education, students and instructors were directed to engage with one another multiple days a week. The 2002 amendment made it such that students could participate in online education one or two days a week for larger blocks of time [15].

2005: The Regular and Substantive Interaction (RSI) requirement to the online education space was introduced in The Higher Education Reconciliation Act of 2005 (Pub.L. 109-171) [16]. In this act, RSI between instructors and students was emphasized as the main factor distinguishing distance education and the correspondence education paradigm. However, the terminology, “Regular and Substantive Interaction,” was never fully defined. Subsequently, since 2005, RSI has been convoluted as to what is pedagogically appropriate. Because of RSI, in distance online education, students become eligible to receive Title IV federal financial aid. In contrast, correspondence education students cannot receive Title IV federal financial aid because they are not engaged in RSI with instructors [17]. Furthermore, the 2005 Act also allowed students enrolled in approved direct assessment programs to be eligible for Title IV federal financial aid. A direct assessment program (defined by 34 C.F.R. §668.10) is “an instructional program that does not require credit hours or clock hours, but instead directly measures student learning by measuring what a student knows and can do; examples of direct measures include: exams, portfolios, projects, presentations, papers, and performances (34 C.F.R. §668.10(a)(1) and (2)).

2006: Thereafter, in 2006, regulations around awarding financial aid to direct assessment programs were evolved by the DOE requiring that direct assessment programs must meet the same RSI standards as distance education courses [18].

2012: The Office of Inspector General (OIG) of DOE audited the online distance education courses at Saint Mary-of-the-Woods College and found that their courses did not include a Learning Management System, nor RSI [19]. They further found that instructors did not have lectures, and the instructors did not initiate discussions with students (OIG, 2012). It was concluded that Saint-Mary-of-the-Woods violated the 50% rule and thus should return \$42 million in student financial aid (OIG, 2012). Saint-Mary-of-the-Woods retorted that the Department of Education had retroactively defined RSI requirements.

2014: By 2014, there was enough confusion about the interpretation of RSI, and this required explanation. In an effort to clarify these confusions and requirements of RSI, the (Acting) Assistant Secretary of Postsecondary Education, Lynn B. Mahaffie, issued a letter [20]. This was primarily focused on Competency-Based Education (CBE), but the section on RSI in the document was also applicable to the larger field of distance online education. To clarify the required conditions of RSI between teachers and students for CBE programs that included direct assessments (Regular and Substantive Interaction - UPCEA), the DOE replied by explaining what RSI was not. These are summarized as follows:

- Optional student-teacher interactions are not RSI.
- Interactions initiated primarily by the student are not RSI.
- Interactions that happen only when the student requests it electronically or verbally are not considered RSI (DOE, 2014).

The same document also listed several diverse types of activities that, within the context of CBE, may be considered to meet the RSI definition (DOE, 2014):

- Regularly scheduled learning sessions where there is direct interaction between students and instructor.
- Submissions of academic assignments.
- Taking an exam
- Doing an interactive tutorial
- Computer-assisted instruction.
- Students participating in a study group assigned by the college.
- Student engagement in an online discussion about academics.
- Faculty mentors meeting with a student to discuss academic course content.
- Student participation in an instructor led independent study
- Finally, the letter says, “Note not all of the educational activities described above fulfil the requirements for RSI between instructor and student.” (OIG Report on WGU, Part 3: A Brief History of RSI)

Unfortunately, a well-defined and clear definition of RSI was still not available.

2015-2016: On September 30, 2015, the Higher Learning Commission (HLC) was audited by the OIG [21]. The audit concluded that the HLC had approved the sizable applications of change from six colleges wanting to offer CBE, but these applications defined and described the proposed plans as self-paced curriculums. They failed to establish and justify how the curriculums would incorporate RSI between faculty members and their students (OIG, 2015).

Thereafter, on August 2, 2016, the OIG audited the Western Association of Schools and Colleges (WASC) and found that WASC did not sufficiently evaluate whether proposed CBE programs included faculty-initiated RSI (OIG, 2016).

Even though both of these audits fault the accrediting bodies for not correctly evaluating the presence of RSI, neither audit defined what would be sufficient RSI.

2017: Thereafter, in 2017, the OIG audited Western Governors University (WGU), the biggest CBE college in the US [22]. After stating that there is no legal and constitutional definition of RSI, the OIG outlined the ‘ordinary meaning’ of RSI between instructors and students. RSI was described as “relevant to the subject matter” and involves “student interaction with faculty or a student’s individual submission of an assignment where an evaluator provides feedback to the student” (OIG, 2017). Furthermore, the OIG went on to define what RSI is NOT. Substantive interaction does NOT include:

- Computer-generated feedback to students on assignments
- Recorded webinars, videos, and reading materials if the student was not required to interact with an instructor.
- Interaction with faculty who do not directly provide instruction on the course subject matter (OIG, 2017) [23].

2021: The US DOE issued new regulations for Distance Education in September 2020 (to go into effect July 1, 2021), updating the definition of distance versus correspondence education, attempting to clarify the differences between these two modes of course delivery. (“Regular and Substantive Interaction | SUNY Empire State ...”). The 2021 regulations heavily focussed on RSI while defining the critical factors that distinguish distance education from correspondence education:

- Distance education is delivered via a suitable form of online media.
- Distance education must utilize instructors that meet accreditor requirements for the subject matter.
- Instructor-Initiated Interaction: To differentiate distance education courses from correspondence courses, in correspondence education students are responsible for initiating contact; whereas, in distance education the instructor must start the interactions. (“Regular and Substantive Interaction | SUNY Empire State ...”). The instructor should initiate and guide a plethora of faculty-student interactions throughout the term making these interactions integral to the instructional plans for the course, rather than being optional and left up to individual student’s discretion. Examples of instructor-initiated interactions include instructor-facilitated discussions, personalized assignment feedback, scheduled virtual office hours, individualized emails,
- Regular, Scheduled, and Predictable Interactions:
 - “Interactions with students should be frequent and repeated consistently the entire term.” (“Online Learning Regulatory & Policy Considerations”)
 - Long time-intervals should not pass between instructor interactions with students.
 - The type of interactions may vary throughout the term of the course. But the interactions should be as consistent as possible.
- Course materials should outline the expected frequency of interaction with the instructor, including announcements, grading feedback, the times and dates of virtual office hours (if applicable), and potential email communications. Examples include weekly course announcements that are written

specifically for the course; regularly scheduled online review/help sessions, and weekly summaries of discussion posts. (“Regular and Substantive Interaction SUNY Empire State ...”)

- Substantive Interactions:
 - “Interactions should connect to the course subject, and should also contribute to the course, program, and college learning objectives.
 - Routine administrative interactions like reminders of due dates and assigning grades are not ‘substantive’ unless they include individual feedback and/or suggestions for improvement.
- Strategies for including RSI via Course Design and Course Delivery:
 - To meet RSI, the rules do not dictate which activities to use and how often to use them in the course; this allows for flexible and creative online courses. For example:
 - Pre-recorded lectures are not considered to be RSI, but if followed with discussion forums on issues discussed in the videos, it would constitute RSI.
 - Automatically graded quizzes are not interactive and do not provide individualized feedback. However, if the instructor offers a detailed summary of the common mistakes made on the quizzes and provides additional instructional support and ways for students to ask questions, this moves a quiz closer to constituting RSI.”
- For Title IV federal financial aid funds to apply, online courses must include RSI between students and instructors. In short, RSI is one of the key components that distinguishes distance education from correspondence education and thus is a pivotal factor for students to access Title IV funds.

III. DISCUSSION BOARDS EMERGE AS THE CHOSEN METHOD FOR RSI

A long history of RSI has loomed over distance education which is now termed online education. The Department of Education (DOE) has imposed RSI dating back to 2005. To check the RSI box, the organizations that built courses for online education gravitated toward Online Discussion Forums (ODF) as a standard for weekly Regular and Substantive Interaction (RSI).

Blackboard

In 1997 the Blackboard platform was founded, and soon became the leading LMS in higher education. Phil Miller, the Chief Learning and Innovation Officer at Blackboard, explained that the designers of the LMS platform initially utilized Online Discussion Forums (ODFs) which had previously existed in technical circles [24]. At first, in asynchronous classrooms, instructors used these ODFs at the beginning of the course, to have students introduce themselves to each other. As the use of this platform increased, Blackboard received suggestions and requests that morphed into weekly ODFs requiring students to respond to a prompt started with an initial post, followed by a few days of required written discussions between students before the final deadline for submissions [24]. This use of Online Discussion Boards became a primary form of Regular and Substantive Interaction (RSI) within the Blackboard LMS.

Online Program Management (OPM) Providers

Simultaneously, around the year 2000, Online Program Management (OPM) providers entered the higher education market. By 2015, higher education research firm, Edventures, estimated the OPM market to be worth \$1.1 billion. The goal of the OPM providers was to help colleges bring their programs online, in return taking a share of tuition revenue. At the time, very few schools believed in online education and thus they were uninterested in building online infrastructures for delivering education. The OPM providers came to the universities across America and demonstrated that creating online infrastructures was a win-win proposition. In exchange for a large share of the tuition revenue, the OPM providers would build the online infrastructure, including the classes, without a school needing to make big up-front investments or utilizing the resources of their internal teams [25]. The OPM providers essentially provided everything needed to create an online program for a school. Colleges across the nation signed contracts with OPM providers requiring no upfront capital investment or risk to the school, yet incremental revenues for the college; John Katzman and Greg O’Brien of Moodle Partners, share an example wherein an OPM would invest \$2 million of its own capital to create a program for a university, in exchange for 60 percent of the tuition revenue for x number of years. The remainder of the revenues would go to the college [26]. So, without doing anything but putting its college name on the program, the school could generate incremental revenues.

OPM Providers and RSI

As part of their suite of services, the OPM providers began offering pre-built online courses to colleges and universities globally to take academic programs online and integrate into Blackboard or other LMS. These pre-built college courses were cookie-cutters of each other replicated from college to college across the nation. Hypothetically, a student at the University of Southern California would take exactly the same course as a student at Florida State University, with the only exception being that one was named USC Course X and the other FSU Course Y, and different (usually adjunct faculty) instructors would be attached to the respective university classrooms.

Each course followed a defined pre-built course map (blueprint) for classes. As part of this course map, many OPM providers adopted the approach to include a Weekly ODF, therein building in the required RSI.

Online Program Experience

In 2021, OPMs have evolved into what is now termed the Online Program Experience (OPX). By 2025, it is forecasted that the Global OPM/OPX market will reach \$13.3 billion, with a four-fold increase in international growth [27]. In this new model, instead of a tuition revenue-share model, OPX has transitioned into a fee-for-service model whereby colleges leverage their own expertise, and they choose and outsource other services to the OPX. Unlike traditional OPM revenue-share models, in the OPX model, the college builds its own online courses and programs. And the OPX focuses on the other student support aspects such as marketing and admissions. Many colleges now seek to build online programs and courses in-house.

Given this explosion in online higher education, colleges seek to maximize the student learning experience, and thus there is pause for reflection about what best achieves RSI with students. Thereby we ask the question: "Does the Discussion Board serve as a metric that best meets RSI?"

IV. HOW AN ASYNCHRONOUS ONLINE DISCUSSION FORUM WORKS

Lively in-class face-to-face discussions are the hallmarks of traditional on-campus classes. In the transition to online asynchronous learning, ODFs have been a mainstay in higher education since the beginning of distance education. Here is how they traditionally work:

- Historically, a discussion assignment will be a prompt that is a topic-based question related to that week's assigned learning topics and materials. The discussion assignment generally is weekly and is part of the student's total grade for the week and the term.
- Students are asked to respond to the prompt in an essay-style format, usually with a short reply called an "Initial Post." These generally run 250-500 words. Citations are usually required.
- Thereafter, students are required to respond to at least two peers in a manner that furthers the academic discussion in around 250 words. Citations are often required.
- The student is graded on the initial post and the subsequent two (or more) reply to posts.

The benefits of online Discussion Boards include reflection time and the ability to work at the student's own pace. In the asynchronous format, students can participate virtually any time during the day or night. This adds a great deal of flexibility for learners [28]. Conversely, the effectiveness of the online discussion thread, as a replacement for the face-to-face component found in the physical classroom, has traditionally been influenced by multiple factors which, over time, have limited the robust nature of the discussion thread. Doubters of the opportunities with the asynchronous online teaching-learning paradigm contend that it is difficult to reproduce the in-person face-to-face discussion benefits with online discussions, in terms of quality of substantive discussions, collaboration, peer-learning, participation, and commitment, as well as limited interaction between students and the instructor. Some argue that utilizing asynchronous Discussion Boards, can inhibit creativity and that spontaneous free-flowing contributions are impacted as students respond at various times. Most substantially, Discussion Boards are viewed as surface-level discussions [29] that are rote and obligatory that students invest very little in.

V. BEST PRACTICES FOR CREATING ROBUST DISCUSSION FORUMS

Lively in-person discussions are a robust aspect of traditional on-campus classrooms. Doubters of the online education paradigm argue that robust discussions are difficult to replicate online, and it is challenging, and maybe not completely possible, to reproduce these benefits in an online education setting.

With the emergence of the COVID-19 pandemic, higher education is suddenly in an unprecedented growth period, which has driven the need for innovation at an ever-increasing rate. The Quality Matters Standards for Online and Blended Courses deems that learning activities must provide opportunities for interaction to support the learning" (QM 5.2). Following are some of the best practices for creating robust ODFs:

Instructor Facilitation

The level of individual student participation in an online classroom significantly impacts the level of knowledge transfer. Nandi, Hamilton, and Harland [30] observed that there is a broad range of student engagement, ranging from (1) monitoring to gaining ideas, (2) discussion participation actively and with genuine interest, and (3) contributing substantial content.

The authors further assert that the interactions between the student and the instructor is a critical factor that contributes to student satisfaction in an online course [30, p.8]. Yet, students often view the ODF not as an interactive discussion, but rather treat the discussion as an assignment where they merely need to contribute to earn maximum points [35]. Thus, the ability and the proficiency of the instructor to manage the discussion thread and encourage active student participation has historically been vital to creating an environment of collaboration and critical thinking [28]. Nandi, Hamilton, and Harland [30] further suggest that student satisfaction in the online courses is highly dependent on an instructor's ability to guide and support the student's

learning. It is widely recognized that the ideal learning environment is reached when the students are inspired to think out of the box, leveraging the contributions of the group, to build new knowledge.

Students sometimes feel that they are far behind in class, but this should not discourage them from responding to the Discussion Board conversations. As one instructor, Vanessa Paz Dennen of the College of Education, Florida State University [31] describes her role as enhancing the student learning experience. She regularly sends private emails to non-contributing students. As well, this instructor advocates for how valuable it is to give timely feedback and grades to students on their discussion post performance. Mitigating instructor investment such as Dennen's in facilitating ODFs is the trend in higher education in general, and emphasized in online education, to hire adjunct faculty, as opposed to full-time faculty [32]. Adjunct salaries are low, and no commitment is made to them to contract them with assured regularity [33]. This sometimes results in these adjuncts showing low interest in really facilitating a robust ODF as the adjuncts are trying to balance classes at multiple institutions to combat their low level of pay [34].

Conversely, too much instructor participation may be negative. Students need to be initiative-taking and self-motivated to be creative and put forth innovative ideas. However, this is not always the case, as many on-line students lead busy lives and are frequently over-committed. As a result, these students tend to go with the flow of the discussion, limiting the introduction of innovative ideas beyond what is already being discussed. The successful instructor needs to balance providing motivating material with avoiding over-participation. Hew (2015) observed that instructors who are too involved in the discussion risk limiting students' participation because they do not want to express a different opinion than the professor [35]. This leads to an "instructor-centered" discussion where students tend to rely on the professor to guide or maintain the discussion.

Technology Advancements

The availability of increasing bandwidth on the internet has enabled speedy advancements in content delivery and the platforms used for content deliveries. With the increased popularity of the flipped classroom method of learning [36], learners today are expecting a more technologically rich learning environment. Perhaps the most significant driver of technology innovations has been the COVID-19 pandemic. Higher education was thrust into an unprecedented innovation period as academic institutions struggled to deal with the sudden migration to distance learning. Garcia-Morales et al. [37] assert that "Although higher education has been in the process of digital transformation for many years, the pandemic accelerated it, leading to fundamental evolutionary changes in a matter of months" [37; p.2]. Emerging technology has raised student expectations as more features and capabilities are developed. This has resulted in increased pressure on instructors to learn and adapt to new methods and technologies [37] with minimal training. This is already a challenge with the normal evolution of technology development, and it is more difficult with the accelerated pace of a COVID-19 environment. Advances and availability of technologies have significantly raised student expectations to an elevated level. Some promising technologies that will enhance the student experience and learning in ODFs include:

Artificial Intelligence (AI) and Cloud Infrastructure. Using AI in designing ODFs has big positive opportunities. Independent navigations by the student will be significantly enhanced by using AI in deciding the best course of action for the learner. Additionally, creating forum communities in the cloud will be greatly beneficial. These include enterprise platforms like Google Cloud Platform (GCP), IBM Cloud, Adobe Creative Cloud, Microsoft Azure, Amazon Web Services (AWS), etc. These are readily available to learners, and in most cases, free or inexpensive versions are available.

Voice Applications for Recorded Discussions: Bryant University is a private university in Smithfield, Rhode Island. Bonnie Budd, Director of Online Learning at this university, stated that their Online Discussions in courses, in most cases, contained a combination of written student responses supported by research on the topic, and video posts with individual views, arguments, and justifications. Budd suggests that these uses of Discussion Boards give the students a context and an opportunity to express their individual opinions beyond just agreeing to posts. Students in these classes are invariably all over the country, sometimes also in various locations internationally. They cover different time zones and these written responses with video posts make these communications actual conversations and not just an assignment [24]. Numerous voice applications are trending that are enhancing the nature of Discussion Boards. Instead of students writing responses they can record responses. A few examples of available applications are:

- FlipGrid: Flipgrid is one such audio-visual video tool that enables instructors and educators to post content that is mostly in the video multimedia format with some associated and accompanying text [38]. The instructor video is shared with students. Students create a FlipGrid video responses both to the initial prompt, as well as with replies to classmates, in video format and submit them to the Discussion Board. All students can see and hear each other, rather than just reading text responses. Flipgrid provides as much face-to-face interaction as you can get in an online Discussion Board.
- Voice Thread. The popular video-creation tool VoiceThread is another tool used in the discussion platform that allows students to record (audio-visual) asynchronously to discuss course content.

Grading the Discussion on Substance

One trend in Discussion Boards is the instructor assigning full points to an ODF activity simply based on the fact that the student submitted a post and a set number of reply to posts. This allows students to be “lazy” in that they know they will get full credit and points by virtue of simply completing the assignment with minimal effort. Again, the trend to higher Adjuncts over Full-time faculty and the low investment in Adjunct pay and lack of commitment to Adjuncts can result in Adjuncts showing low interest in intently grading Discussion assignments [34]. A best practice is for the grade to be based on not just the submission, but also by its content and by the quality. Instructor Speer, in an article by Lieberman [24], shares that he awards relatively higher grades to discussion posts that advance the collaborative discussion among fellow students and the participating instructor. Following student posts build on previous posts, the discussion continues with related content – like an in-person face-to-face discussion. Speer further states that she does not give credit for posts that are simply restating or agreeing to a previous post without backing up their positions with appropriate research, justification and/or logic [24]. As touched upon above, mitigating the rigorous grading of ODFs is the trend in higher education in general, and emphasized in online education, to hire adjuncts as opposed to full-time faculty. Adjuncts are not compensated well and thus default to grading based on submission, not quality. Furthermore, academic institutions do not have the budget for oversight in grading so this rote grading goes unnoticed by all except students who see that they can put in the minimal effort for the Discussion Board grade.

Quality over Quantity and Frequency

One approach put forth is an emphasis on quality and thoughtfulness of responses as being more important than quantity of Discussion Forums utilized. As opposed to weekly discussions, having fewer discussions, but more meaningful ones, encourage more in-depth dialog. Hodges, in the same article by Lieberman [41], proposes to first, cut in half the number of ODF assignments per term. Second, he allows students to respond to discussion prompts with more robust replies than simply a 250-word response; perhaps with a PowerPoint presentation, YouTube video, concept map, and/or a worksheet analysis. For some discussions, he gives instructions to include multimedia submissions that enhance student learning and understanding.

Interaction in Smaller Groups

Often the number of students in a course is large. Thus, the Discussion Board becomes unmanageable with so many initial posts, and then students are expected to reply to their peers. This makes it such that students quickly skim over and figure-out where to reply, versus really engaging in all the posts of their peers. One best practice has been to have the professor assign groups of students who will interact with each other instead of with the larger cohort. This encourages in-depth conversation amongst few versus a more scattered conversation amongst many [39]. Bliss and Lawrence (2019), of the Centre for Distance Learning at Empire State College, did a study that found that in small groups students participated at a higher rate than in large groups. They found that in a small group, there was more of a sense that people knew you, and students were better able to connect with them. Also, they found that the number of students’ posts in these small groups versus large groups was greater. Furthermore, the quality of student posting was more on topic and content aligned [40]. The recommended way is to divide a big class with a size of more than twelve students into smaller subsections of six-eight students. Then create separate but parallel Discussion Boards for each subsection. This allows students to easily interact with each other. A large class of 100 students can feel like a class of six to eight fellow learners. This is a good practice to make the students feel involved and part of a small decision-making entity. All the major online LMSs (Moodle, Canvas, Blackboard, Desire2Learn (D2L) Brightspace, etc.) have the feature to allow students to be divided into groups [41].

Focus on Critical Thinking

In pilot now, CRIT Blackboard (Critical Tasks in Blackboard) is an algorithm developed in Blackboard that can assess the level of critical thinking used by students when answering questions. [42]. That algorithm draws on the Flesch-Kincaid Readability Index, a military-approved readability standard. This algorithm provides instructors with analysis of the student’s critical thinking to help inform grading; currently, this analysis is focused on evaluating the depth and the writing structure of the written submission [24]. To date, the feature, particularly as it relates to evaluating the content of a student’s submission, has gotten “a little pushback” from instructors who are not ready for this type of technology [42].

Complement, Comment, Connection, Question (3CQ)

One promising trend in asynchronous ODFs is the requirement to post in a format known as the 3CQ format. This requires the post content containing a Compliment, a Comment, a Connection (3C), and a Question (Q). This attribute for evaluating ODF posts was developed by Jennifer Stewart-Mitchell, who frequently publishes her thoughts and ideas related to academic programs, curriculums, and course developments. Each student response to a post must include the 3CQ elements [24].

Replace Discussion Boards with Other Assignments

One trend in asynchronous online classrooms is replacing Discussion Boards all together with more robust or learning-driven assignments such as analysing newspaper articles, doing book reviews, or learning vocabulary, as well as the YellowDig application. Some instructors question whether the Discussion Board is the best way to encourage learning, and thus, they have tried other assignments to replace the Discussion Board and assess learning against the course learning outcomes.

Case Study Discussion Boards

Some institutions, like the University of Louisville, have opted to use the Discussion Board to analyse a case study over the course of multiple weeks. The quality of student online postings observed a significant improvement in student learning related to the quality of postings. The study by Ravi Seethamraju (2014) found that combining the ODF with the case study analysis encouraged collaboration among learners and enhanced rational and cognitive learning. In general, students appreciate different perspectives and different views on the subject, even when they are different from their own. This helped them with reflections on their own learning and perceptions [43].

Engage Students

Student engagement is a critical success factor in higher education. It not only impacts the quality of the educational experience, but it is also a key factor in determining if a student will complete their educational journey. A review of the body of knowledge [44-46], reveals that there are many theories addressing successful student engagement. A critical success factor is the learner's perceived value of the experience; it must be engaging, insightful, and of immediate value.

To be engaging, the material must be presented in a format that encourages the learner to move beyond being a passive learner [44]. Groccia asserts that learners must be engaged on three levels (doing, feeling, and thinking) in order to achieve higher-level learning, retention, and satisfaction" (44, p.14). Student engagement is an overly complex issue [45-46], impacted by a student's commitment, educational experience, background, and teaching practices, to name a few. Looking through this lens, we see a more holistic view of student engagement; one which encompasses a much broader personal dimension.

Insightful material stimulates the student's interest to learn. This can be accomplished through multiple learning modalities, thus enabling the learners to use a learning channel that best suits them. To promote engagement, it has been suggested that a broad-based approach needs to be undertaken, including in and out of the classroom [44].

Immediate value has critical importance; it is the benefit that results from the knowledge, skills, or core competencies that can be immediately applied to the learner's personal or professional life. The ability to benefit from the knowledge gained, in a real-world environment, provides validation that the material is valuable, timely, and immediately useful.

Technologies that Replace Discussion Forums

Emerging multimedia technology, coupled with ever-increasing bandwidth availability on the internet, has enabled improvements and innovations in content delivery mechanisms. Using these advanced technologies, the flipped classroom paradigm of teaching and learning [36] has been adopted in many institutions by many teachers. Also, to practice this, the tech-savvy students today are expecting a more technologically advanced learning platform. The demand for quality interactive multimedia material has driven collaboration between higher education institutions and the creators of commercial education resources, resulting in a more universal learning environment. Seeking to leverage the need for vocational style education, outside of formal education. This has led to a rapid development in this industry with the expanding capabilities of the internet. Offering courses that range from general education to specialty offerings in business, technical and creative topics, these programs fill a need for low-cost, short-duration courses, to improve personal skills and expertise [47]. One of the main attractions is a separate set of resources that addresses real-time topics that are directly applicable to student's personal, academic, and professional lives. When used in conjunction with the traditional higher education model, they add more depth and breadth to the courses and encourage greater student participation. From the instructor's perspective, the addition of resources from the commercial learning companies provides a vast suite of virtual tools that are relevant, current, and represents an immediate value add to the students. There are many examples of commercial education providers in the marketplace. Three such providers stand out as having a profound impact on higher education, providing a model for more technology-advanced interaction with students that goes beyond the traditional discussion thread.

One of the early entrants to the commercial education market was Lynda.com. Founded in 1995, they were an online resource company offering individual and enterprise-wide education on a subscription basis. Originally offering approximately four thousand video courses, their offering expanded to over 16,000 videos as the company matured. The platform established itself as an effective resource for use in a flipped classroom environment which is fewer lectures and more students driven [48]. Accessed directly through their website, or via hyperlinks from a traditional online LMS, they supported many of the classic multi-media functions [36] such as fast forward, rewind, and auto-play. According to Jennifer Morin, they became popular with instructors

and course developers as supporting material for their courses which saved them tremendous amounts of time developing content and building PowerPoint® slides [47]. The author further asserts that another advantage, which was immediately popular with students, was that it replaced reading multiple chapters in a textbook with a multi-media presentation that was both entertaining and informative. According to Morin: “With the flipped classroom strategy, educators prepare and disseminate online content to students before the face-to-face class sessions, which are no longer utilized for lectures. Instead, class meetings provide the opportunity for student’s application of concepts learned before the class through interactive exercises and reflection” [47; p.627].

LinkedIn® emerged in social media as the “go-to” multi-media application for professional networking. Seeing a demand for training and individual skills development, LinkedIn Learning leveraged its success in the professional networking market by entering the commercial education market. In 2015, LinkedIn Learning purchased Lynda.com [49], and immediately benefited from their library of some 16,000 video courses including business, technology, and creative topics. The platform also offers a wide range of options such as enterprise and individual subscribers. Today, LinkedIn Learning has gone global, offering courses in multiple languages. According to Trent-Gurbuz [49], this includes English, French, Spanish, Japanese, Brazilian Portuguese, and Mandarin. LinkedIn Learning has a diverse pricing structure that include free courses, individual subscription services, and enterprise-based subscriptions. It is also bundled with LinkedIn Premium subscriptions, which includes tools and services available to support their web-based platform. They are also forming relationships with various colleges and universities, to include supplemental content in their own course offerings.

Coursera is another popular and successful commercial education LMS supplier providing open online courses. This was established in 2012 by Computer Science professors Andrew Ng and Daphne Koller at Stanford University. According to Wochner [50], the Coursera platform offers over seven thousand courses in a broad range of topics such as data science, business, Information technology, and engineering. Like their competitors, they offer subscription-based services as well as courses for no charge (if a certificate is not needed) and enter collaborative relationships with colleges and universities to provide supplemental content.

In summary, as technology evolves, the traditional discussion thread is slowly being replaced with more student-driven multimedia resources. Courses will evolve from the traditional instructor lecturer-based format [36] to that of a flipped classroom whereas the students will utilize available resources, in conjunction with the course room, in a more “flexible, collaborative, active learning environment” [36]. Creating effective scenarios for the exchange of ideas, still rests with the instructor. Andresen [28,51] observed in the online environment that it is crucial for instructors themselves to discover new ways to show their feelings and passion in the subject matter when communicating ideas to the learners [51: p.250].

VI DISCUSSION AND CONCLUSIONS

As advances in technology evolve and become commercially available, the traditional ODF discussion thread in the teaching-learning space in academia is slowly being replaced to a considerable extent with more learner-driven multimedia platforms and resources. Inevitably teaching contents and styles will evolve from the traditional instructor lecturer-based format [36] to that of a flipped classroom model whereas the students will utilize available resources, in conjunction with the course room, in a more flexible, collaborative, active learning environment [36]. Enabling the creation of effective ways for the exchange of ideas will still depend on the instructor. ODF presents opportunities for creating and incorporating interactive and inquiry-based learning between students and instructors, resulting in student knowledge creation and acquisition.

The ODF feature analysed in this paper has proven to be successful for collaborative and shared learning. However, to maximize the impact of ODF, there is a need for increased student and teacher participation. Instructors must devote more time towards facilitation of, and interactions in, the discussions. Going forward, for this ODF to be still more helpful and effective, involvement and teamwork among students and with teachers need to enhance and improve further. This will also be instrumental in enhancing competence and student productivity. One suggestion for evaluation and research is to understand the consequences of increased teacher presence and usage of the forum, with class exercises, assignments, and other submissions. This may be an opportunity to improve student participation in the ODF. Proactive and timely teacher response enhances student interest in the discussion, invariably leading to better collaboration. Instructors must monitor and coordinate the forum to ensure that only related and appropriate content are posted and discussed. All securities, precautions, and oversight must be in place to guard against abuses, trivialities, and questionable activities that can deter ODF cohort participation and collaboration [3].

VII RECOMMENDATIONS FOR FUTURE RESEARCH

Due to the rapid advances in available bandwidth, mobile technologies, and related social platforms, the influence of these improvements on the online teaching-learning space needs further research and analysis. These technologies are expected to enhance and bring in big opportunities in academia. One of the areas where

future efforts can focus is on how ODFs can be used as an instrument to enhance Inquiry-Based Teaching and Inquiry-Based Learning [3]. Rapid developments and improvements in technology, products, and platforms are driving these paradigm shifts in this space of online discussions and collaborations. The use of Artificial Intelligence (AI), Cloud Infrastructures, Big Data, Semi-Structured and Unstructured Data, Blockchain, social media, and other communication platforms, as they may guide and enhance this education space, needs to be studied, understood, and their applications in this area of student discussions analysed.

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**Corresponding Author: Bhaskar Sinha*

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