TLIC PAPER

Collaborative Learning of Macroeconomics Through the Lens of Universal Design for Learning (UDL)

Subhadra Ganguli(✉)

Penn State University, Lehigh Valley, PA, USA

Smg6870@psu.edu

ABSTRACT

The paper shows that implementation of Universal Design for Learning (UDL) for collaborative learning through teams in a Macroeconomics course can help to transform students' educational experience to become lifelong learners. The UDL uses a portfolio of assessments in the course and team presentation happens to be one of them. In this paper students form teams through self-selection exercise and work in teams throughout the semester to produce and present research outcomes of analyzing macroeconomic policy in a globally connected world. The presentation requires students to apply their learning of country specific macroeconomic issues on global policy decisions. This enables transforming classroom learning into an immersive experience for future career choices of students developing transferable skills in the process.

KEYWORDS

UDL, macroeconomics, career progression, collaborative learning, immersive experience

1 INTRODUCTION

Universal Design for Learning or UDL is a powerful tool to level the playing field for making education more accessible to all irrespective of diversity of the students. This paper explores the use of UDL in providing students the choice in applying knowledge or in-class learning to real world policy issues. The course offers opportunities for team building, collaborative work, and team presentation of macroeconomic concepts to real world applications at the end of the course. This provides opportunities to explore the real world outside the classroom and develop the potential for lifelong learning for future business leadership in a globally connected world. An immersive experience for analyzing a country's macroeconomic policies by applying the theories learnt in class provides an introduction and understanding of the global economic environment and how government decisions can help industries to prosper or fail.

2   WHAT IS UDL?

UDL was originally built from UD (Universal Design) for architectural reforms in construction to allow individuals with disability to receive access easily and without any inconvenience into buildings [1]. It was then introduced into secondary and post-secondary education for disabled students to enable them to access education in ways that would grant them more accessibility into learning. UDL was later introduced into higher education to create universal learning experience for diverse students irrespective of their background in terms of race, education, ethnicity, and disability. UDL can be implemented at the curriculum, program, course or even department level. UDL application in course design, including assessments, can help students with much needed flexibility in completing assessments and provide them with more confidence for learning in the future. UDL application in learning model can help students be prepared for the real-world applications of knowledge in a more meaningful manner than the traditional lecture-based learning and teaching [2].

Table 1 shows the brain network, question, and solution to how UDL can be used in higher education sector for creating an immersive experience for students to apply learning to the real world and become lifelong learners in the process.

Table 1. Universal design for learning (CAST, 2016) [3]

Brain Network	Question	Solution
Recognition	The "what" of learning. How do we gather information?	Present information in multiple ways.
Strategic	The "How" of learning. How do we express our ideas?	Differentiate the ways that students can express what they know.
Affective	The "Why" of learning. How do we motivate learners?	Find a way to connect with student interests. Provide multiple methods of engaging with the material.

"Through providing multiple means of engagement, representation and expression in the classroom, the diverse needs of students are normalised rather than stigmatised. As a result, students with and without disability are provided with opportunities to engage in the classroom and have their diverse needs recognised and met" [4].

The paper will discuss specific items in Table 1, namely the "How" and the "Why" of learning macroeconomics. I will discuss the role of UDL in allowing students flexibility and alternatives in terms of how and why they are learning macroeconomics. The What of learning is associated with different ways in which the learning materials are presented to the students. This may include text, audio, media, visual effects, discussions, debates, and others. This discussion is beyond the scope of the paper. Analysis of a country's performance in response to government's policy reactions to macroeconomic shocks and events allows students to apply in-class learning to the real world. This is represented in the "How" of learning. The "How" of learning relates to various forms of assessments which are used for considering successful learning. Finally, the "Why" of learning is related to outcomes of collaborative learning that students pursue in this case. Under the collaborative model of learning (Figure 1) students learn in teams when everyone shares their tasks for completing the project. Learning to analyze the effects of government policy on macroeconomy and nation's business help them to apply learning to the real world. This, in turn, allows them to accept the importance of government decisions within business in the context of global economy. In all of this, the role of learning in teams play a significant role for the future business leaders to effectively manage their businesses.

3   LITERATURE SURVEY

Unluol et al. [5] demonstrated the significant improvement in lesson planning by general education teacher candidates after UDL training session. King-Sears et al. [6] conducted a meta-analysis of 20 studies to examine the achievement of learners in a UDL environment from kindergarten years to adult participants. UDL was found to be effective as a method of instruction and its efficacy as a research-based practise for diverse learners have also been discussed. Lesoski [7] argues that creation of personal space with students and sharing mental wellness resources strategically plus integrating mental wellness in courses can help in creating a better learning environment. Le Gary et al. [9] introduced UDL based professional learning program for faculty to implement UDL in their courses. The model concentrates on adult learning theory along with long term learning tactics through job embedded learning. Meier et al. [8] discussed the instructional barrier matrix to identify diverse learners and then apply UDL on it to engage students in an effective learning environment. Thoma et al. [10] studied the multifaceted advantages of learning and teaching through application of UDL for STEAM teaching of early-stage students with diverse learning needs. This includes learners' active participation, self-reflection on their learning, teachers' professional development and many other benefits of UDL application. Kohnke et al. [11] discusses how application of UDL helped in learning science due to engagement by the students, accessible content, visualizing content through mind mapping etc. There is a lack of literature on learning Economics through UDL. Though there is mention in the literature about using UDL implementation for training Gen Ed teachers in the making, there is no reference to how Gen Ed economics. Math, statistics, and finance courses can be improved for student learning purposes through UDL. This paper fills the gap in current literature demonstrating how application of UDL can help in learning and teaching of Economics/Finance or Business courses at the post-secondary level to increase global awareness of economic policy impacts. Moreover, the paper discussed how the UDL structured course in Macroeconomics can inculcate judicious personal finance decisions under the influence of dynamic global and local economic environments.

4   ASSESSMENTS

There are two tests, a course final exam, in class assignments/discussions/quizzes, group project using team presentation, engagement exercises for self-assessment and graded HW assignments in the macroeconomics course. The final exam is cumulative. Weights for each requirement and grading scale are as follows (see Table 2):

Table 2. Assessments and weighted contribution towards final grade

Assessments	Weights
HW Assignments online (weekly)	20%
In-Class Quizzes (weekly)	10%
Class Attendance and Participation	10%
Self-Assessed Engagement Exercises (two)	5%
Group presentation (one)	10%
Test 1 (mostly MCQ format)	10%
Test 2 (mostly MCQ format)	10%
Course Final Exam	25%

The different forms of assessments enable students to diversify their risks in different assessment components. Not all students are comfortable with tests in MCQ (Multiple Choice Questions) format in a timed manner. This genre of assessments has no bearing on a student's problem-solving tactics in real world. Moreover, not all students are proficient at presentation skills or class participation exercises due to disability, shyness, lack of self-confidence, motivation, anxiety, and other issues. UDL can go a significant distance in helping students meet their unique capabilities in a flexible manner. "As a result, students with and without disability are provided with opportunities to engage in the classroom and have their diverse needs recognised and met" [4]. Portfolio of assessments enable students to consider their problem-solving techniques in several ways rather than one or two.

Instructors implementing UDL principles in higher education coursework also reported that UDL improved their teaching [12], [13], [14], [15], [16]. This is the "How" of learning using UDL. Different forms of assessments enable students to express their learning in different ways and the diversity of assessments enable them to leverage on their capabilities to learn best. In this paper I will discuss one form of collaborative assessment which help students not only to apply learning to the real world but can also help them become lifelong learners as business leaders through an immersive project-based team approach to assessments. In the following section, the paper discusses how UDL can help in making collaborative learning an immersive experience.

5 HOW DOES UDL INCORPORATE COLLABORATIVE LEARNING OPPORTUNITIES IN UNDERSTANDING GLOBAL ECONOMY USING MACROECONOMICS?

UDL is an overarching structure for learning where students can take advantage of options using multiple ways of learning the material. UDL is about providing various ways of accessing materials like videos, lecture- notes, slides, stories, case studies. This approach considers that students learn in various ways. Hence providing such pathways intrinsically in a course through design and structure from the very beginning could enable students to optimize their learning in meaningful ways. That is the "What" of Learning. On the other hand, the "How" of Learning uses assessments of various forms for learning and application of learning. Table 1 provides details of the assessments. The "Why" of Learning is manifested through the engagement and motivation that students derive through learning. This paper presents the case that collaborative learning has the potential to build real life applications of learning of macroeconomics and prepares students to become lifelong learners. Moreover, working in teams prepares the future business leaders to learn how to build and prepare projects in teams.

In this study application of UDL takes place through collaborative learning using team presentations as one of the different forms of assessments for students. Students have the flexibility to choose their teams using a method of self-selection based on their choice of country they would like to study. After formation, teams work together throughout the semester in a flexible manner outside the class to prepare the end of term presentations. The team size is usually between 3 and 4 students per team. The teams elect their own team leaders in a manner they deem fit and then chalk out the roles and responsibilities of all team members signing an informal contract form per team and then agree to abide by the contract till the presentation is completed. This prepares students to first build accountability for their individual work responsibilities and second to work collaboratively towards the common goal of the team presentation. The two steps here reflect self-selection in teams [17] and work in teams which represent

how an immersive project or presentation-based experience will enable students to be ready for the real-world experience of team building and teamwork. Finally, team presentations are applications of learning macroeconomics in classrooms to specific countries of choice by the teams. The team members present their research using resources and presentation guidelines provided to them by the course instructor. The students, working in teams, are at their free will to prepare the theme and contents of the presentations using broad guidelines provided to them. Thus, UDL provides flexibility to students in choosing their teams through self- selection process; it also provides them with flexibility to work in teams to present research findings (each prepared within their team) based on learning in class; Students evaluate each team except their own in terms of quality of presentation using peer assessment rubric provided by the instructor. Figure 1 shows how UDL is the overarching structure that helps in achieving learning for students in the collaborative learning model.
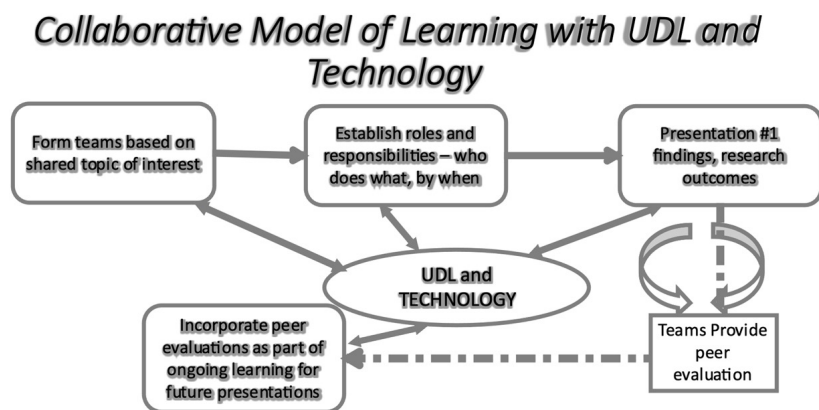

Fig. 1. Collaborative learning model using UDI

Table 3. Typical description of team presentation

Group Presentation: You will be organizing yourselves in groups of **three/four** to make a brief presentation on a topic that we will cover in class or course. You will be evaluating other groups except yours using a peer evaluation method based on an assessment rubric that will be provided to you. More details on the steps of group formation and presentation details will be provided on D2L Brightspace platform/BOLT as the semester progresses.

5.1 Roles and responsibilities of the team

Members of each team prepare a contract among themselves to determine roles and responsibilities of one another. They draw up an informal contract to follow up on their roles and responsibilities from the beginning till the end of the presentation. They are provided with a template such as Table 4 which lists a broad guideline to write up the roles and responsibilities and post it in BOLT's discussion board.

Table 4. Roles and responsibilities of team *<Team Name>*

Team Member Name	Roles and Responsibilities
<Team Leader Name>	
<Member 2 Name>	
<Member 3 Name>	

Table 5 provides the students with the presentation template slide by slide. Students can use their knowledge and imagination in designing their presentation with audio/visual impacts using the guidelines in Table 5.

Table 5. Presentation template

Slide Description	Title of Slide
Cover Side	Macroeconomics of *<Country Name>*; Challenges Posed by Covid – 19 Pandemic; Role of Government in the context of the pandemic. Names: Full names and email addresses • *<Team Leader>* • *<Team Member>* • *<Team Member>*
Three Macroeconomic variables	Three Macroeconomic Variables for the last 5 years and pre- pandemic (so between 2015–2019) • *<Variable 1>* • *<Variable 2>* • *<Variable 3>* Discuss in detail 1, 2 and 3(slide 2) during 2015–2019
Macroeconomic Analysis	Analysis of your observations on 1,2,3 during 2015–2019
Macroeconomic Applications	How chosen macroeconomic variables were affected during 2020 pandemic?
Macroeconomic Policies	Identify two or more macroeconomic policies – fiscal and monetary undertaken by government
Macroeconomic Policy Analysis	How has the government performed in terms of the policies? Explain with reference to the policies you mentioned.
References	References

Students are provided with a peer evaluation template that is used by each team to critically evaluate other teams' presentations. This peer evaluation document allows students to be able to consider and provide critical feedback to their peers and, in the process, learn to anticipate and accept critical feedback they will need to provide and receive at their workplace. The ability to critically evaluate a peer's work is considered a successful trait of a business leader or worker. Each team must submit peer evaluations for other teams, after discussions within their groups at the of all presentations in class online synchronously.

Table 6. Peer Evaluation to be filled out at the end of each team presentation (except their own)

Peer evaluation is one of the most powerful methods of providing constructive criticism and appreciation to your peers for their work and receiving the same for your improvement. You will be doing this always at your workplace and it is good to be able to start doing this from now as this education will prepare you for a lifetime of achievements! Good luck!

You and your team will receive the same points for the presentation, and you will be reviewed by your peers using the following set of questions on a 10-point scale.

1. Identify **at least** one and up to three elements of the presentation that was/were noteworthy and why? 3 points
2. Identify **at least** one and up to three elements of the presentation that need/s improvement and why? 3 points
3. Give **at least one and up to three suggestions** as to how the presentation can be improved by you and explain how and why that can be achieved. Giving critical feedback and peer review is an important part of learning and something you will do all the time in your future profession. Hence your feedback will be valuable for the presenting team. 4 points

5.2   UDL in team presentation

Different steps in which UDL has been applied to the collaborative model of learning (Figure 1) are being discussed here. Table 1 shows the three aspects of UDL structure namely the "What", "How" and the "Why" of learning which are also represented as the engagement, representation, and expression aspects of UDL. Under UDL umbrella, the assessment matrix shows a wide variety and risk diversified portfolio of assessments for students or teams (Table 2). One aspect of that assessment matrix that has been discussed in this paper is Team Presentation. This assessment involves a few steps including self-selection process in teams by the students, ironing out team roles and responsibilities by students among team members in a particular team, preparation of team presentations using research and guidelines provided by the course instructor, team presentations and peer evaluations of team presentations. Team leaders need to coordinate activities of team members and develop leadership skills in the process. Students have a choice in self-selecting themselves in teams based on choice of country they wish to study in the course for a presentation. They need to team up with students who have a similar interest in their choice of country they want to study in for the preparation of the presentation. This gives students some flexibility in deciding with whom to work based on a common theme of interest among team members (in this case it is the country of choice). This may sometimes create unbalanced teams with little diversification where friends team up and avoid the self-selection process entirely. However, according to Weimer [17] it is best to allow students to create or self-select themselves in teams as per a common theme of interest. In this case it is the country of choice.

The work students produce in teams have a template for guidance (see Table 5) only and students or their teams are given the flexibility to produce their work using independent research in consultation with authorized data sources provided by the instructor; they are free to use visuals, data, graphs, quotes, newspaper clips, videos or any appropriate or suitable resource that are authorized and accepted in academic research as provided or approved by the course instructor. In all of this, the template of the presentation needs to be followed by the teams.

Peer evaluation is a student driven model of evaluation based on pre- determined questions that each team fills out and, in the process, helps students develop the skills of receiving and providing critical feedback to other teams. The ability to receive and provide constructive feedback is another important aspect of a business leader. Peer evaluation is a common form of evaluation at the workplace. This helps students to appreciate the importance of stakeholder feedback to improve performance in a globalized and uncertain climate, product, or service at the workplace. A potential second round of revised presentation using peer evaluation feedback to improve upon brings forth the idea of the importance of stakeholder feedback towards improvement of a product or service. This last step has not been included in the study due to lack of time on the course.

6   CONCLUSION

The UDL approach helps create a broad framework within which diverse students can learn meaningfully using several choices or alternatives embedded in the preparation of the assessments. Use of UDL in team presentation component of assessment allows students multiple options to create their presentation and to

present it and finally to be able to witness the application of in-class learning to real life situations such as a country of choice in this case. Students can learn that macroeconomics is relevant for analyzing government policies by applying in-class learning to contextual situations of specific countries. This experiential learning offers the potential to develop lifelong learners who can witness the usefulness of learning and its application going forward in their professional career. For future business leaders it becomes imperative that they realize the importance of government policy decisions for the success or failure of a nation's economic wellbeing as well as implications for the business sector. Collaborative learning through team formation and working in teams lead students to be prepared for leading and working in teams in the future as business leaders. Immersive experience of working collaboratively to apply learning for analyzing government policies helps students to anticipate how business can be impacted by government decisions. Learning through UDL inspired collaborative assessment can help in creating lifelong learners. The goal for students to complete college is to find a suitable career or job. UDL approach helps learning to become more personalized based on skills and aptitudes of students. This should enable students to learn comfortably and explore areas of study which they not only find useful but also which leverage their personal aptitudes towards skills upgrade for jobs. Hence UDL can be used as a tool to upskill students for the job market, and this could be a policy prescription from post-secondary education perspective. Since UDL is now a part of the education policy at the Federal level, more pervasive implementation of UDL will transform education at the post-secondary level to become more fair, equitable and inclusive. This will also help to build the gap between skills formation at the higher education level and the workplace by equipping the graduates with lifelong learning skills as well as transferable skills for future employability.

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8 AUTHOR

Subhadra Ganguli, Penn State University, Lehigh Valley, PA 18034, USA (E-mail: Smg6870@psu.edu; ORCID: 0000-0001-6144-0032).