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SE@T Lab

Flipped Learning: From Basics to Advanced Applications in Student-Centred Education

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Digicompass Conference

Outline

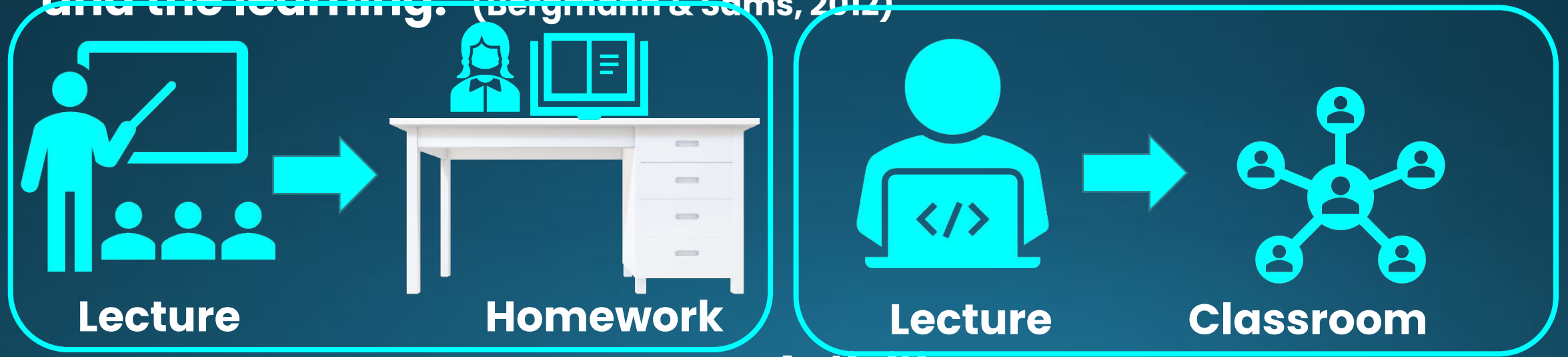
- Definitions and learning activities
- Role of the teacher & student
- Advantages & challenges
- Trends in flipped learning
- Learning theories and flipped learning

Source: Gamm

Definitions

Flipped Classroom

- ‘That which is traditionally done in class is now done at home, and that which is traditionally done as homework is now completed in class.’
- ‘Flipping the classroom is more about a mindset: redirecting attention from the teacher and putting attention on the learner and the learning.’ (Bergmann & Sams, 2012)



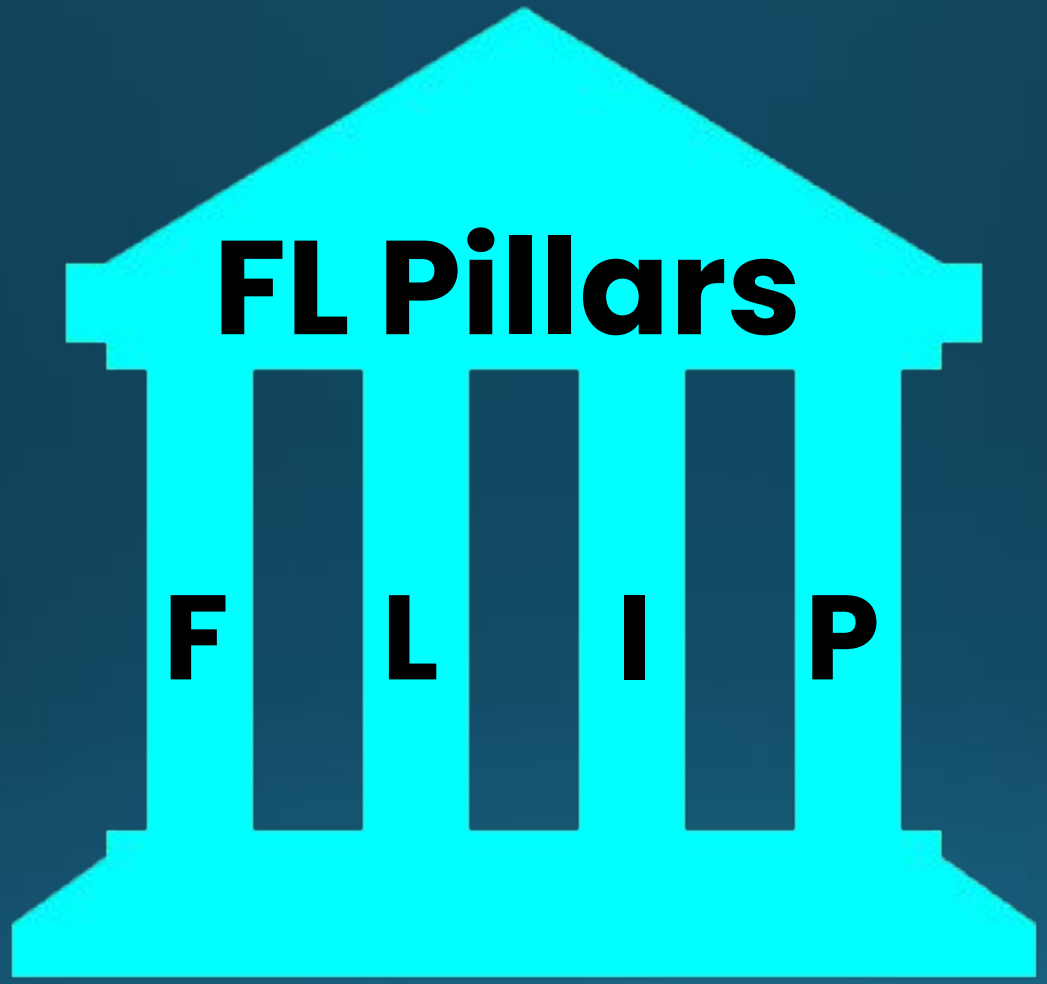
Definitions

Flipped Learning is a **pedagogical approach** in which **direct instruction** moves from the **group learning space** to the **individual learning space**, and the resulting **group space** is transformed into a **dynamic, interactive learning environment** where the **educator guides students** as they **apply** concepts and **engage creatively** in the subject matter. (Flipped Learning Network, 2014)

Description	Traditional classroom	Flipped classroom
Teacher centred	√	-
Student centred	-	√
Passive learning environment	√	-
Active learning environment	√	√
Face-to-face lecture	√	-
First phase (lecture)	In the classroom	At home
Second phase (active activities[a])	At home	In the classroom

Naing, 2023

FL Pillars



Flexible Environment

Intentional Content

Learning Culture

Professional Educators

Flipped Learning Activities

Pre-class

Learning outcomes

Learning material/tasks

In-Class

Interactive learning

Post-Class

Learning Tasks

Feedback

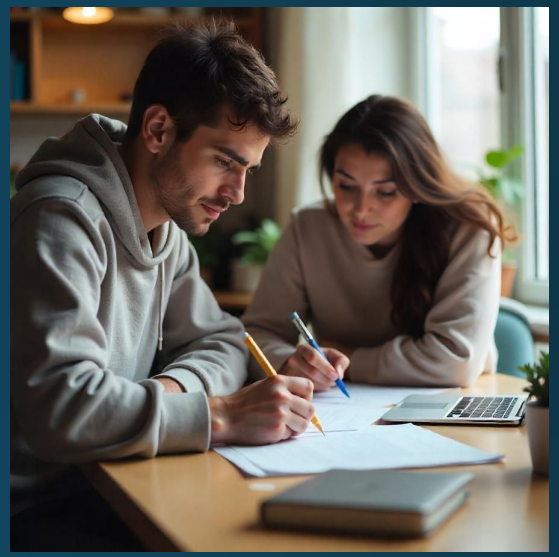
Source: Freepik

Role of the Teacher and Student in Flipped Learning

Teacher	Student
Facilitator of learning	Active participant
Designs learning activities and guides students through the learning process	Self-directed learner
Creates an environment conducive to collaboration and interaction	Engaged collaborator/communicator, effective problem-solver
Monitors and assesses	Critical thinker
Provides feedback	Reflective learner

Advantages

- Flexible methodology to meet learning outcomes/needs
- Access to varied resources
- Flexible environment and autonomy
- Increased student motivation and enthusiasm in learning
- Scaffolding in learning
- Efficient use of class time
- Social interaction
- Active learning
- Development of 21st century skills



Source: Freepik AI

Challenges

Students

- Non-engaging learning material
- Time management
- Accessibility
- Experience with teacher-led environments

Teachers

- Shift in Teaching Approach
- Time-intensive preparation
- Student accountability
- Classroom management

Overcoming challenges

Resources
For the teachers and the students

Activity
Real-world problems
Application of knowledge

Institutional Facilitation

Support
Set expectations
Ongoing student support

Evaluation
Formative assessment
Feedback

Adapted from Lo, 202

Growth Trends in Flipped

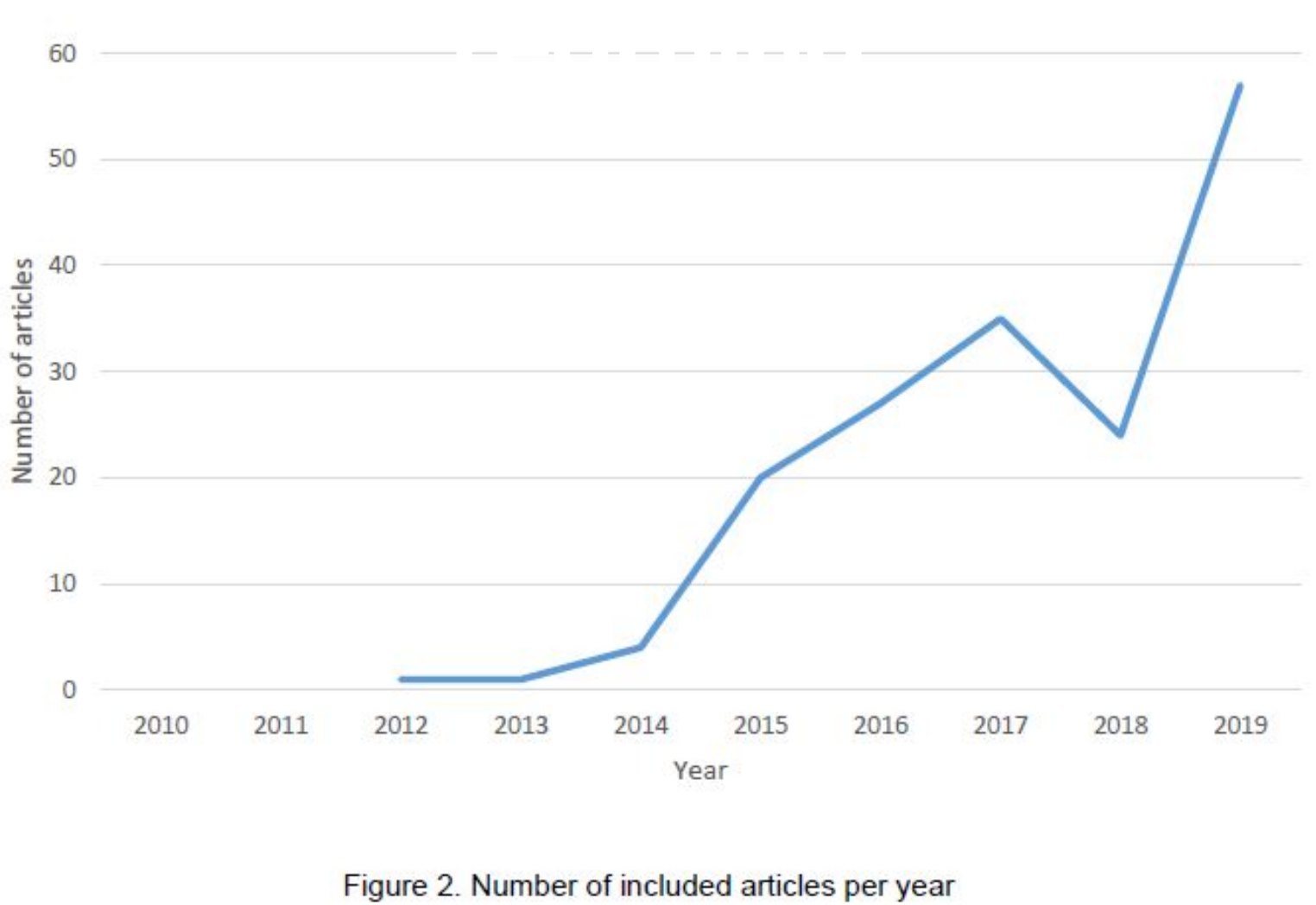


Figure 2. Number of included articles per year

Gamal, 2022

Source: Gamm

Growth Trends in Flipped Learning

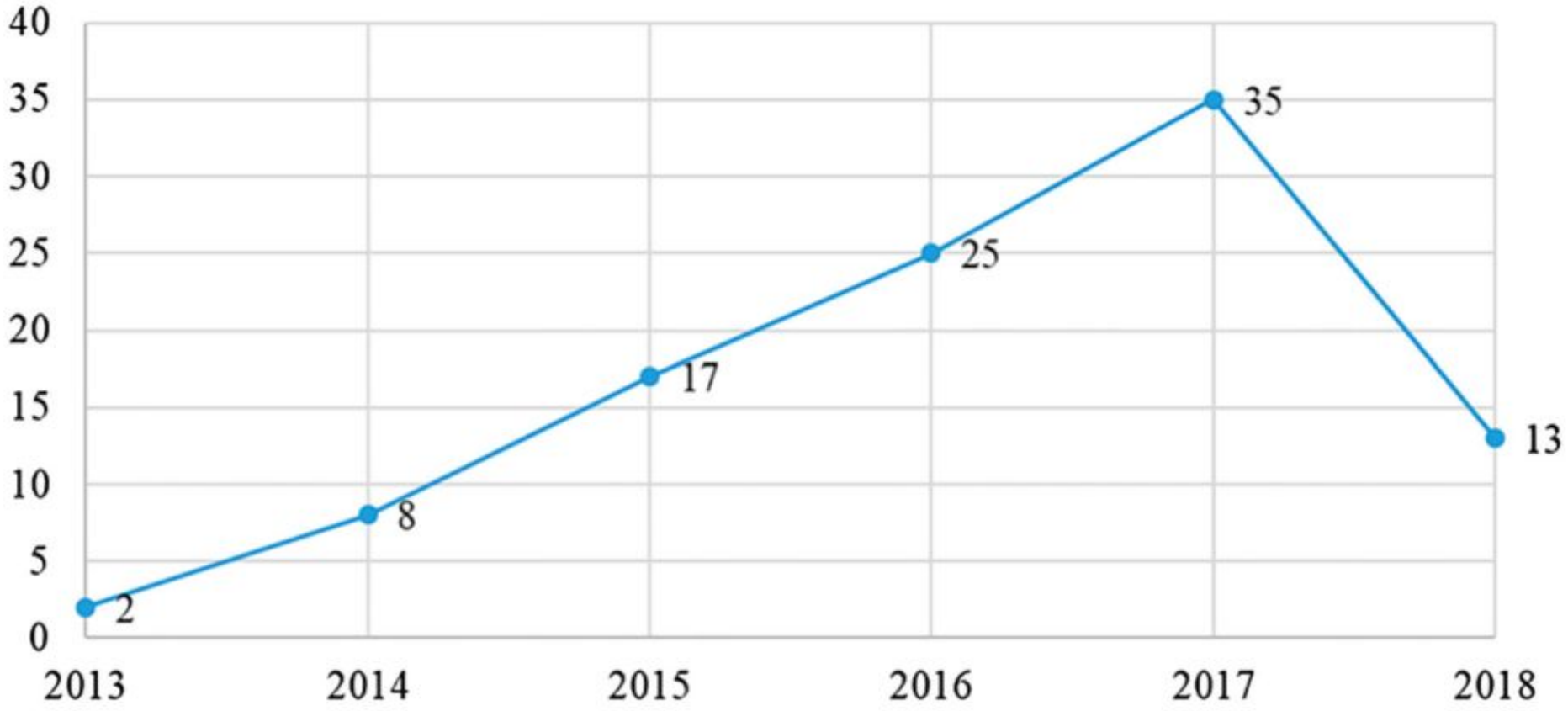


Figure 2. Distribution curve of the highly cited research related to flipped learning.

Cheng *et al*, 2022

Global Trends in Flipped Learning

Table 4. Distribution of Articles by Country and Cumulative Percentage (N= 169)

Rank	Country	n	Percentage
1	USA	49	29.9
2	Taiwan	13	7.6
	Korea	13	7.6
3	Turkey	12	7.1
4	Australia	7	3.3
5	UK	5	2.9
	China	5	2.9
6	Spain	4	2.3
7	Malaysia	3	1.7
	Indonesia	3	1.7
	Oman	3	1.7
8	Mexico	2	1.1
	Ireland	2	1.1
	Japan	2	1.1
	Pakistan	2	1.1
	India	2	1.1
	Russia	2	1.1
	UAE	2	1.1

Gamal, 2022

Source: Freepik AI

Disciplines and Subject Area

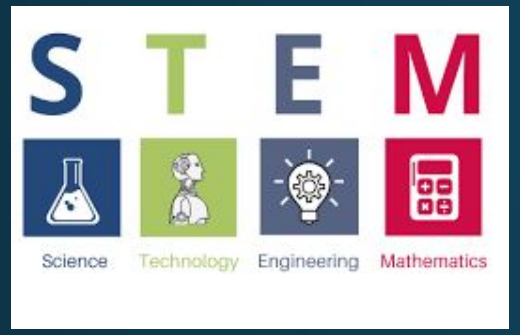


Table 3. Percentage of research fields in each period (2013–2018).

Research domains	2013–2015 ($N = 27$)	2016–2018 ($N = 73$)	2013–2018 ($N = 100$)
Engineering or computers	15%	19%	18%
Science	15%	26%	23%
Health Medical or Nursing	19%	6%	11%
Social science or social studies	37%	16%	22%
Art or design	0%	0%	0%
Languages	4%	18%	14%
Business management	4%	10%	8%
Others (review studies)	7%	3%	4%

Cheng *et al*, 2022

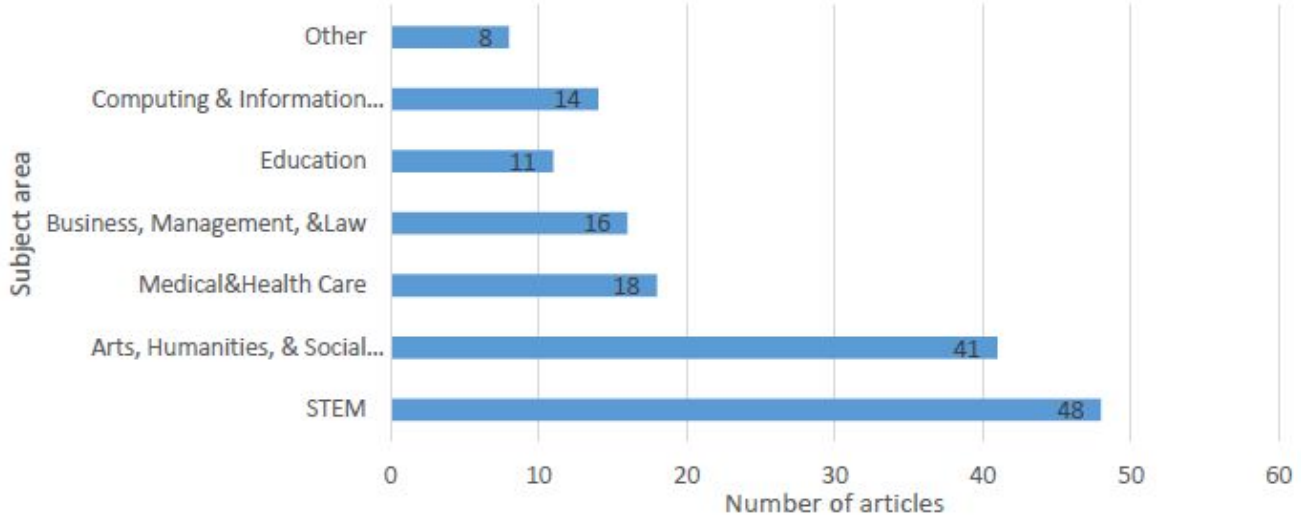
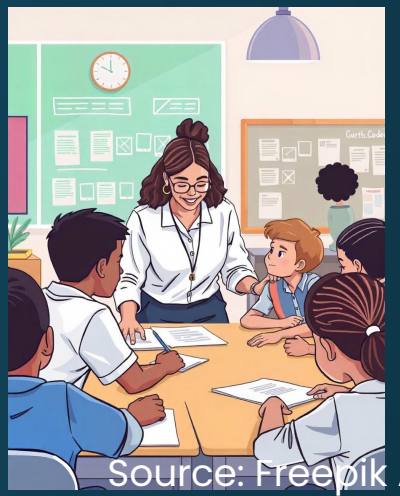


Figure 4. *Distribution of Articles among Subject Areas*

Gamal, 2022



Primary

5%

78%

Higher Education

Cheng *et al*, 2022

Flipped Learning Activities

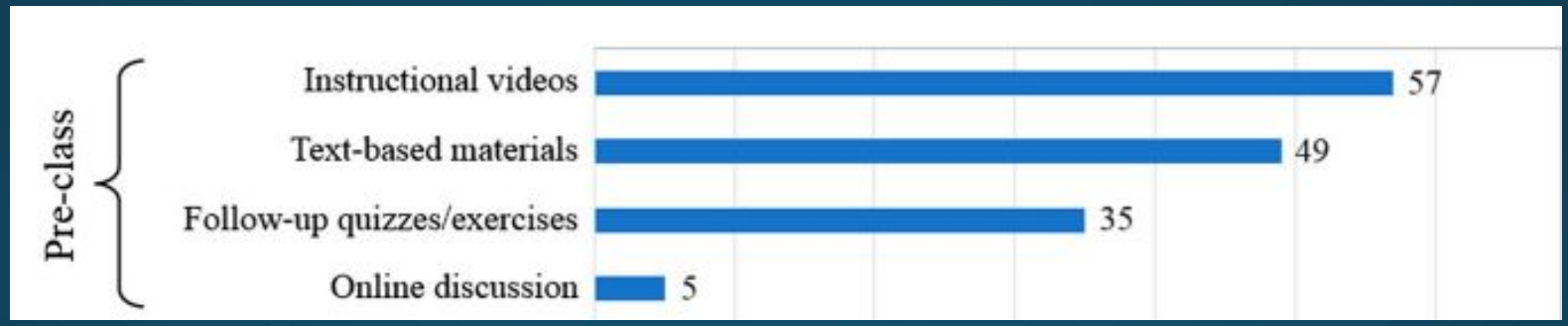
Source: Freepik AI

Pre-class

In-Class

Post-Class


Source: Freepik AI



Cheng *et al*, 2022

Table 5. Percentage of pre-class learning tasks used in each period (2013–2018).

Pre-class learning tasks	2013–2015 ($N = 27$)	2016–2018 ($N = 73$)	2013–2018 ($N = 100$)
Form of learning materials	33%	49%	45%
Learning system or player	59%	48%	51%
Online discussions	0%	0%	0%
Other (review studies)	7%	3%	4%

Lo, 2024

Flipped Learning Activities

Source: Freepik AI

Pre-class

In-Class

Post-Class

Source: Freepik AI

In-class learning strategies	2013–2015 (*N* = 27)	2016–2018 (*N* = 73)	2013–2018 (*N* = 100)
Issue discussions	52%	45%	47%
Practicing or doing exercises	19%	18%	18%
Problem-based learning	4%	8%	7%
Group projects	15%	21%	19%
Personal projects	0%	0%	0%
Gamified activities	4%	4%	4%
Peer assessment	0%	1%	1%
No research adopting mind-tool based learning or inquiry-based learning	0%	0%	0%
Other (review studies)	7%	3%	4%

Cheng *et al*, 2022

Lo, 2024

Flipped Learning Activities


Source: Gamma

Pre-class

In-Class

Post-Class

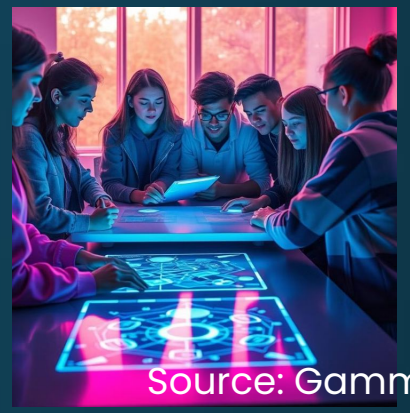
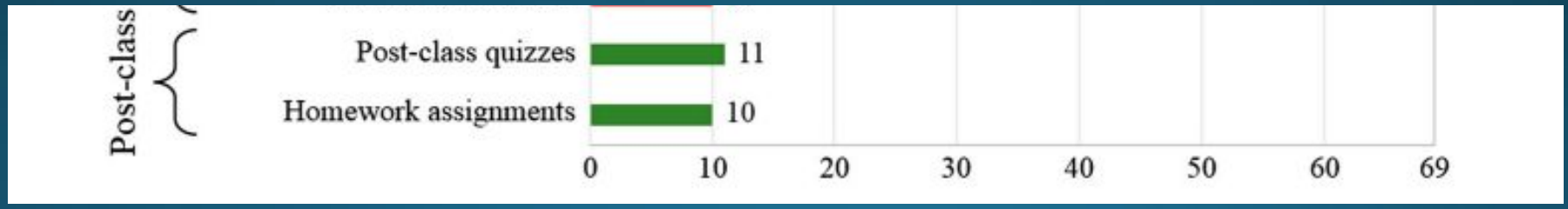

Source: Gamma

Table 8. Percentage of post-class learning tasks used in each period (2013–2018).

Post-class learning tasks	2013–2015 ($N = 27$)	2016–2018 ($N = 73$)	2013–2018 ($N = 100$)
Personal projects (e.g. reports, games, videos)	4%	21%	16%
Group projects (e.g. reports, games, videos)	26%	10%	14%
Post-course assessment	33%	7%	14%
No activity	30%	60%	52%
Other (review studies)	7%	3%	4%

Cheng *et al*, 2022



Lo, 2024

Technology and Flipped Learning

Table 8. An Excerpt of Reported Media and Technologies Classified According to Uses and Users

Technology	Used For			Used by	
	Video publication, creation, and dissemination	Learning facilitation, and course administration	Communication, collaboration, and interaction	Faculty	Student
YouTube	*			*	*
Google Classroom				*	
Instructional video	*			*	
Video Lectures	*				*
Piazza			*	*	*
Padlet	*			*	
IRS (Clicker)			*	*	
Socrative					
Kahoot					
LMS: Blackboard, Canvas, Moodle, Unisa, Openedx, Edmodo		*		*	
What's app			*	*	*
Google Hangout			*	*	*
Quizlet			*		*
Facebook			*	*	*
Mediasite	*			*	
Camtasia	*			*	
Screencast-O Matic	*			*	
Edpuzzle	*			*	

Gamal, 2022

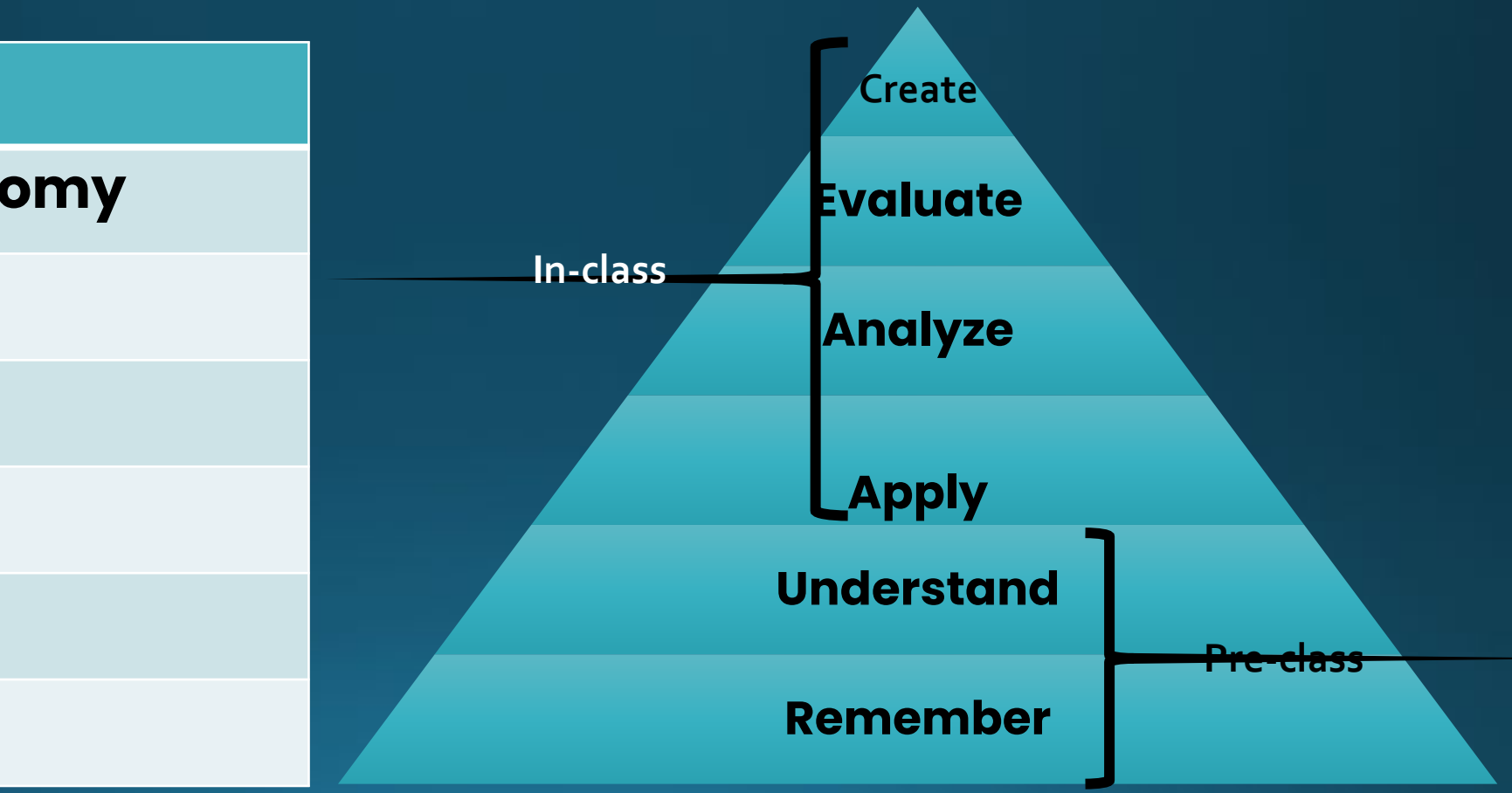
Source: Freepik A

Technology
Pedagogy

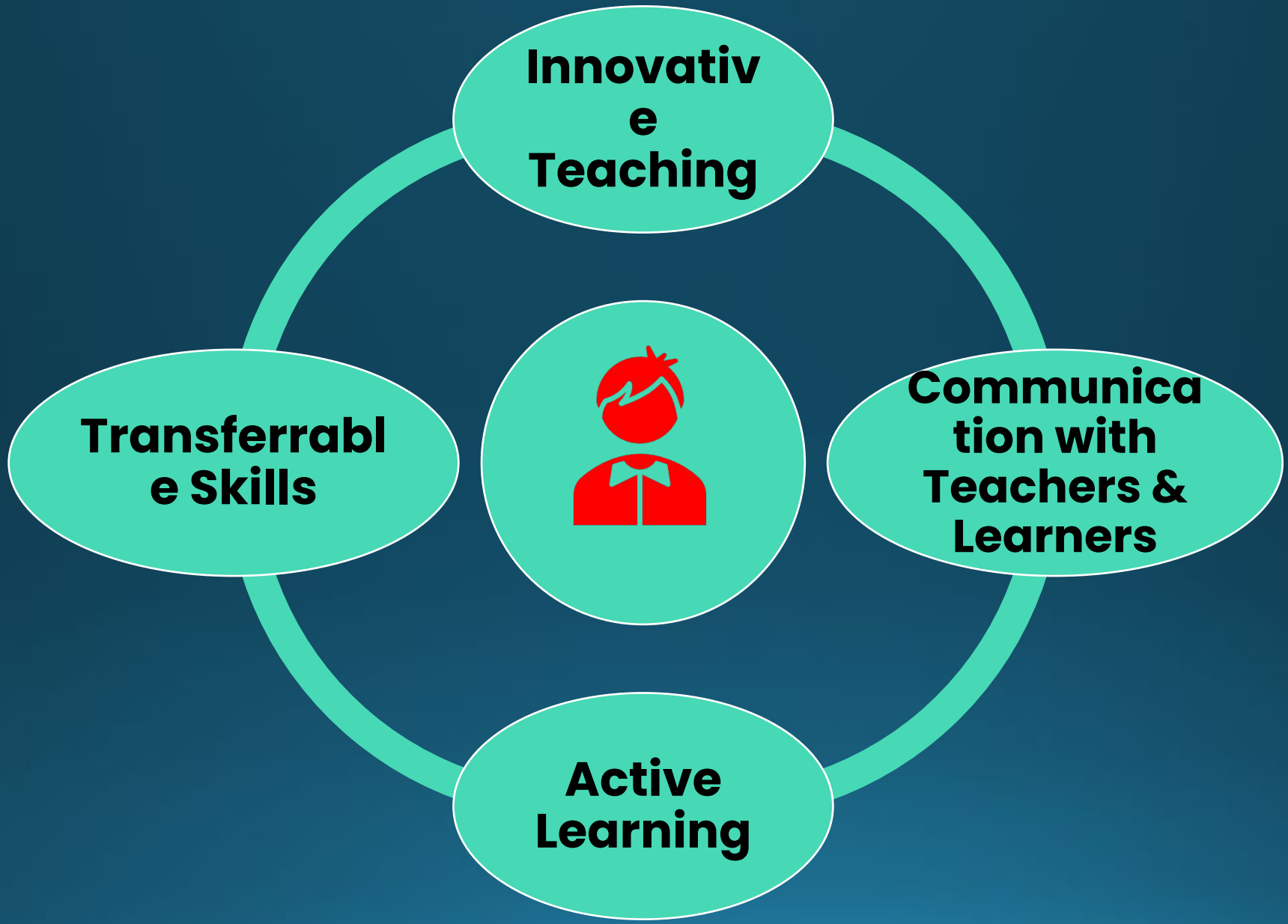
Source: Freepik A

Flipped Learning and Learning Theories

Pedagogical Theories
Bloom's Revised Taxonomy
Social Constructivism
Situated learning
Cognitive load theory
Active learning
Self-directed learning



STUDENT-CENTRED LEARNING



FLIPPED LEARNING

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Thank you!

Source: Freepik