DoI: https://doi.org/10.58537/jorangrau.2024.52.4.12

J. Res. ANGRAU 52 (4) 109-117, 2024

COMPARATIVE STUDY ON CHALKBOARD AND POWERPOINT TEACHING METHODS FOR EFFECTIVE LEARNING

SADDIKUTI PRASHANTHI and T. LAKSHMI

Department of Agricultural Extension Education,
S.V. Agricultural College, Tirupati.

Date of Receipt : 04-11-2024 Date of Acceptance : 17-12-2024

ABSTRACT

This comparative study investigates the effectiveness of traditional chalkboard and modern Power Point teaching methods in contemporary education. The study was conducted among third-year B.Sc. (Hons.) Agriculture students at Sri Venkateswara Agricultural College, Tirupati. A descriptive survey method was employed, utilizing questionnaires distributed via Google Forms, with 120 randomly selected responses analyzed using statistical tools. Results indicated that while PowerPoint presentations are perceived to offer better organization, clarity and visual aids, chalkboards are valued for their ability to stimulate interest, facilitate note-taking, and enhance student-teacher interaction. Specifically, 63.33 per cent of students found Power Point presentations well-organized and 86.67 per cent appreciated the visibility of lecture content. Conversely, 81.67 per cent of students reported better understanding through chalkboard teaching and 85.00 per cent valued the interaction it fosters. The study highlights that each method has distinct advantages: PowerPoint's multimedia capabilities and ease of updating content versus the chalkboard's simplicity and reliability. The findings suggest that an optimal teaching approach might integrate both methods to leverage their respective strengths, thereby enhancing educational quality and learning outcomes.

Keywords: Chalkboard Teaching; Power Point Presentations; Student Perceptions; Teaching Methods

INTRODUCTION

In the realm of education, the methods employed by educators to impart knowledge have evolved significantly over the years. Among the myriad of teaching techniques, the use of traditional chalkboards and modern Power Point presentations stand out as two prominent methods. This comparative study aims to explore the efficacy of these teaching tools in the context of contemporary education.

The chalkboard, also known as a blackboard, has been a staple in classrooms for centuries. Its simplicity, cost-effectiveness, and ease of use have made it a reliable tool for teachers globally. Chalkboards allow for spontaneous illustrations and a tactile learning experience, fostering direct interaction between the teacher and students. However, they also come with limitations, such as dust from chalk and the potential for reduced visibility in large classrooms.

Corresponding author E-mail: prashanthisaddikuti@gmail.com

Conversely, the advent of digital technology has introduced Power Point presentations as a popular alternative. PowerPoint, developed by Microsoft, offers a multimedia approach to teaching, incorporating text, images, videos, and animations. This method caters to diverse learning styles and can enhance engagement through visually appealing slides and interactive elements. Nevertheless, the effectiveness of Power Point is contingent on the teacher's proficiency with the software and the quality of the presentation design.

According to a study by Szabo and Hastings (2000), Power Point can enhance student attention and retention when used effectively. However, Bartsch and Cobern (2003) found that overly complex slides might detract from learning. On the other hand, research by Mayer (2009) highlights the benefits of multimedia learning, suggesting that well-designed Power Point presentations can support cognitive processes involved in learning.

In contrast, studies on traditional teaching methods underscore the importance of direct interaction and the tactile benefits of using chalkboards (Brophy, 1986). Additionally, Cline and ishi, (2006) argue that the simplicity and reliability of chalkboards can be advantageous, particularly in resource-limited settings. Chalkboard teaching emphasizes teaching methods as systematic procedures adopted by educators, while Power Point presentations can be classified under audiovisual (AV) aids, tools used to enhance the delivery of content.

Teaching method is a broad, structured plan or approach used by teachers to deliver lessons and achieve learning objectives.It's general and overarching and guides how a subject is taught.Teaching Technique as specific, concrete strategy or tactic used within a method to accomplish a particular goal. It is Narrow and focused. It's the "how-to" of implementing a method. A method is the overall approach (like using a discussion format), while a technique is a tool or action within that method (like using brainstorming exercises during the discussion).

Teaching Aids are any material or tool used to support and enhance teaching, making lessons more effective and engaging. It is a broad category which includes both traditional and modern tools. AV Aids are a subset of teaching aids that specifically use sight and/or sound to facilitate learning. It is focused on multimedia tools that appeal to the visual and auditory senses. All AV aids are teaching aids, but not all teaching aids are AV aids. For example, a chalkboard is a teaching aid but not an AV aid, whereas a video is both a teaching aid and an AV aid.

Furthermore, Power Point can increase students' engagement and bridge the gap between abstract and concrete concepts. Also, it was revealed that Power Point has no relationship with students' genders (Igwe, 2022). The comparative analysis of chalkboard and Power Point teaching methods seeks to provide a comprehensive understanding of their respective advantages and drawbacks. By evaluating their impact on various educational parameters, the study aims to inform best practices in teaching and contribute to the enhancement of educational quality.

MATERIAL AND METHODS

The study adopted a comparative and descriptive survey in which the questionnaire was sent to the students using Google forms. The B.Sc. (Hons.) Agriculture students of Sri Venkateswara Agricultural College, Tirupati were selected for the study. The components of the study were collected by thorough review of literature. The Google questionnaire was circulated in the WhatsApp group of the

Table 1. Perception of learners towards power point presentations in the class (n=120)

S.No.	Category	Frequency	Percentage
1.	Least effective	24	20.00
2.	Moderately effective	68	56.67
3.	Most effective	28	23.33

students. Out of the responses received, 120 were selected randomly for analysis. Statistical tools like mean, standard deviation, frequency and percentage were used for analysis of the collected data.

RESULTS AND DISCUSSION

The results of the study are discussed below

Perception of learners towards power point presentations in the class

Perception is the act of being able to observe and evaluate emotions based on the past experiences. the way in which the students perceive the classes though power point might significantly impact their learning. The data on perception of the students about power point presentations in the class was collected using a schedule with a five continuum of agreement. The results were analysed using mean and standard deviation and categorized into three groups which were presented in the Table 1.

It could be inferred from the above table that more than half (56.67 %) of the students find the power point as a moderately effective method of teaching followed by most effective (23.33 %) and least effective (20.00).

The moderately to most effective nature of the power point presentations as perceived by the students might be justified by the reason that the retaining capacity of students has been more with power point mode

Table 2. Students' responses to chalkboard and power point (n=120)

S.No.	Statements	Chalkboard		Power point	
		Frequency	Percentage	Frequency	Percentage
1.	Lectures were well organized and structured	44	36.67	76	63.33
2.	Clarity of the contents/diagram	32	26.67	88	73.33
3.	Visibility of lecture contents	16	13.33	104	86.67
4.	Reproducibility of text and diagram	36	30.00	84	70.00
5.	Stimulates interest in subject	88	73.33	32	26.67
6.	Integration of text with figures	44	36.67	76	63.33
7.	Able to take notes and copy diagrams	64	53.33	56	46.67
8.	Better understanding of topic	98	81.67	22	18.33
9.	Overall satisfaction and effectiveness	80	66.67	40	33.33
10.	Demonstration of practical aspects	36	30.00	84	70.00
11.	Student - teacher interaction	102	85.00	18	15.00

of teaching. The results seek support from the findings of Ghimire and Joshi (2023) who stated that students memory was improved which in turn enhanced their overall perception on Power Point use. The findings of Ghimire and Joshi (2023) also revealed that notable percentage (37.8%) of students strongly agreed and 58.30 per cent of students agreed that the lesson more interesting with Power Point.

Comparison of students' responses to chalkboard and power point

The students' responses on different components were collected, analysed and presented in the Table 2.

The results from Table 2 can be interpreted as nearly two-thirds (63.33 %) of the students responded that lectures were well organized and structured in power point presentation. Nearly one-fourth (73.33 %) of the students felt that the clarity of contents/ diagram was more in power point. Majority (86.67 %) of the respondents felt that visibility of lecture contents was more in power point and 70.00 per cent responded that reproducibility of text and diagrams was more using power point. On contrary to the above findings, 73.33 per cent of students felt that lessons through chalkboard method of teaching stimulates interest in the subject. The integration of text with images is possible through power point according to 63.33 per cent of students and more than half (53.33 %) revealed that chalkboard provides ability to take notes and copy diagrams.Chalkboard provides better understanding of the topic as responded by majority (81.67 %) and also the overall satisfaction and effectiveness (66.67 %)was more in chalkboard teaching. Demonstration of practical aspects was more effective in power point as opined by 70.00 per cent and student-teacher interaction was more in chalkboard according to 85.00 per cent of the students.

Advantages of Chalk and board method of teaching

The response of the students regarding advantages of chalk and board method of teaching are collected on a three-point continuum. The results are analysed and organized in the Table 3.

Table 3. Students' responses on advantages of chalk and board method of teaching

(n=120)

S.No.	Statements	Agree		Undecided		Disagree	
		No.	%	No.	%	No.	%
1.	No need of technical support	90	75.00	4	3.33	26	21.67
2.	Taking notes is possible	112	93.34	4	3.33	4	3.33
3.	Students are visible and thus their responses can be judged	92	76.67	20	16.67	8	6.67
4.	Presentation remains on board	86	71.67	20	16.67	14	11.67
5.	Facial expressions of teacher can be seen	96	80.00	18	15.00	6	5.00
6.	Step by step teaching	114	95.00	6	5.00	0	0.00
7.	More involvement of teacher	102	85.00	16	13.33	2	1.67

The finding from table 3 reveal that step by step teaching is the major advantage of chalk and boardmethod of teaching as opined by majority (95.00 %) of the respondents followed by taking notes is possible (93.34 %), more involvement of teacher (85.00 %) and facial expressions of teacher can be seen (80.00 %).

Research underscores the effectiveness of the chalk-and-board teaching method in fostering structured learning and active student engagement. Sequential presentation on the board aids cognitive processing and retention (Nouri and Shah, 2020), while handwritten note-taking, as highlighted by Mueller and Oppenheimer (2014), enhances understanding through active summarization. The teacher's physical presence at the board promotes interaction and motivation, positively impacting learning outcomes (Grossman *et al*., 2017). Additionally, non-verbal cues like gestures and facial expressions strengthen comprehension and emotional connection with the material (Argyle, 2017). These factors collectively affirm the enduring value of the chalk-and-board method in education, even amidst technological advancements.

Disadvantages of Chalk and board method of teaching

The response of the students regarding disadvantages of chalk and board teaching are collected on a three-point continuum. The results are analysed and organized in the Table 4.

The major disadvantage of chalkboard method of teaching as listed by majority (83.33 %) of the student respondents was less no. of diagrams, flow charts and animation followed by difficulty in understanding the handwriting (78.33%), non-availability of contents for further reference(76.67 %) and distraction of students after teacher faces board (75.00 %).

While the chalkboard method has its strengths, research highlights several limitations in addressing modern educational

Table 4. Students' responses on disadvantages of chalk and board method of teaching

(n=120)

S.No.	Statements	Agree		Undecided		Disagree	
		No.	%	No.	No.	%	No.
1.	Difficulty in understanding the handwriting	94	78.33	14	11.67	12	10.00
2.	Distraction of students after teacher faces board	90	75.00	16	13.33	14	11.67
3.	Non-availability of contents for further reference	92	76.67	20	16.67	8	6.67
4.	Writing and cleaning on board takes time	84	70.00	12	10.00	24	20.00
5.	Usage of short forms is more	73	63.33	20	16.67	24	20.00
6.	Less no. of diagrams, flow charts and animation	100	83.33	6	5.00	14	11.67
7.	Limited content of lecture	88	73.33	14	11.67	18	15.00

needs. Mayer (2009) emphasizes the importance of visual aids, such as diagrams and animations, for visual learners and illustrating complex concepts - features that chalkboards often lack. Handwriting on chalkboards can also be hard to read, particularly for those with visual impairments, impacting engagement and comprehension (Lee *et al*., 2011). Additionally, the temporary nature of chalkboard content restricts students' ability to review material outside the classroom, a critical factor for deeper learning and retention, as noted by Penuel *et al*. (2007). Facing the chalkboard during lectures can further reduce teacher-student interaction and engagement, as Evertson and Weinstein (2006) highlight the importance of eye contact and connection in maintaining focus. These limitations suggest that while the chalkboard method has traditional merits, it may fall short in meeting the diverse and evolving needs of contemporary education.

Advantages of power point method of teaching

The response of the students regarding advantages of power point teaching are collected on a three-point continuum. The results are analysed and organized in the Table 5.

From the Table 5, it could be inferred that pictures, videos, animations etc., can be added was the major advantage responded by 96.67 per cent of students followed by multimedia can be used (93.33 %), the presentation can be updated (85.00 %) and no hand writing issues (81.67 %).

Research highlights the growing preference for multimedia presentations in education due to their ability to improve learning outcomes through visual stimulation, engagement and clarity. Studies by Mayer (2009) and Clark and Mayer (2016) demonstrate that incorporating visuals such as pictures, videos, and animations improves comprehension and retention by aiding information processing. Multimedia also fosters higher student engagement and motivation through interactive learning experiences

Table 5. Students' responses on advantages of power point method of teaching

(n=120)

S.No.	Statements	Agree		Undecided		Disagree	
		No.	%	No.	%	No.	%
1.	Pictures, videos, animations etc., can be added	116	96.67	0	0.00	4	3.33
2.	Multimedia can be used	112	93.33	4	3.33	4	3.33
3.	No handwriting issues	98	81.67	10	8.33	12	10.00
4.	Humour, stories and quotes can be added	84	70.00	8	6.67	28	23.33
5.	Numerous illustrations are possible	90	75.00	18	15.00	12	10.00
6.	It is possible to update the presentation.	102	85.00	4	3.33	12	10.00
7.	Good retention of knowledge	92	76.67	24	20.00	4	3.33

(Tindall-Ford *et al*., 2016). Unlike static traditional methods, multimedia offers flexibility for updates, corrections, and adaptation to diverse learning needs, as emphasized by Li and Kirkup (2007). Additionally, multimedia eliminates issues of handwriting legibility, presenting information clearly and reducing cognitive load (Merrill, 2002). These advantages position

multimedia as an effective and versatile tool for modern education.

Disadvantages of power point method of teaching

The response of the students regarding advantages of power point teaching are collected on a three-point continuum. The results are analysed and organized in the Table 6.

The results from Table 6 conclude that 95.00 per cent of students responded that the main disadvantage of power point teaching was many times, it appears that the faculty is merely reading the content followed by teacher will be in a hurry to read and finish the slide (93.33 %), the quick pace and darkness make it impossible to take notes (88.33 %) and frequent electricity or technical errors (83.33 %).

While Power Point presentations offer numerous benefits, research highlights several potential drawbacks if not used judiciously. Gurung (2005) notes that merely reading slides can reduce interaction and lead to passive learning, which diminishes retention and understanding. Additionally, rushing through slides to fit within time constraints can result in information overload, hindering comprehension (Hohenstein *et al*., 2018). Dimmed lighting,

Table 6. Students' responses on disadvantages of power point method of teaching

(n=120)

S. No.	Statements	Agree		Undecided		Disagree	
		No.	%	No.	%	No.	%
1.	Many times, it appears that the faculty is merely reading the content.	114	95.00	2	1.67	4	3.33
2.	Teacher will be in a hurry to read and finish the slide	112	93.33	6	5.00	2	1.67
3.	More information on single slide often confuses the students	96	80.00	20	16.67	4	3.33
4.	The quick pace and darkness make it impossible to take notes.	106	88.33	12	10.00	2	1.67
5.	Faculty will be unable to continue the lecture after ppt failure	94	78.33	14	11.67	12	10.00
6.	The PowerPoints are poorly constructed and unreadable.	78	65.00	30	25.00	12	10.00
7.	Less attention due to darkness	94	78.33	18	15.00	8	6.67
8.	Frequent electricity or technical errors	100	83.33	20	16.67	0	0.00

often required for slide visibility, can impede effective note-taking—a critical aspect of learning, as emphasized by Peverly (2006). Furthermore, reliance on technology introduces risks of technical issues, which can disrupt lessons and reduce instructional time (Clark and Mayer, 2016). These challenges underscore the importance of integrating Power Point presentations thoughtfully, prioritizing active engagement, appropriate pacing, conducive environments for note-taking, and robust technical support to maximize their effectiveness in education.

CONCLUSION

In contemporary education, balancing traditional methods like chalkboard teaching with modern approaches such as multimedia presentations is crucial for optimizing learning outcomes. Chalkboard teaching fosters structured communication and direct interaction, though it is limited by challenges such as handwriting legibility (78.33%), difficulties in illustrating complex concepts (83.33%), and the transient nature of content (76.67%). Multimedia presentations, including Power Point, enhance engagement through dynamic visuals (96.67%) and flexibility (85.00%) but risk promoting passive learning when slides are over-relied upon (78.33%), rushed (93.33%), or presented in note-taking-unfriendly conditions (88.33%).

A balanced approach integrates multimedia's interactive and visual strengths with the clarity and personal engagement of traditional methods. Educators should focus on active learning strategies, professional development for effective multimedia use, and addressing accessibility and technological challenges. Institutions must prioritize robust technological infrastructure to ensure seamless delivery and minimize disruptions.

Future research should explore the effectiveness of varied teaching methods across contexts, with student feedback guiding instructional practices. By combining innovation with foundational teaching principles, educational institutions can foster inclusive, engaging environments that equip students for future challenges.

REFERENCES

Argyle, M. 2017. Bodily communication (2nd ed.). Routledge. Bartsch, R. A. and Cobern, K. M. 2003. Effectiveness of PowerPoint presentations in lectures. Computers & Education. 41(1): 77-86.

Brophy, J. 1986. Teacher Influences on Student Achievement. American Psychological Association.

Clark, R. C. and Mayer, R. E. 2016. e-Learning and the science of instruction: Proven guidelines for consumers and designers of multimedia learning (4th ed.). Wiley.

Cline, H. F. and Ishi, M. A. 2006. The role of traditional teaching methods in modern education. Journal of Educational Psychology. 98(2): 195-208.

Evertson, C. M. and Weinstein, C. S. 2006. Handbook of classroom management: Research, practice, and contemporary issues. Lawrence Erlbaum Associates.

Ghimire, S.K. and Joshi, P. 2023. Students' Perception on Power Point Use in Classroom. Journal of Balkumari College. 12(1): 83-87.

Grossman, P., Compton, C., Igra, D., Ronfeldt, M., Shahan, E. and Williamson, P. 2017. Teaching practice: A cross-professional perspective. Teachers College Record. 119(5): 1-41.

Gurung, R. A. R. 2005. How do students really study (and does it matter)? Teaching in higher education. 10(3): 363-377.

Hohenstein, J., Pieschl, S. and Goguadze, G. 2018. In search of the "why" of learning: The role of goal-setting, feedback, and self-regulation in educational settings. Educational Psychology Review. 30(3): 1-28.

Igwe, G. M.2022. Undergraduate Students' perception and Attitude toward the use of PowerPoint for Lecture Delivery in Tertiary Institution. Social Sciences and Education Research Review, 9(2), 21-28.

Lee, J., Bostic, J. H. and Lee, J. 2011. The impact of lecture note-taking skills on academic performance. Accounting Education. 20(6): 547-560.

Li, L. and Kirkup, G. 2007. Context, communication and collaboration: Knowledge construction in a multimedia-supported learning environment. Interactive Learning Environments. 15(1): 79-92.

Mayer, R. E. 2009. Multimedia learning (2nd ed.). Cambridge University Press.

Merrill, M. D. 2002. First principles of instruction. Educational Technology Research and Development. 50(3): 43-59.

Mueller, P. A. and Oppenheimer, D. M. 2014. The pen is mightier than the keyboard: Advantages of longhand over laptop note taking. Psychological Science. 25(6): 1159-1168.

Nouri, J. and Shah, S. 2020. Impact of whiteboard and PowerPoint presentations on students' performance: An empirical study. International Journal of Education and Development using Information and Communication Technology. 16(2): 23-37.

Penuel, W. R., Boscardin, C. K., Masyn, K. and Crawford, V. M. 2007. Teaching for understanding: The complex nature of classroom interactions in literacy and mathematics. Educational Assessment, Evaluation and Accountability. 19(2): 99-113.

Peverly, S. T. 2006. The importance of handwriting speed in adult writing. Developmental Neuropsychology. 29(1): 197-216.

Szabo, A. and Hastings, N. 2000. Using IT in the undergraduate classroom: Should we replace the blackboard with PowerPoint? Computers & Education. 35(3): 175-187.

Tindall-Ford, S., Chandler, P. and Sweller, J. 2016. When two sensory modes are better than one: A review of the effects of audio-visual presentation on learning. Educational Psychology Review 28(3): 459-474.

Prashanthi S and Lakshmi T. 2024. Comparative study on chalkboard and power point teaching methods for effective learning. The Journal of Research, ANGRAU. Vol. 52 (4): 109-117