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Volume 2
Issue 2

December, 2025

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Cambodian Journal of Educational and Social Sciences (CJESS)
Vol. 2, No. 2, December 2025, DOI: <https://doi.org/10.69496/cjess.v2i2>
E-ISSN 3007-2328, P-ISSN: 3007-4649

Vol. 2 No. 2 (2025): The Cambodian Journal of Educational and Social Sciences (CJESS)

Editorial Team

The Cambodian Journal of Educational and Social Sciences (CJESS), Cambodian

Issue summary

This is the second issue of the Cambodian Journal of Educational and Social Sciences (CJESS) in 2025. This issue has six articles, including one editorial article, two research articles, and three review articles. The articles are about educational fields, English language education, and social sciences. CJESS welcomes original research articles, review articles, and book reviews. CJESS publishes two issues a year, in June and December, and the authors are welcome to submit their articles year-round. However, authors must notice that each article needs at least three months from submission to publication. Authors need to [register](#) and follow the instructions to submit articles to CJESS.

Message from Head of Advisory Board



Dear colleagues and readers,

Greetings for the second issue of the Cambodian Journal of Educational and Social Sciences (CJESS) in 2025. As the Head of the Advisory Board, I am still very honored to support this new platform dedicated to advancing interdisciplinary research in education and social sciences.

CJESS aims to publish high-quality, peer-reviewed articles that address key challenges and promote sustainable development in Cambodia and beyond. Our goal is to establish a cooperative environment where ideas and advancements can be shared to positively impact society.

We appreciate your interest and support. We are excited for your input and participation.

Best regards,

Asst. Prof. Dina Pen, PhD

Head of Advisory Board

The Cambodian Journal of Educational and Social Sciences (CJESS)

Asst. Prof. Dina Pen is the head of the library and assistant dean at the Faculty of Social Science, Svay Rieng University. Besides teaching and research, he is a reviewer for well-known journals and publishers, i.e., SAGE, IGI Global, and Luzy Saber. He holds a PhD in Political Science, and his research covers women's political participation, academic staff motivation, and teaching and learning. He contributes to several educational projects, including EMMAAsia 2014, Eurasia Foundation, HR4Asia, CALOHEA, and HEIP.

Message from Founder and Editor-in-Chief



Through personal observation and empirical evidence, I acknowledge that research in Cambodia lags behind that of other countries, including its neighboring ones. As a result, it is very critical to encourage and support research and publication in our country. This is the second issue of 2025, and we have been working very hard to make this issue possible in the scholarly cycle. Thus, on behalf of all CJESS members, I would like to take this opportunity to thank the editorial team members, reviewers, authors, and all other contributors for their essential inputs in this issue.

Kind regards,

Sereyrath Em, PhD

Founder and Editor-in-Chief

The Cambodian Journal of Educational and Social Sciences (CJESS)

*Dr. Sereyrath Em is a Cambodian government teacher of English with a higher education degree, a university lecturer, and an educational researcher with 19 years of experience in teaching, instructing, and lecturing. In addition, he holds three master's degrees: an MA in TESOL, an MA in Education, and an MBA, and he holds two doctoral degrees: a PhD in Educational Science and a PhD in Educational Administration. Moreover, he is also working hard toward his third PhD in Cooperative Education at Suranaree University of Technology, Thailand. Moreover, he is also doing a Doctor of Laws majoring in International Law at Pannāsāstra University of Cambodia (PUC), Cambodia. Besides, he serves as an Editor at the Cambodian Journal of Educational Research (CJER) and is the Founder and Editor-in-Chief of the Cambodian Journal of Educational and Social Sciences (CJESS). Additionally, he is also an editor for Frontiers in Education and Psychology, where he has edited 14 articles and is editing five more articles. Likewise, he is also an editor for IGI Global, where he is editing two edited books entitled “**Cultural and Political Impacts on Educational Leadership in ASEAN**” and “**Student Enrollment and Retention Strategies to Reduce Dropout in Higher Education**.” Noticeably, he also serves as a reviewer for many other well-known journals and publishers such as Cogent Education, MDPI, Taylor & Francis, Springer Nature, and Palgrave Macmillan, among other Scopus-indexed outlets. So far, he has published around 100 scholarly pieces in highly reputable journals and publishers.*

The Mission and Vision of The Cambodian Journal of Educational and Social Sciences (CJESS)

1. Mission

To provide a dynamic platform for collecting, exchanging, and advancing knowledge in educational and social sciences through rigorous research, quality publication, fostering intellectual dialogue, and supporting evidence-based policymaking and sustainable development initiatives.

2. Vision

To be a leading academic and scientific journal, nationally and internationally accredited and recognized, that drives innovation and transformative change in educational and social sciences, contributing to sustainable development and societal progress in Cambodia and beyond.

Articles in Volume 2, Issue 2, December 2025

No.	Titles	Types	Authors	Pages
1.	Exploring experimental research: Methodologies, designs, and applications across disciplines	Editorial	1. Sereyrath Em	1-8
2.	The effects of social media on violence and aggressive behavior among adolescents: A case study of the capital city and a province	Research article	1. Samphoas Chien, 2. Kai-Lih Liu, 3. Bunnak Poch	9-34
3.	Disability inclusive education in Cambodia: Current barriers and opportunities	Research article	1. Jennifer Byrne	35-51
4.	Introductory note on the intended meaning of public accountability and the influence of information and communication technologies	Review article	1. Udam Prang	52-63
5.	ICT adoption in supporting teachers' instruction in higher education: A review of benefits and challenges	Review article	1. Chhayna Cheng 2. Pheara Khy	64-82
6.	The integration of English language teaching with environmental sustainability: A comprehensive review of pedagogical strategies and global impacts	Review article	1. Sovanna Huot 2. Sereyrath Em	83-94

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Exploring experimental research: Methodologies, designs, and applications across disciplines

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Article info

Article history

Received: March 07, 2024

Revised: April 26, 2025

Accepted: July 10, 2025

Keywords

Causal inference

Experimental research

External validity

Internal validity

Research designs

Article type

Editorial article

Abstract

Experimental research is a primary scientific method used to elucidate cause-and-effect correlations between variables in diverse fields. Specifically, this paper outlines the essential characteristics of experimental research, encompassing variable manipulation, controlled settings, random assignment, and precise measurement procedures to enable causal inferences. Moreover, the paper clarifies many experimental designs, including randomized controlled trials, true experimental designs, quasi-experimental designs, and single-case designs, each adapted to certain research contexts. Subsequently, the paper delineates the procedural processes for doing experimental research, underscoring the significance of methodological rigor from study design to result interpretation. Furthermore, it outlines the possible challenges to internal and external validity, emphasizing the importance of addressing confounding factors to ensure strong experimental results. In addition, the paper examines the timing of pre-tests and post-tests, the complexities of experimental design, and emerging trends such as internet-based experiments and ex post facto research. Finally, this paper seeks to furnish scholars with a detailed comprehension of experimental inquiry through an extensive analysis of research procedures, designs, and applications across several academic fields.

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1. Introduction

Experimental research is a scientific method used to investigate cause-and-effect relationships between variables (Frissen & Evans, 2024; Sturmberg & Marcum, 2024). In experimental research, the researchers manipulate one or more independent variables to observe the effect on a dependent variable, while controlling for extraneous variables that could influence the results (Cohen et al., 2017; Mattila et al., 2021).

Experimental research is characterized by key features such as the manipulation of independent variables, control of extraneous variables, random assignment of participants, and the establishment of cause-and-effect relationships (Frissen & Evans, 2024; Rauteda, 2025). Below are more detailed explanations.

Manipulation of variables: The term “manipulation of variables” refers to the process by which a researcher purposefully alters or manipulates various independent variables in order to examine the effect that these changes have on the dependent variable (Thomas, 2021). Because of this alteration, researchers are able to determine the causal relationship (Van der Stede, 2014).

Controlled conditions: In order to guarantee that the outcomes of the experiment are not influenced by any extraneous variables, experimental research is carried out under controlled settings (Street, 1995). It is possible for researchers to isolate the effects of the independent variable on the dependent variable if they adjust for these variables (Ross & Morrison, 2013).

Random assignment: The participants in experimental research are often randomized to various groups by a random assignment process (Shadish et al., 2008). This is done to ensure that each group is comparable at the beginning of the study before the experiment begins (Edgington, 1985). According to Rogers and Revesz (2019), random assignment is an effective method for reducing the impact of individual variations and prior biases.

Measurement of variables: Evaluation of the relationship between the variables in experimental research, it is necessary to measure both the independent and dependent variables in order to evaluate the relationship between them (Sigall & Mills, 1998). Accurate data collection is ensured by the use of measurement tools that are both valid and trustworthy (Bhandari, 2022).

Causal inferences: One of the fundamental objectives of experimental research is to determine the causal linkages that exist between the variables being studied (Rutter, 2007). In order for researchers to draw conclusions regarding the nature of the link between the variables, they must first manipulate the independent variable and then observe the effect that this manipulation has on the dependent variable, all the while controlling for any extraneous variables (Kuang et al, 2020).

Accordingly, Leppink (2019) noted that research that is conducted through experimentation is utilized extensively in a variety of sectors, including psychology, education, medicine, and the natural sciences. Researchers are able to put hypotheses to the test, make predictions, and contribute to our understanding of how variables interact with one another and influence behavior, outcomes, or phenomena.

2. Randomized controlled trials (RCTs)

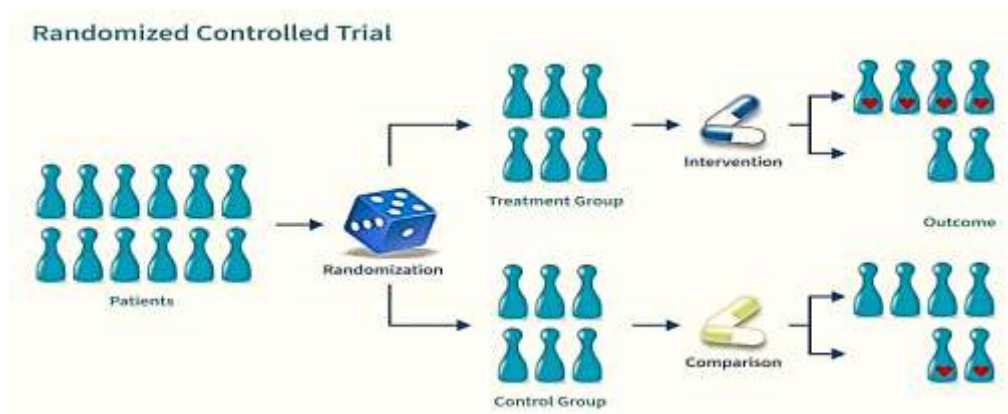


Figure 1. Randomized controlled trials (RCTs). Source: Simkus (2024).

Explanation: Experimental designs known as randomized controlled trials (RCTs) involve randomly assigning people to various groups. In these investigations, at least one group receives the intervention or treatment that is being examined, while another group acts as a control. According to Ross and Morrison (2013), random assignment helps to ensure that the groups are comparable, which in turn enables researchers to draw conclusions about the effects of the intervention based on causality that they have established.

Example: Students are randomly assigned to either an experimental group, which is given Method A, or a control group, which is given Method B, in a study that compares the efficacy of two different teaching approaches for enhancing students' mathematical skills. After that, the results of the math tests are compared between the two groups in order to evaluate the effectiveness of the instructional strategies.

3. Designs in educational experiments

Explanation: Various experimental designs are utilized in educational research to investigate the efficacy of various teaching approaches or interventions. This word refers to the various experimental designs that are utilized. The level of control that these designs have on the variables and their capacity to draw conclusions about causal relationships are both different (e.g., Chan et al., 2021).

Example: Randomized controlled trials, quasi-experimental designs, and single-case designs are examples of the types of experimental designs that are frequently utilized in educational research programs.

4. True experimental designs

Explanation: The true experimental designs entail randomly allocating people to various groups and altering the independent variable in order to evaluate the influence that it has on the variable that is being studied (the dependent variable). According to Ross and Morrison (2013), these designs make it possible for researchers to establish links between causes and effects.

Example: Students are randomly assigned to either an experimental group, which is given the new way of instruction, or a control group, which is given the traditional style of instruction, in a study that investigates the impact of a new teaching approach on reading comprehension. Following this, the scores of both groups are compared with regard to their reading comprehension.

5. Quasi-experimental designs

Explanation: The difference between quasi-experimental designs and true experimental designs is that the former do not include random assignment to groups. According to Ross and Morrison (2013), individuals are not randomly assigned to groups but rather are randomized to groups based on certain qualities or conditions.

Example: In a study that investigates the efficacy of a tutoring program for enhancing academic performance, it is possible to compare the academic performance of students who willingly participate in the program (the treatment group) with the performance of students who do not participate in the program (the control group). Random assignment is not possible because participants choose their own groups at the beginning of the study.

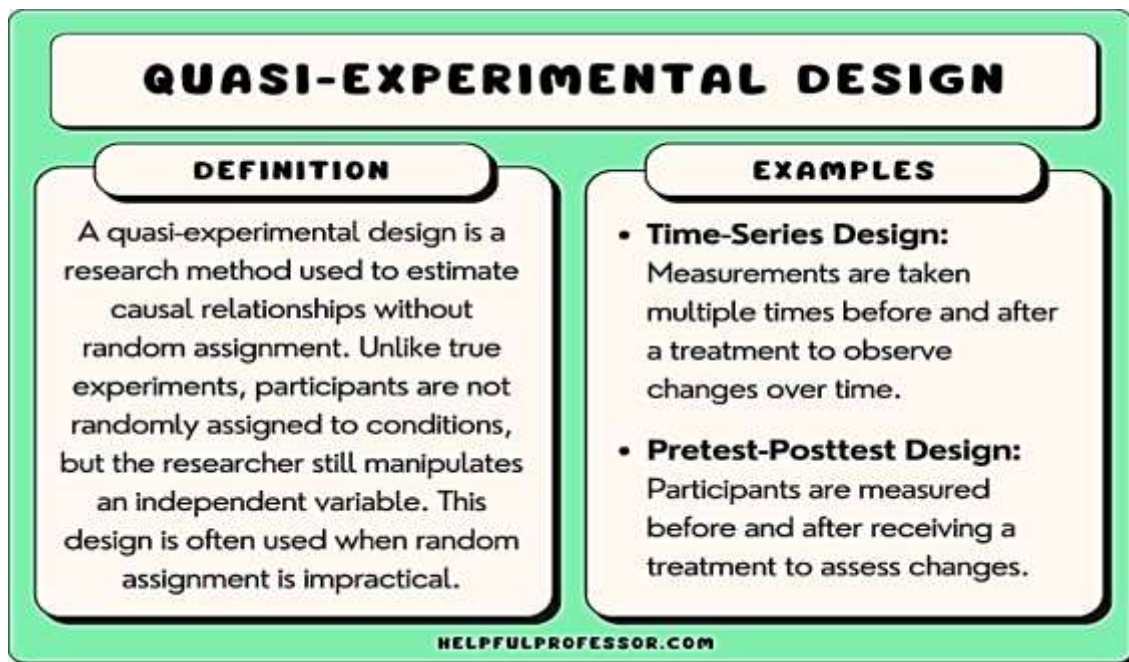


Figure 2. Quasi-experimental designs. Source: Cornell (2024).

6. Single-case ABAB design

Explanation: In the field of applied behavior analysis, one sort of experimental design that is utilized is known as the single-case ABAB design. It entails alternating between baseline phases (A), in which the intervention is not applied, and intervention phases (B), in which the intervention is implemented, in order to evaluate the effects of the intervention (Kazdin, 2021).

Example: An investigation of the efficacy of a behavior modification program for reducing disruptive behaviors in a student might involve alternating between periods of baseline observation (no intervention) and intervention implementation. This would indicate that the program is effective in reducing disruptive behaviors. It is possible for researchers to determine whether or not the intervention results in changes in behavior thanks to the design.

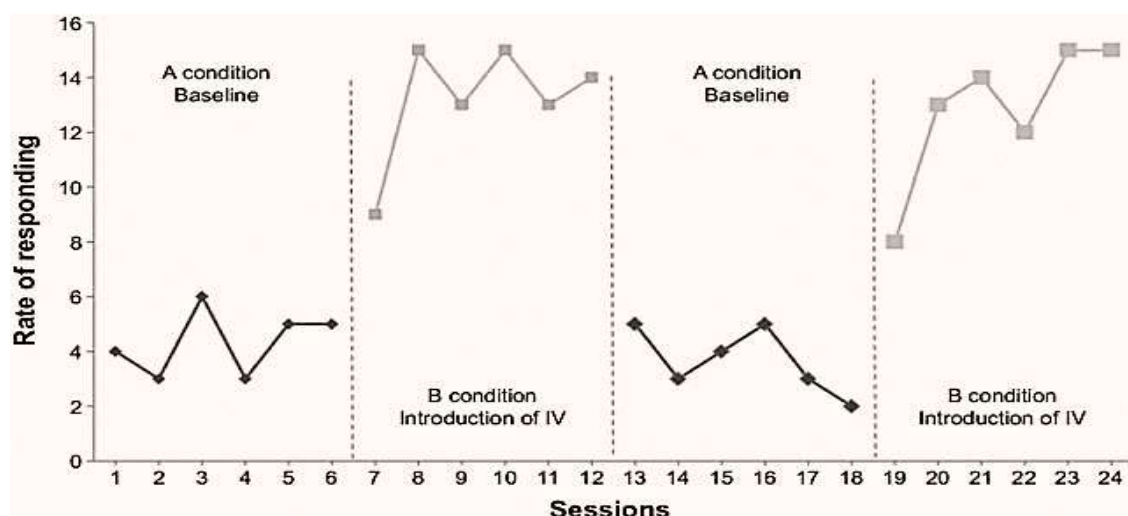


Figure 3. Single-case ABAB design. Source: Steingrimsdottir and Arntzen (2015).

7. Procedures in conducting experimental research

Explanation: According to Ross and Morrison (2013), the following are the systematic stages and methodologies that researchers take when conducting experimental research. These include designing the study, choosing participants, executing treatments, collecting data, and interpreting the outcomes.

Example: The researchers may begin by designing the study, recruiting participants, randomly assigning them to groups, implementing the teaching method, administering pre- and post-tests, collecting and analyzing data, and drawing conclusions based on the findings. This is all part of the process of conducting an experiment to evaluate the effectiveness of a new teaching method.

8. Threats to internal and external validity in experiments

Explanation: The term “internal validity” refers to the extent to which the observed effects may be attributed to the independent variable rather than confounding variables. On the other hand, the term “external validity” refers to the extent to which the findings can be generalized to other populations or contexts. According to Andrade (2018), various threats to validity have the potential to impair the validity of experimental data.

Example: When participants in various groups are systematically different at the beginning of the investigation, this is an example of selection bias, which is a common danger to the internal validity of the study. The utilization of a highly controlled laboratory environment that does not accurately reflect the conditions that exist in the actual world could pose a risk to the external validity of the study.

9. The timing of the pre-test and the post-test

Explanation: It is common practice in experimental research to administer pre-tests prior to the intervention in order to evaluate the baseline levels of the dependent variable. Post-tests, on the other hand, are administered after the intervention in order to evaluate the changes that have occurred in the dependent variable. For the purpose of determining whether or not the intervention was successful, the timing of these tests is very significant (Marsden & Torgerson, 2012).

Example: It is possible that students will first be required to take a math test, often known as a pre-test, in order to establish their baseline performance in a study that is testing the impact of a new teaching approach on mathematical skills. A second arithmetic test, known as a post-test, would be administered to the individuals after they had received the intervention in order to evaluate any gains in their abilities.

10. The design experiment

Explanation: It is possible that this term is referring to the process of creating an experiment, which includes establishing the research issue, selecting the proper design, and organizing the implementation and analysis of the study (Mattila et al., 2021).

Example: The first step for researchers who are interested in investigating the effects of a mindfulness-based intervention on the well-being of students is to design the experiment, define the research question, choose the experimental design (for example, a randomized

controlled trial), and plan the specifics of the intervention as well as the procedures for collecting data.

11. Internet-based experiments

Explanation: The experiments in question are carried out online, and they frequently make use of web-based platforms in order to recruit participants, carry out interventions, and collect data. According to Gavras et al. (2007), internet-based experiments provide a number of benefits, including the ability to access a wide range of people and the cost-effectiveness of the research. However, these experiments may also encounter issues in terms of sample representativeness and data security.

Example: An investigation into the effects of an online mindfulness training program on stress levels could involve the recruitment of participants through social media or online marketing, the delivery of the intervention through a web-based platform, and the collection of data through online surveys or evaluations.

12. Ex post facto research

Explanation: In the context of research that is carried out after the fact, this refers to situations in which the researcher does not have control over the independent variable. The study of naturally occurring variations between groups is a common component of ex post facto research, as opposed to the manipulation of factors (Rohwer, 2022).

Example: In the event that a researcher is interested in investigating the ways in which gender influences academic achievement, they might examine the data that is already available from school records and compare the academic performance of male and female students. Because the researcher is unable to influence the gender of the participants, this kind of research is classified as ex post facto.

13. Conclusion

In conclusion, experimental research is an essential component of scientific investigation because it provides researchers with a potent instrument for revealing causal linkages, putting hypotheses to the test, and expanding knowledge across a variety of fields. When researchers embrace methodological rigor, make use of a variety of experimental designs, and address validity risks, they are able to harness the full potential of experimental research and produce contributions that are important to their respective areas. Researchers have a responsibility to maintain vigilance in their pursuit of rigorous and meaningful scientific inquiry as experimental procedures continue to develop and adapt to shifting research contexts.

Acknowledgments

The article was initially published by English Academic Essay (EAE) as a preprint on March 7, 2024, and concurrently submitted to CJESS for publication consideration. Subsequently, it was approved for publication through the ethical phases of the procedure. Consequently, the author wishes to convey his profound appreciation to the reviewers and the editing team of CJESS for their evaluation and proofreading of the manuscript. This article would not have emerged in academic circles without their assistance. Consequently, their contributions are seen as indispensable and beneficial to society at large, particularly within the academic community of research and publication.

Conflict of interest

No potential conflict of interest was reported by the author.

Funding

The author received no financial support for the study, authorship, and/or publication of this article.

Declaration of AI usage

The author used Grammarly to polish the language in some parts of the article. However, he declared that the content of the article is totally his.

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The effects of social media on violence and aggressive behavior among adolescents: A case study of the capital city and a province

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Article info

Article history

Received: June 04, 2025

Revised: September 02, 2025

Accepted: October 27, 2025

Keywords

Adolescent aggression

Aggressive behavior

Cambodia

Media violence

Social media

Article type

Research article

Abstract

This study examines the effects of social media exposure on violent and aggressive behavior among adolescents, using data collected from lower and upper secondary schools in Phnom Penh and Kampot province, Cambodia. A cross-sectional survey was conducted with 200 students aged 13 to 19 years. The questionnaire measured exposure to violent media content (including violent video games, movies, music, and social networking platforms) and self-reported aggressive behavior. Findings revealed a statistically significant correlation between exposure to violent video games and aggressive behavior, particularly among male students. Music containing violent lyrics and social media interactions related to aggression also contributed to elevated aggression scores. Socioeconomic status was another influencing factor, with students from lower-income households reporting higher levels of aggression. While female students reported lower aggression levels overall, exposure to online violence still had measurable effects across genders. The study highlights the influence of media consumption on adolescent behavior in a rapidly digitalizing Cambodian society. These findings suggest the need for integrated school-based media literacy programs, parental supervision strategies, and policy responses that promote safer digital environments for young people. Finally, the study offers a foundational reference for understanding long-term trends in youth behavior and social media impact in Cambodia.

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1. Introduction

The 20th century has been unprecedented because of increasing mass media use, which changed how people interact with information (Anderson et al., 2010). Recently, in 2023, there are over 5.3 billion people globally using the internet for digital news, social media, and television (Kong & Cleffmann, 2023). The British Broadcasting Corporation's worldwide audience is estimated to be 492 million people a week (Massarat, 2022; Langan, 2024). These networks serve the purpose of informing the public on emerging issues, but they also shape public opinion, policy decisions, and social change. As of October 2024, 63.8% of the global population engages with social media platforms, dedicating an average of 2 hours daily to these channels (Chaffey, 2025).

Aggressive behavior among adolescents has been a growing concern worldwide due to its implications for both individual development and societal well-being (Muarifah et al., 2022). Research indicates that multiple factors contribute to aggressive behavior, including exposure to media violence and family dynamics. Understanding these factors is critical to developing effective interventions such as media literacy programs, social-emotional and learning initiatives, parental meditation, and regulations on violent media content (Anderson et al., 2003a; Huesmann et al., 2003; Boxer et al., 2009; Lee-Rowland et al., 2020; Foell et al., 2021).

Exposure to media violence, including violent video games (Mortal Kombat, Grand Theft Auto, God of War) and television programs (Squid Game, The Punisher, The Walking Dead), has been consistently linked to aggressive behavior in adolescents (Huesmann, 2007). The Social learning theory, created by Bandura (Bandura, 1977), suggests that individuals learn behaviors through observation and imitation, they are more inclined to engage in aggressive behavior if they witness such actions being rewarded, media violent repeated exposure to violent video games, television programs, and movies strengthens aggressive thoughts in a person's memory by increasing the likelihood of them showing aggressive behavior in a real-life situation (Su et al., 2010).

Media violence often portrays aggression as a rewarding and acceptable means of conflict resolution, potentially normalizing such behavior in young viewers. A meta-analysis found that violent video games increase aggressive thoughts, feelings, and behaviors in both children and adults and that exposure to violent video games is linked to higher levels of aggressive thoughts, feelings, and behaviors in both children and adults (Anderson & Dill, 2000). The family environment plays a crucial role in shaping adolescent behavior, while high levels of family conflict and harsh disciplinary practices are significant predictors of aggression (Robles-Haydar et al., 2021). Children growing up in tumultuous households may develop aggressive behaviors as a coping mechanism or through the direct modeling of conflict resolution strategies observed in the home. Research by Straus underscores the importance of family interactions in the development of aggressive behaviors (Tremblay, 2000; Duman & Margolin, 2007).

Media plays a central part in people's lives as they interact with it daily, whether it is through music, television, the Internet, or video games. Media is used for entertainment, information, and communication (Martires, 2019). Although people do not necessarily seek out violent content, violence is an integral part of the media landscape. Its influence is often subtle yet inescapable. The effects of media violence have been a public concern around the world, with hundreds of studies demonstrating a clear and consistent positive relationship between viewing media violence and aggression (Bender et al., 2018). Media violence is only one cause of aggressive behavior (Groves et al., 2016). Human aggression is a complex subject, influenced by many determinants such as poverty, the availability of guns, peer-group influence, and hormonal and neurological abnormalities (Anderson & Bushman, 2002a). Media violence does contribute to aggression, but it is a modifiable risk factor (Groves et al., 2016).

The mass media in Cambodia have significantly expanded over the past decades and play a vital role in the distribution of information, public awareness, and social change. Traditional mass media such as television, cassettes, and radio remain the primary sources of news and entertainment. Additionally, digital media, particularly social media platforms, have rapidly influenced public discourse and engaged adolescents. The Cambodian government has implemented various policies to regulate the media and ensure its role in education, cultural preservation, and national development. The media is an essential tool in reducing violence, promoting positive social norms, and fostering national unity. Currently, there is a Neary Rattanak VI Strategic Plan (2024-2028) that emphasizes responsible media effects of media

violence. Social media platforms, including Facebook, TikTok, and YouTube, are widely used for news, entertainment, and education. More than 80% of Cambodian youth actively engage with digital media and foster civic participation. The lack of content regulation leads to the spread of false or misleading information. Social platforms may negatively influence adolescents as audiences (MOWA, 2024).

1.2 Research gap

The prevalence of media violence is increasing in modern entertainment, and concerns about the psychological and aggressive behavioral effects on adolescents have grown. There are many studies that have been conducted in Western countries; there is limited empirical evidence examining these effects in the Southeast Asian countries' context, mainly in Cambodia (UNICEF, 2022). In this era, with the technology's rapid advancement and media accessibility, Cambodian adolescents are also increasingly exposed to media violence through TV, movies, music, video games, and social media platforms (CCIM, 2017). To determine the significant predictors of aggression and explore gender and regional differences, this study contributes to the broader lesson on the media's violent influence and adolescents' behavior.

1.3 Research objectives

This study aims to investigate the impacts of exposure to media violence among adolescents on their aggressive behavior, family status, socioeconomic status, and individual factors related to aggressive behaviors. The specific objectives include:

1. Examining the relationship between violence exposure and aggression among adolescents in Phnom Penh and Kampot urban areas
2. Assessing the gender differences in the effects of media violence on aggressive behavior
3. Compare the influence of different types of violent media (television, movies, music, and video games) on adolescents' aggression.
4. Explore the potential protective factors, such as socioeconomic status and parental supervision, that may mitigate the effects of media violence on aggression.

1.4 Research questions

To meet the above objectives, this study answers the following questions:

1. What is the relationship between exposure to media violence and levels of aggressive behavior among adolescents in Phnom Penh and Kampot urban areas?
2. Are there significant gender differences in the effects of media violence on adolescents' aggressive behavior?
3. How do different types of violent media content, such as television, movies, music, and video games, differentially influence aggression among adolescents?
4. To what extent do protective factors, such as socioeconomic status and parental supervision, moderate the relationship between media violence exposure and adolescent aggression?

1.5 Significance of the study

This study contributes to the growing body of research on the behavioral effects of digital media exposure among adolescents in Cambodia, a topic of increasing importance in the

context of rapid technological change and rising youth engagement with social media. By examining the relationship between violent media content and aggressive behavior among lower and upper school students, the study provides empirical evidence to support the development of media literacy programs, school-based behavioral interventions, and parental guidance strategies. The findings provide valuable insights for educators, policymakers, and child protection advocates seeking to understand and mitigate the potential risks associated with unregulated media consumption. Furthermore, as one of the few studies using Cambodian data on this topic, it serves as a foundational reference for future research in adolescent development, educational psychology, and social media impact in Southeast Asia.

2. Literature review

Young adults are perpetually subjected to media, influencing their cognition, emotions, and behaviors. Frequent exposure to violent imagery in television, films, music, and video games may incite aggression in adolescents. In impoverished nations such as Cambodia, media violence and aggression are hardly associated, although considerable Western research. Considering the rising prevalence of digital access and evolving adolescent lifestyles, it is essential to examine the impact of media violence on Cambodian youth within their own cultural and socioeconomic context.

2.1 Conceptualizing media violence with the aggressive behavior among adolescents in Cambodia

Media violence increases adolescents' access to violent content through television, movies, music, and video games. Due to these concerns, media violence has long been a subject of debate regarding its potential influence on aggressive behavior among adolescents (Coker et al., 2015). Currently, global research has broadly studied the relationship, but there is still a gap remaining to know the Cambodian context, where cultural, social, and economic factors may influence media consumption and behavioral outcomes (Khurana et al., 2019).

Social Learning Theory and the General Aggression Model are two prominent theoretical frameworks that explain the potential association between mass media violence and aggressive behavior. One of the theories related to the Social Learning Theory (Bandura, 1977) suggested that adolescents imitate violent behavior observed in the media. Another important theory by Anderson and Bushman discussed the general aggression model of the processes by which repeated exposure to violent content influences thoughts, emotions, and behaviors over time (Anderson & Bushman, 2002b). There is also one of the theories about the cultivation theory by Gerbner that points out long-term exposure to mass media violence shapes perceptions of reality, which leads to desensitization and normalization of aggression.

The empirical finding on media violence and aggressive behavior, related to video games by Anderson, suggests that video games have a significant impact on aggressive behavior. Cambodian adolescents, particularly male participants, are increasingly engaging in gaming contexts, demanding an investigation into their psychological and behavioral effects (Anderson et al., 2010). Television and movie shows there are some studies that show that there is minimal effect (Boxer et al., 2015). However, Cambodia found that where access to foreign movies and TV content is growing, their role in shaping adolescent aggressive behavior needs further investigation. The music violence, some research concluded that lyrics promoting violence may influence attitudes and behaviors (Coyne & Padilla-Walker, 2015). In Cambodia, adolescents, particularly in urban areas, are increasingly exposed to Western and K-pop music, which may have different effects compared to traditional media.

Synthesis and evaluation of existing studies indicated that most existing studies are based on Western contexts and cultures, with limited studies in Southeast Asia, particularly in Cambodia. Factors such as social norms and family influence may moderate the effects of media violence. While some of the study's findings from a meta-analysis confirm a link between media violence and aggression, these also suggest that socioeconomic status, parental supervision, peer influence, and time play a role over media alone. Many studies rely on self-reported aggression, which may introduce bias. There are limited empirical studies on how media violence influences Cambodian adolescents about sociocultural background, gender differences, parental mediation, social influence, and social media platforms.

Empirical research on the impact of media violence on Cambodian teenagers is insufficient, especially concerning their sociocultural context, gender disparities, parental mediation, social impacts, and the growing number of social media platforms. This research employs two main theoretical frameworks for its analysis: Social Learning Theory (Bandura, 1977) and the General Aggression Model (Anderson & Bushman, 2002b). Social Learning Theory discusses how teenagers can imitate aggressive behaviors experienced in violent media, particularly when such behavior is perceived as rewarded or accepted. The General Aggression Model offers a comprehensive framework for understanding how continual exposure to violent content might affect internal states such as cognition, emotion, and arousal, potentially leading to increased aggressive reactions. These ideas are particularly pertinent in the Cambodian setting, where access to digital media is expanding quickly, and cultural norms on aggressiveness, authority, and familial discipline may uniquely interact with media impacts.

3. Methodology

This study used a quantitative design with a stratified, school-based sampling approach to ensure balance across gender and location to examine the influence of media violence on aggressive behavior among adolescents in Cambodia.

3.1 Research design

This study applied a quantitative, correlational research design to examine the relationship between social media exposure and aggressive or violent behavior among adolescents. The design was suitable for identifying patterns and associations at a specific point in time, offering insights into youth behavioral trends in Cambodian lower and upper secondary schools during mid-2015.

3.2 Samples and sampling techniques

The recruitment of students followed a stratified sampling approach to ensure representation by both gender and grade level. The study was conducted in two urban locations: Phnom Penh and Kampot, where two schools were selected: Chea Sim Boeung Keng Kang Lower and Upper Secondary Schools in Phnom Penh and Krong Kampot Cambodian-Japanese Friendship Lower and Upper Secondary Schools in Kampot. Within each school, students from grades 7 to 12 were invited. For each grade, 4 to 5 classes were selected based on availability. During recruitment, data collectors obtained class lists and consulted with teachers to identify the gender composition of each class. Stratification by gender was achieved by ensuring that an equal number of male and female students were invited to participate from each school. If a class had an unequal gender ratio, more students were purposively selected from other classes within the same grade to balance gender representation. Ultimately, 100 male and 100 female

students were selected, 50 of each gender from Phnom Penh and 50 of each gender from Kampot, to ensure balanced representation across both location and gender groups.

Table 1. Sample size by schools and study location

Name of school	Population	Sub-population	Location	Sample size	% of students
Chea Sim Boueng Keng Kang, lower secondary	71,082	~ 2,090	urban Phnom Penh	100	2.4%
Chea Sim Boueng Keng Kang, upper secondary		~ 2,090	urban Phnom Penh		2.4%
Krong Kampot Cambodian-Japanese Friendship lower secondary Kampot	22,710	~ 668	urban Kampot	100	15%
Krong Kampot Cambodian-Japanese Friendship Upper Secondary School		~ 669	urban Kampot		15%
Total	93,792	~ 5,517	2 lower 2 upper schools	200	34.8%

3.3 Instruments

The Aggression Scale (Orpinas & Frankowski, 2001) was developed to evaluate self-reported aggression development and the psychometric properties of the scale in diverse samples of middle school students. The Aggression Scale included items that represent three components. The first two components, physical aggression and verbal aggression, are direct acts of aggression toward others. The third component, anger, represents the emotional arousal that can lead to aggression (Berkowitz & Heimer, 1989). These three components have also been included in other scales (Buss & Perry, 1992). In order to be addressed and validated, the tool in this study to given the absence of prior validation of this aggression scale in the Cambodian context, a Confirmatory Factor Analysis (CFA) was conducted using AMOS version 27 to evaluate its construct validity. The CFA tested a three-factor measurement model, consistent with the theoretical framework underlying the scale. The analysis focused on examining the adequacy of factor loadings, internal consistency (Brown, 2015).

Aggressive behavior is an index computed based on the average of 11 questions. The higher the score, the more aggressive the child is. The Aggression Scale is used to describe descriptive statistics for the demographic and clinical variables section, and is also used in the inferential statistics in the results. This study converted and modified the scale item scaling from 0 to 6+ to 1 to 6 and changed the time from the last 7 days to the last 30 days; moreover, it changed the variable values from 0 = never, 1=rarely, 2 = sometimes, 3 = often, and 4 = always. Exposure to media violence was divided into TV shows, movies, music, and games. Exposure for each type of mass media is computed as a dichotomous variable, with yes being for those who reported experience or like to watch fighting words or scenes, destructive scenes, and physical contact between real persons.

Independent variables in this study are media violence exposure; this included movie violence, video game violence, music violence, and TV show violence. The moderating variables are gender differences (male versus female) and location (Phnom Penh versus Kampot province); the study examines whether gender influences the relationship between media violence exposure and aggressive behavior. Control variables are other factors that influence aggressive behavior, including socioeconomic status, parent monitoring time, education status, and time spent watching TV, movies, music, and video games. The dependent variable is aggressive behavior.

3.4 Data collection procedures

Data collection was conducted between August 18 to 25, 2015, with five trained research assistants. Participants were selected based on their enrollment in schools within the specified urban areas, their willingness to participate, and their exposure to media. The study utilized questionnaires to gather data on demographic information, media consumption habits, and aggressive behaviors for measurement. Formal consent was not obtained from parents or guardians for this study. The participants were adolescents who provided written informed consent themselves, as they were deemed capable of understanding the study procedures and voluntarily agreeing to participate. This study followed key ethical principles of informed consent, confidentiality, and voluntary participation. While formal parental consent was not obtained due to school policy, verbal and written assent were secured from all participants, and school principal approval was granted. All students were clearly informed about the purpose of the research and their right to withdraw at any time without penalty. To avoid bias, verbal consent was obtained from all participants, and approval was granted by the relevant school principals in Phnom Penh and Kampot before data collection. The decision not to seek additional parental or guardian consent was based on the school's internal policies, which permitted student participation in low-risk educational research during class hours with principal approval.

The students were selected based on the following criteria: Age range 13-19 years old. Currently enrolled in lower and upper secondary schools from grades 7-12 of the school's selection. 100 students in urban Phnom Penh from CHEA SIM Boueng Keng Kang lower and upper secondary schools, and 100 students in urban Kampot province from Krong Kampot Cambodian Japanese Friendship lower and upper secondary schools. Often or frequently, consumers of media (TV, movies, video games, music). Students voluntarily agreed to participate and understand the study's objectives.

3.5 Data analysis

This study used a combination of descriptive statistics, t-tests, and correlation analysis. Data were analyzed using STATA V.15 software for regression modeling, and chi-square tests were employed to assess effectiveness and measure the relationships between media violence and adolescent aggressive behavior, while accounting for demographic and family-related variables. A t-test was used to compare aggressive behavior levels between different groups (males and females). The chi-square test was also used to analyze gender differences in media preferences (music, TV, movies, and video game consumption) by comparing the proportion of males and females consuming media violence content. Additionally, bivariate analysis was conducted to examine the relationship between aggressive behavior and video game violence exposure.

Jamovi V2.5 software was used to perform the Polytomous Rasch Model analysis and to assess the model fit of the adapted Aggression Scale, specifically measuring values such as infit and outfit indices, reliability estimates, and fit statistics (person reliability and MADaQ3).

3.6 Ethical consideration

This study was conducted in alignment with basic ethical research principles, including respect for voluntary participation, informed consent, and confidentiality. As the participants were adolescents, they were deemed capable of understanding the study's purpose, procedures, and rights, including the right to withdraw at any time without penalties. Parent or guardian consent was not required under the university's ethical guidelines. The confidentiality and anonymity of the participants were protected; no personally identifiable information was collected, and all data were securely stored.

4. Findings

This part articulates the findings of your investigation clearly and exhaustively; nonetheless, it requires enhancement for academic coherence, logical progression, and language clarity. The following is an enhanced iteration of the "Findings" section, featuring greater clarity, uniformity, and precision in statistical representation, while preserving the original data and structure.

4.1 Academic information, television and TV viewing habits, and video game playing information

Table 2 shows that 35.5% of students reported they had the best score for mathematics, which is the highest percentage for these subjects. For the Khmer literature subject was 33.5% but for foreign language and vocational education, 11.5% was reported. Therefore, students in this study were more likely to be deficient in studying foreign languages and vocational training. Most of the students indicated that Mathematics and Khmer literature were the subjects in which they received the best scores in their school performance. However, some students 30.5% reported that they had physically fought with their classmate during school time, about 38.0% reported they had verbally fought with their classmate during school time, and almost half of the students 47.5% reported that they had been punished by their teacher.

Most students 64.5% reported that they have only one television in their homes, and 3.0% reported that they don't have any televisions in their homes. At least 25% of students said that they have a television for personal viewing in their own room. Approximately 40.5% reported that they spend less than an hour a day watching television. This is a high percentage of students spending their time watching television per day.

An interesting result: about 20.0% of students reported that they spent their time on game playing almost every day, while 27.5% reported that they spent less than one time a week. Based on this result, a high proportion of students in this study spent more time playing than helping their parents to do housework.

Table 2. School performance and behavior characteristics of students

Variable	Category	Frequency	Percentage
Best subject score	Khmer	67	33.5
	Foreign language	23	11.5
	Mathematic	71	35.5
	Sciences	41	20.5
	Social Science	13	6.5

	Vocational Education	9	4.5
Regular school attendance	Yes	183	91.5
	No	17	8.5
Student like their school	Dislike	4	2.0
	Like/dislike	11	5.5
	Like	113	56.5
	Strongly like	72	36.0
Physical fight with classmates	Yes	61	30.5
	No	139	69.5
Verbal fight with classmates	Yes	76	38.0
	No	124	62.0
Punished by the teacher	Yes	95	47.5
	No	105	52.5
Household television ownership and viewing habits of students			
TV in the home	Don't have a TV at home	6	3.0
	1 TV set	129	64.5
	2 TV sets	54	27.0
	3 TV sets	6	3.0
	4 TV sets	5	2.5
TV in the bedroom room	Yes	50	25.0
	No	150	75.0
Daily hours of TV	Less than an hour per day	81	40.5
	1-2 hours per day	75	37.5
	3-4 hours per day	28	14.0
	5-6 hours per day	12	6.0
	More than 6 hours per day	4	2.0
Gaming access, preferences, and frequency among students			
A game station in their house	Yes	25	12.5
	No	175	87.5
A student playing any games	Yes	195	97.5
	No	5	2.5

Place of game playing	At the game station	16	8.0
	With smart phone	180	90.0
	At the game shop	7	3.5
	With a computer or at an internet shop	33	16.5
Students spent time playing games per day	Almost every day	40	20.0
	4-5 times a week	49	24.5
	2-3 times a week	31	15.5
	1 time a week	25	12.5
	Less often than once a week	55	27.5

4.2 Family conflict and violence

Table 3 shows that 55.0% of students reported that they witnessed their parents' dispute, 64.0% reported that parents had spanked them since they attended school, and 21.8% reported that it happened several times a month for them. Moreover, the result shows that 71.0% of students report that parents yelled or cursed since they attended school, and 19.7% reported that they yelled or cursed several times in a month. 30.5% said that they had physical fights with their siblings, and about 40.0% reported having verbal fights with siblings. The results show that the highest percentage of students reported that they have been spanked by parents since they attended school.

The study examined the relationship between media violence and aggressive behavior among Cambodian adolescents in two urban cities, Phnom Penh and Kampot. Multiple linear regression analysis was employed to assess the relationship between several independent variables (Cui et al, 2023; Trunfio et al., 2022), including exposure to media violence, family dynamics, and the dependent variable of aggressive behavior.

The study found that family conflict and discipline had the most significant impact on aggressive behavior among adolescents. High levels of family conflict and exacting disciplinary practices were strongly associated with increased aggressive behavior. Additionally, adolescents who spent more time playing violent video games exhibited more aggressive behaviors. Similarly, increased TV viewing time was a significant predictor of aggression, with more time spent watching TV correlating with higher levels of aggression. The number of siblings also played a role, though its impact was less pronounced compared to the other factors; having more siblings was associated with slightly higher aggressive behavior.

Table 3. Parental discipline and student conflict experiences

Variable	Category	Frequency	Percentage
Seen parents' dispute	Yes	110	55.0
	No	90	45.0
Have your parents ever spanked you since you attended school	Yes	128	64.0
	No	72	36.0
	About once every year,	65	50.7

How often, parents spanked you in the last 3 years	Several times a year	25	19.5
	Almost every month	6	4.69
	Several times in month	28	21.8
	Every week	4	3.13
The parent yelled or cursed at you since you went to school	Yes	142	71.0
	No	58	29.0
How often, parents yelled or cursed in the last 3 months	About once every year	77	54.2
	Several times a year	35	24.6
	Almost every month	2	1.41
	Several times a month	28	19.7
fought physically with your siblings or children in the neighborhood	Yes	61	30.5
	No	139	69.5
fought verbally with your siblings or children in the neighborhood	Yes	80	40.0
	No	120	60.0

4.3 Aggression behavior and media violence in the media

The Pearson correlation analysis revealed that the various degrees of relationship between different types of media violence and aggressive behavior, found that there is a moderate positive correlation between TV violence and aggressive behavior ($r = 0.47$, $p=0.05$). The higher exposure to TV violence is significantly associated with increased aggressive behavior (Table 4). Movie violence also shows a very weak and no significant correlation between movie violence and aggressive behavior ($r = 0.05$, $p=0.13$) and video games ($r = 0.000$, $p = 0.24$), respectively. While music violence has a strong, significant correlation with aggressive behavior ($r = 0.97$, $p = 0.00$), greater exposure to music violence is strongly linked to increased aggressive behavior.

Table 4. Correlation matrix of media violence exposure variables

Variables	1	2	3	4
Independent variables	—			
1. TV Violence	0.05	—		
2. Movie Violence	0.13^b	-0.031	—	

3. Music Violence	0.00	0.089	-0.058	—
4. Video Game Violence	0.24**	-0.036	0.100	-0.006

Note: All point bi-serial correlations are two-tailed and in bold text.

*** $p < .01$; b = nearly significant at 0.05.*

The scatterplot represents the relationship between different types of violent media consumption (movies, video games, music, and TV shows) and aggressive behavior (Fig.4). Violent video games have the strongest positive association with aggressive behavior (coef. = 0.1712, $t = 2.64$), indicating a statistically significant relationship. Violent movies show a weak but positive relationship (coef. = 0.1236, $t = 1.72$), though not strongly significant. Violent music and violent TV shows do not show significant associations with aggressive behavior (very low coefficients and t -values). The video games' violence appears to have the most significant effect on aggressive behavior, while other media forms (movies, music, and TV shows) show little to no strong correlation.

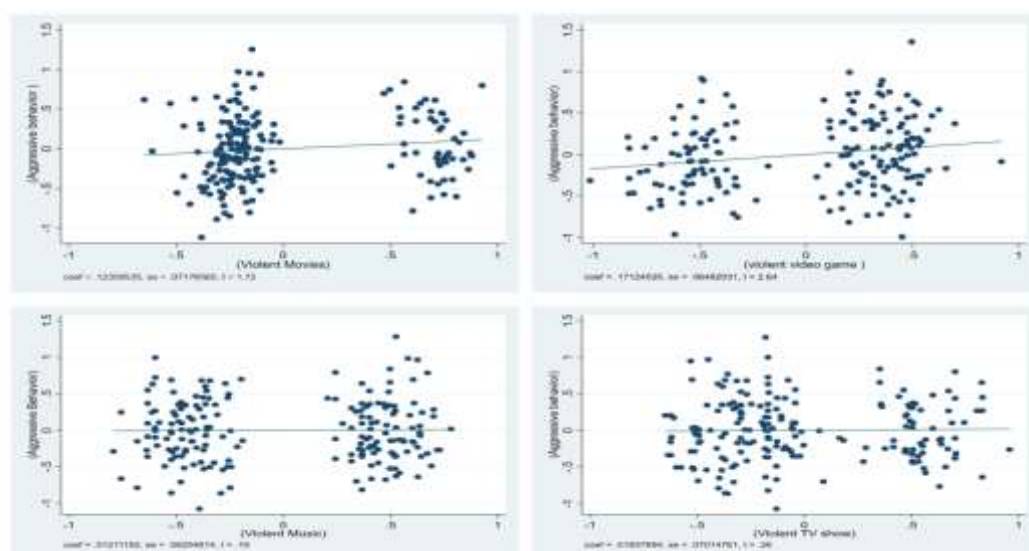


Figure 1. Scatterplots of media violence exposure and aggressive behavior

4.4 Polytomous Rasch model analysis of the aggression scale

The item statistics of the aggression scale were evaluated using the Polytomous Rasch Model to assess item performance, reliability, and overall model fit in Table 3. Item difficulty scores (measure values) ranged from -2.008 (AG7) to 0.278 (AG6), with negative values indicating easier items (lower difficulty scores) that were more frequently endorsed by participants and positive values representing more difficult items. The AG7 and AG8 had the lowest measure values, making them the easiest items for adolescents to agree with, while AG6 was the most difficult to endorse. This range demonstrates that the scale effectively captures varying levels of aggression intensity. The standard errors of measurement ranged from 0.0748 to 0.1402, reflecting reasonably precise item estimates, although items with larger standard errors (such as AG5, AG6, and AG11) may reflect slightly less stability due to factors like response distribution or sample size. Infit and outfit mean square statistics mostly fell within the acceptable range of 0.7 to 1.3, indicating a good model fit. Most items (AG1–AG4, AG6–AG10) fit the model well with values close to 1. However, AG5 (Infit = 1.324, Outfit = 1.443) slightly exceeded the upper threshold, suggesting possible noise or item misfit, while AG11

(Infit = 0.849, Outfit = 0.756) was slightly below the range, indicating over-predictability in responses. The person reliability index was 0.70, meeting the minimum acceptable threshold for this study and suggesting that the scale can moderately distinguish among varying levels of aggression in adolescents. Finally, the overall model fit was supported by a MADaQ3 value of 0.095 and a significant p-value ($p < 0.001$), indicating that the Polytomous Rasch Model assumptions were satisfied and the data fit the rating scale model adequately.

Table 5. Item statistics of the rating scale model and model fit

Aggression scales	Measure	S.E.Measure	Infit	Outfit
AG1	-1.301	0.0769	1.077	1.083
AG2	-1.265	0.0773	0.947	0.940
AG3	-1.829	0.0748	1.087	1.098
AG4	-1.700	0.0748	1.080	1.084
AG5	-0.816	0.1402	1.324	1.443
AG6	0.278	0.1324	0.990	0.931
AG7	-2.008	0.0860	0.940	0.924
AG8	-1.925	0.0880	0.888	0.836
AG9	-0.943	0.0822	1.050	1.055
AG10	-0.474	0.0949	0.945	0.866
AG11	-0.854	0.1375	0.849	0.756
Person Reliability	0.70			
MADaQ3	0.095			
p-value	<.001			

Note: Infit = Information-weighted mean square statistic; Outfit = Outlier-sensitive mean square statistic. MADaQ3 = Mean of absolute values of centered Q3 statistic with p value obtained by Holm adjustment; Ho = the data fit the Rasch model.

4.5 Person–Item distribution on aggression traits and item difficulty (Polytomous Rasch model)

The Wright Map, shown in Figure 2 below, of the alignment between respondents' latent aggression traits and the difficulty of the aggression scale items. On the left, the histogram shows that most adolescents fall within the moderate range of aggression (around 0 to +1 logits), with fewer respondents located at the very high or very low ends of the aggression continuum. On the right, the placement of items along the same scale indicates how difficult each item was for students to endorse. Items such as AG7, AG3, and AG4 were the easiest to agree with, reflecting aggression behaviors common even among students with lower aggression levels. In contrast, AG6 was the most difficult item, suggesting that it captured more severe forms of aggression that only students with higher levels tended to report. Several items (AG1, AG2, AG8, AG9, AG11) were positioned in the mid-range, aligning well with the majority of respondents. Overall, the map demonstrates that the scale is well-targeted to the sample, as item difficulty closely matches the distribution of student aggression levels. However, the relative scarcity of items at the upper end suggests that the scale could be strengthened by adding more items measuring extreme levels of aggression to improve sensitivity at the higher trait range.

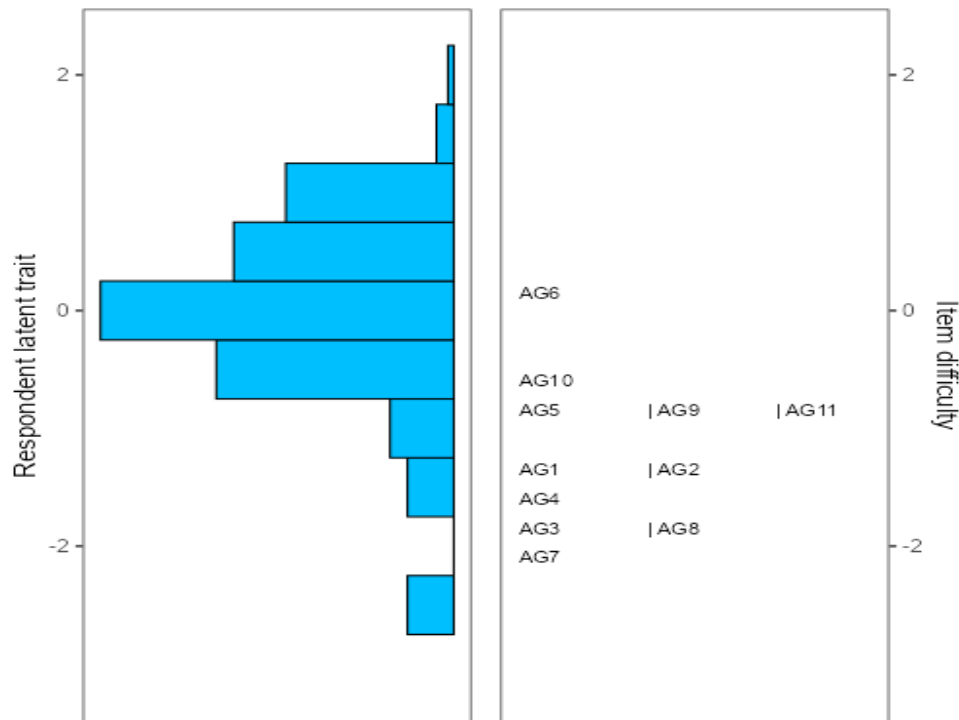


Figure 2. Wright's map of the aggression scale

4.6 Gender differences in preferred media violence

A chi-square test (Table 5) of independence variables was conducted to examine the relationship between gender and media type preferences. The results revealed significant differences in preferences for television, $\chi^2(1, N = 65) = 16.62, p = 0.00$ and video games, $\chi^2(4, N = 119) = 16.67, p = 0.00$. However, no significant differences were found for movies $\chi^2(1, N = 50) = 0.43, p = .624$, or music $\chi^2(1, N = 98) = 2.00, p = 0.20$.

Table 5: Differences in the type of preferred media violence by gender

Media type	Expected male count	Male (%)	Expected female count	Female (%)	χ^2	d.f	p
Television	32.5	46.0	32.5	19.0	16.615	1	0.00
Movie	25.0	27.0	25.0	23.0	0.427	1	0.62
Music	49.0	44.0	49.0	54.0	2.001	1	0.20
Video Game	59.5	71.0	59.5	48.0	16.672	4	0.00

Note: χ^2 = Pearson chi-test; df = degrees of freedom; p = p-value.

4.7 Aggression of aggressive behavior for both location and gender

Independent samples *t*-tests in Table 6 were conducted to compare means between groups. Results indicated a statistically significant difference between total males ($M = 1.90, SD =$

0.43) and total females ($M = 1.77$, $SD = 0.45$), $t(198) = 2.11$, $p = 0.03$. However, no significant differences were found between total Phnom Penh ($M = 1.85$, $SD = 0.48$) and total Kampot province ($M = 1.82$, $SD = 0.42$), $t(198) = 0.45$, $p = 0.657$. Similarly, there were no significant differences between Phnom Penh males ($M = 1.91$, $SD = 0.42$) and Kampot males ($M = 1.88$, $SD = 0.46$), $t(98) = 0.24$, $p = 0.808$, or between Phnom Penh females ($M = 1.76$, $SD = 0.54$) and Kampot females ($M = 1.77$, $SD = 0.38$), $t(98) = -0.13$, $p = 0.895$).

Table 6. The t-test for differences in media exposure by gender and location

Variable	Mean	SD	t-value	d.f	p
Total males	1.90	.433	2.105	198	0.03
Total females	1.77	.453			
Total Phnom Penh	1.85	.476	.445	198	0.65
Total Kampot	1.82	.416			
Phnom Penh Males	1.91	.42	.243	98	0.80
Kampot males	1.88	.46			
Phnom Penh females	1.76	.54	-.133	98	0.89
Kampot females	1.77	.38			

Note: SD = Standard deviation; t = Independent t-test value; d.f = degrees of freedom; p = the two-tailed significance value

4.8 Aggression of aggressive behavior in Phnom Penh city

Table 7 shows that ($r^2 = 0.26$), ($\text{Adj}R^2 = 0.17$), $F(11, 88) = 2.85$; ($p = 0.003$). Exposure to movie violence and video game violence is found to have statistically significant and positive effects on aggressive behavior in students. Specifically, students who were exposed to movie violence have a mean of aggressive behavior 0.29 more than students who were not exposed to movie violence ($CI = 0.08-0.50$). Similarly, students who were exposed to game violence had a mean of aggressive behavior 0.27 more than students who were not exposed to video game violence ($CI = 0.08-0.46$).

Table 7. Factors associated with exposure to media violence (Phnom Penh: males and females)

Independent variables	Coef.	S.E.	t-test	p	95% CI	
Exposed to TV show violence	0.06	0.10	0.60	0.55	-0.14	0.26
Exposed to movie show violence	0.29	0.10	2.74	0.01	0.08	0.50
Exposed to music shows violence	-0.01	0.10	-0.10	0.92	-0.20	0.18
Exposed to violent games	0.27	0.09	2.88	0.01	0.08	0.46

Sex of participants (male is ref.)						
female versus male	-0.14	0.11	-1.29	0.20	-0.34	0.07
Age groups (13-14 is ref.)						
15-16 years old	0.15	0.11	1.39	0.17	-0.06	0.37
17 years old or older	0.03	0.13	0.27	0.79	-0.22	0.29
Marital status (married & living together is ref.)						
Other	-0.14	0.22	-0.64	0.52	-0.57	0.29
Living arrangement (with both parents is ref.)						
Other	-0.08	0.20	-0.41	0.68	-0.47	0.31
Economic status (above the average is ref.)						
Average	-0.06	0.11	-0.50	0.62	-0.28	0.17
Below average	-0.25	0.15	-1.66	0.10	-0.56	0.05

4.9 Aggression of aggressive behavior in Kampot province

The Table 8 shows that ($R^2 = 0.32$), $\text{Adj } R^2 = 0.18$, $F(10, 48) = 2.26$, ($p = 0.03$). Exposure to movie violence was found to have a statistically significant and positive effect on aggressive behavior in students. Students who were exposed to movie violence have the mean of aggressive behavior ($R^2 = 0.32$), ($CI = 0.07$ - 0.57). Students who are exposed to either movie tend to be more aggressive, and this effect is statistically significant regardless of the gender and age of students, as well as exposure to TV show violence and music show violence. Exposure to TV show violence and music show violence mustn't exert an effect on the aggressive behavior of students, controlling for all other variables in the model.

Table 8. Factors associated with exposure to media violence (Phnom Penh: male only)

Independent variables	Coef.	S.E.	t-test	p	95% CI	
Exposed to TV show violence	0.16	0.11	1.48	0.15	-0.06	0.37
Exposed to movie show violence	0.32	0.13	2.54	0.01	0.07	0.57
Exposed to music shows violence	-0.02	0.12	-0.18	0.86	-0.27	0.22
Exposed to violent games	0.18	0.11	1.53	0.13	-0.05	0.41
Age groups (13-14 years old are ref.)						
15-16 years old	-0.02	0.14	-0.14	0.89	-0.29	0.26

17 years old or older	-0.08	0.15	-0.53	0.60	-0.37	0.22
Marital status (married and living together is ref.)						
Other	-0.28	0.23	-1.18	0.24	-0.75	0.19
Living arrangement (with both parents is ref.)						
Other	-0.02	0.21	-0.09	0.93	-0.45	0.41
Economic status (above the average is ref.)						
Average	-0.08	0.14	-0.53	0.60	-0.37	0.21
Below average	-0.24	0.17	-1.35	0.18	-0.59	0.11

4.10 Aggression of aggressive behavior in Kampot province

The Table 9 shows that ($R^2=0.29$, $\text{Adj}R^2 = 0.05$), $F(10, 30) = 1.23$, $p = 0.31$). That was found to have no significant negative effect on aggressive behavior in students. Female students in Phnom Penh were not exposed to violence or aggressive behavior.

Table 9. Factors associated with exposure to media violence (Phnom Penh: female only)

Independent variables	Coef.	S.E.	t-test	p	95% CI	
Exposed to TV show violence	-0.15	0.28	-0.51	0.61	-0.73	0.43
Exposed to movie show violence	0.25	0.20	1.22	0.23	-0.17	0.67
Exposed to music shows violence	0.17	0.20	0.85	0.40	-0.23	0.57
Exposed to violent games	0.33	0.18	1.81	0.08	-0.04	0.69
Age groups (13-14 years old are ref.)						
15-16 years old	0.29	0.22	1.32	0.20	-0.16	0.75
17 years old or older	0.20	0.27	0.75	0.46	-0.35	0.74
Marital status (married and living together is ref.)						
Other	0.06	0.48	0.12	0.90	-0.92	1.04
Living arrangement (with both parents is ref.)						
Other	-0.27	0.44	-0.62	0.54	-1.16	0.62
Economic status (above the average is ref.)						
Average	-0.01	0.20	-0.05	0.96	-0.42	0.40

Below average	-0.08	0.41	-0.20	0.84	-0.91	0.75
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4.11 Aggression or aggressive behavior in Kampot province for male students

Table 10, shows ($R^2 = 0.34$, Adj $R^2 = 0.13$, $F(10, 30) = 1.58$, $p = 0.34$). Male students in lower and upper schools are not exposed to violence that exerts an effect on the aggressive behavior of male students in Kampot province.

Table 10. Factors associated with exposure to media violence (Kampot: males only)

Independent variables	Coef.	S.E.	t-test	p	95% CI	
Exposed to TV show violence	0.16	-0.47	-0.40	0.64	0.25	0.25
Exposed to movie show violence	0.15	0.17	0.93	0.36	-0.19	0.49
Exposed to music shows violence	0.06	0.16	0.36	0.73	-0.27	0.38
Exposed to violent games	0.31	0.19	1.60	0.12	-0.08	0.70
Age groups (13-14 years old are ref.)						
15-16 years old	0.85	0.53	1.60	0.12	-0.24	1.93
17 years old or older	0.07	0.46	0.15	0.88	-0.86	1.00
Marital status (married and living together is ref.)						
Other	0.07	0.46	0.15	0.88	-0.86	1.00
Living arrangement (with both parents is ref.)						
Other	0.20	0.31	0.63	0.53	-0.44	0.84
Economic status (above the average is ref.)						
Average	-0.29	0.57	-0.51	0.61	-1.47	0.88
Below average	-0.11	0.57	-0.19	0.85	-1.28	1.06

4.12 Aggression of aggressive behavior in Kampot province for male students

Table 11 shows ($R^2 = 0.24$), (Adj $R^2 = 0.09$), $F(10, 48) = 0.52$, $p = 0.152$. Among these independent variables, only exposure to family economic status is found to have a statistically significant and positive effect on aggressive behavior toward students. Specifically, students who were exposed to family economic status had a mean of aggressive behavior (-0.74) more than students who were not exposed to family economic status ($p = 0.01$), (CI = -1.27 to -0.22). Students who are exposed to either family economic status tend to be more aggressive, and these effects are statistically significant regardless of gender and age of students.

Table 11. Factors associated with exposure to media violence (Kampot: female only)

Independent variables	Coef.	S.E.	t-test	p	95% CI	
Exposed to TV show violence	-0.12	0.13	-0.89	0.38	-0.39	0.15
Exposed to movie show violence	-0.23	0.14	-1.67	0.10	-0.51	0.05
Exposed to music shows violence	0.00	0.11	0.03	0.98	-0.21	0.21
Exposed to violent games	0.02	0.11	0.23	0.82	-0.19	0.24
Age groups (13-14 years old are ref.)						
15-16 years old	0.11	0.34	0.32	0.75	-0.58	0.80
17 years old or older	0.10	0.30	0.34	0.74	-0.49	0.69
Marital status (married and living together is ref.)						
Other	0.35	0.43	0.80	0.43	-0.52	1.22
Living arrangement (with both parents is ref.)						
Other	-0.60	0.40	-1.51	0.14	-1.41	0.20
Economic status (above average is ref.)						
Average	-0.74	0.26	-2.82	0.01	-1.27	-0.21
Below average	-0.77	0.31	-2.50	0.01	-1.40	-0.15

*Note: p = p-value; SE = Standard Error; *p < .05. **p < .001.*

5. Discussion

The study found a significant relationship between exposure to violent video games and movies and aggressive behavior among adolescents. Male students reported a higher consumption of media violence compared to females. The findings suggest that adolescents exposed to high levels of family conflict and harsh disciplinary practices are more likely to exhibit aggression. This underscores the critical influence of the family environment on the development of aggressive behaviors (McDonald et al., 2009).

Gender was also a significant predictor, with higher levels of aggression in males than in females, which aligns with existing literature indicating that males are generally more prone to aggressive behavior (Archer, 2004). Additionally, the number of siblings was found to be positively associated with aggression. This finding may reflect the increased opportunities for conflict and competition in larger families, which can exacerbate aggressive tendencies (East, 2009; Milevsky et al., 2011; McHale et al., 2012). These results highlight the importance of considering family structure in efforts to address aggressive behavior in adolescents (Tompsett et al., 2018).

Media violence, exposure to violent video games, and television viewing time were also significant predictors of aggression. Adolescents who spent more time playing violent video games and watching TV exhibited higher levels of aggressive behavior, as in the previous research (Reissler, 2006; Keikha et al., 2020). This finding supports the substantial body of literature linking media violence to aggression (Anderson & Bushman, 2001). The portrayal of violence as a normative and rewarding behavior in these media forms may desensitize adolescents to aggression and increase the likelihood of imitative aggressive behavior (Krahé et al., 2011; Şengönül, 2017; Li, 2023a). An increasing media consumption among the youth, these results suggest a pressing need for media literacy programs and parental guidance to mitigate the potential adverse effects of media violence on adolescent behavior (Anderson et al., 2003).

This study also contributes to the existing research on mass media violence and adolescent aggressive behavior by providing specific insight into the Cambodian context (Nou, 2024; Heng et al., 2022). In addition, this study highlights the need to consider the cultural and regional influences when examining the effects of media violence (Li, 2023b). Moreover, the findings in this study underline the importance of differences between types of mass media violence (TV, Movies, Music, and Games) and the type of impact (Aneesha et al., 2023). This study supports the Social Learning Theory (SLT) in defining how adolescents affect aggressive behavior through mass media exposure (Lee, 2011; Cosme, 2021; Khadka, 2024). While it suggests that protective social factors such as parental supervision and socioeconomic condition may mitigate these effects.

The findings in this study suggest important policy considerations to mitigate the impact of mass media violence on adolescent aggressive behavior (Gentile et al., 2007). Government and CSOs should encourage the intervention activities by supporting parental supervision to monitor and control their children's exposure to mass media violent content (Moed et al., 2017; Jamie Lachman et al., 2024). Policymakers should consider revising the existing policy or mass media content guidelines to limit children's exposure to excessive violence in video games and movie shows (Collier et al., 2008; Barlett & Anderson, 2009). The educational institutions should integrate mass media literacy programs into the curriculum to help and support students (Cheung & Xu, 2016). Local organizations should develop community awareness campaigns that inform parents/guardians, educators, and adolescents about the risks of mass media violence (Saunders & Goddard, 2014).

6. Conclusion and recommendation

The study investigated media violence's influence on adolescent aggression among adolescents in Phnom Penh and Kampot, with consideration by gender and region. Reveals that exposure to violent movies and video games increases aggressive behavior among male students in Phnom Penh. TV and music violence have no significant effect on aggression, undermining other research that has claimed they do. It was also discovered that regional differences are important, as for students in Kampot, media violence had little effect on aggression. Males had a stronger link than females between media violence and aggression. This supports earlier studies indicating that biological, psychological, and social factors play a role in gender differences in aggressive behavior.

Furthermore, an unexpected result emerged in Kampot, where lower-income female students exhibited lower aggression levels, highlighting the potential protective effects of economic hardship and strict parental supervision.

Movie violence and video game violence significantly increase aggressive behavior, supporting Social Learning Theory. TV shows and music violence do not influence aggression, possibly due to passive consumption. Males are more affected than females, reflecting biological and social influences. Media violence has no impact in Kampot, suggesting regional and cultural differences.

Economic hardship may serve as a protective factor against aggression in females. Media violence plays a role in shaping the aggressive behavior of adolescents; the impact is not uniform across all independent variables. The importance of cultural, gender, and socioeconomic contexts in understanding the effects of addressing media violence requires a complex technique of incorporating parental involvement, educational initiatives, and further empirical studies to develop effective intervention programs.

7. Limitations and future studies

Future research direction recommends that the findings need to be built with consideration to include a larger and more diverse sample from different regions and socioeconomic backgrounds to ensure and enhance generalizability. Further research should explore and examine protective factors such as resilience, parental mediation strategies, and educational interventions; this may mitigate the negative effects of media violence. In addition, more studies related to longitudinal research would provide insight into how media violence exposure influences aggression over time and examine how cultural norms and values shape the perception and impact of media violence in different societies by using mixed methods of quantitative and qualitative research.

Acknowledgments

The author gratefully acknowledges the valuable academic guidance and constructive feedback received throughout the development of this study. Appreciation is also extended for the professional and emotional support that contributed to the completion of the manuscript. No external funding was received for the conduct of this study or the preparation of the manuscript. The author assumes full responsibility for the study design, data collection, analysis, interpretation, and manuscript preparation.

Conflict of interest

The author declares no conflict of interest related to the conduct of this study or the preparation and submission of this manuscript.

Declaration of AI usage

The authors used QuillBot to polish the language grammatically in some parts of the article. However, he declared that the content of the manuscript is totally theirs.

Data statement

The data utilized in this study were collected in August 2015. The author acknowledges the age of the data and affirms that the findings remain valuable for understanding adolescent media behavior and informing current educational and behavioral policy discussions in Cambodia.

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Disability inclusive education in Cambodia: Current barriers and opportunities

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Article info

Article history

Received: May 19, 2025

Revised: August 10, 2025

Accepted: October 06, 2025

Keywords

Cambodia

Children with disabilities

Disability

Educational reform

Inclusive education

Article type

Research article

Abstract

The purpose of this study is to investigate the primary obstacles that stand in the way of inclusive education in Cambodia. Particular attention is paid to the unfavorable socio-cultural views that are held toward the education of children with disabilities, as well as the intersectional discrimination that is experienced by individuals with disabilities in general. This study argues for community-centered methods to inclusive education, with a special emphasis on the negative stereotypes that are frequently held by both parents and teachers. Additionally, the article highlights the unique problems that are experienced by females who have impairments. This study sheds light on the problems that need to be solved in order to promote inclusion in education. It does so by drawing from case studies and experiences that were included in a bigger study, as well as ideas from teachers in the local community. The article also analyzes the possible prospects for advancing inclusive education in Cambodia and suggests ideas for enhancing teacher preparation and fostering more inclusion in the future. There are also potential chances for advancing inclusive education in Cambodia.

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1. Introduction

Globally, around 1.3 billion people live with a disability, and over 80% live in the Global South (WHO, 2022). Many of these people experience discrimination and marginalization daily, and this often manifests in a lack of opportunities offered to them. Most people with disabilities living in the Global South experience compounded challenges related to general economic and social disadvantage, as well as disability. This most often manifests in their widespread exclusion from opportunities for education, personal growth, and development.

WHO (2022) also showed that, on average, children with disabilities spend significantly less time in school than their non-disabled peers. Despite the Universal Declaration of Human Rights entitling all children to an education, many children with disabilities are still unable to access this basic human right. UNICEF and the UNESCO Institute for Statistics (2013) estimated that 90% of children with disabilities in the Global South do not go to school. These children are found to be particularly disadvantaged in terms of education, as they tend to have lower enrolment, transition, and completion rates than children without disabilities. There are

several reasons for this, including a lack of accessible education, poverty in families, and concerns about the safety of children with disabilities.

Singal (2014) argued that this educational exclusion and marginalization prevent young people with disabilities from accumulating not only knowledge, but also the various types of human capital which enable them to lead successful adult lives. Schools also play an important role in developing personal qualities and building the confidence of children with disabilities to embrace opportunities and tackle challenges that they may face in later life (Cobley, 2023). These disparities in education that originate in childhood can subsequently translate into multidimensional poverty, reduced social capital, and under- or unemployment in adulthood (Heckman, 2006).

Despite the many benefits of school attendance for children with disabilities, many barriers still exist to inclusive education. The most pressing of these include stigma and negative social attitudes towards people with disabilities, reinforced by a lack of political will by governments (Jolley & Lynch, 2017). In Cambodia, in particular, education is low among children with disabilities, as physical and environmental barriers continue to hamper inclusive education. Despite agreements, policies, and some noticeable progress, the extent to which targets have been accomplished remains an unfinished task. In 2019, the total number of children with disabilities in Cambodia was roughly 45,000 in primary schools and almost 7,000 in secondary schools, and across the country, children with disabilities were three times less likely to access educational opportunities than their peers without disabilities (UNICEF, n.d.).

1.1 Research gap

While there are some studies being conducted in Cambodia on inclusive education, most of these studies focus on classroom-based methodologies or policy analysis, with little attention given to the socio-cultural roots of exclusion. Through looking deeper into the origins and manifestations of attitudes towards disability, this study presents a new perspective on inclusive education, which is both culturally relevant and practical. This study, therefore, aims to explore inclusive education from a socio-cultural perspective by understanding attitudes and perceptions of disability across a wide range of stakeholders, and using a community-centered approach to facilitate inclusion.

1.2 Research objectives

The research objectives of the current study are as follows.

1. To understand the barriers to inclusive education in Cambodia.
2. To explore the attitudes of teachers and parents towards students with disabilities in the Cambodian context.
3. To provide examples of best practices and emerging ideas for culturally-sensitive inclusive education.

1.3 Research questions

The research questions of the current study are as follows.

1. What socio-cultural barriers exist to inclusive education in Cambodia?
2. How are children with disabilities perceived in the educational context in Cambodia?
3. What strategies could be employed to advance inclusive education?

2. Literature review

Cambodia has achieved notable advancements in education during the last twenty years, enhancing enrollment, institutions, and teacher training (Bou, 2025). Nonetheless, according to UNICEF (2024), obstacles persist, especially for women, girls, and children with disabilities, owing to insufficient teacher competence, substandard learning settings, and cultural and economic impediments. While inclusive education policies are established, their implementation is inconsistent, resulting in numerous students with disabilities being inadequately supported. This section examines the present educational environment, emphasizing both advancements and persistent deficiencies.

2.1 Educational landscape in Cambodia

Overall, Cambodia has made significant progress in the education sector since the early 2000s. Access to education in particular has seen major improvements over recent decades, with about 93% of school-age children attending primary school in 2021 (UNICEF, n.d.). Institutional expansion has played a large role in this increase, with almost 2,000 public secondary schools now available in the country, as well as over 130 higher education institutions.

Teacher training has also improved across the country, through initiatives including enhanced training curricula, improved training facilities and resources, and upgrading programs for in-service teachers and teacher educators. Another significant improvement has been the development of two teacher training colleges, offering modernized programs (Heng & Sol, 2023).

Despite all of this progress, quality education remains a challenge in the country. According to UNICEF (n.d.), children across the country are failing to reach learning standards appropriate for their age, with nearly 25% of children in Grade 3 unable to write a single word in a dictation test. Only 27% of 3- to 5-year-olds are developmentally on track in literacy and numeracy, and by the time they are 17 years old, 55% of adolescents will have dropped out of school. Many of these issues are exacerbated by persistent challenges, including a shortage of teachers in remote areas, a lack of teacher capacity building, inadequate technological infrastructure, and a lack of materials for sanitation promotion (Heng & Sol, 2023).

Women and girls are particularly vulnerable to this lack of quality education, as globally they are more likely to miss school or to be denied education than their male counterparts (Wooden et al, 2018). Traditionally, women and girls were not encouraged to study in Khmer culture, due to the religious norms of schools, as well as the societal expectations placed on them, to look after the household, and to remain within the tight social circle of the family (Em et al, 2022). Since the early 2000s, this culture has begun to change, and it has become much more culturally acceptable for girls to attend school; however, longer-term challenges remain due to the persistence of traditional gender roles – especially in rural areas – as well as poverty, accessibility, and sanitation.

In the longer term, inadequate education in early years of life, coupled with poor nutrition, can leave children developmentally behind (Heng & Sol, 2023). This is most often due to a lack of qualified teachers and poor-quality learning environments. And the situation for children with disabilities is even more complex.

In the first instance, inclusive education is still a new concept in Cambodia, beginning with the ratification of the CRPD, as well as the introduction of the ‘Education Law’ in 2007, which

provided, for the first time, the rights of learners with disabilities. Initially, this provision of ‘special education’ focused on separating children with disabilities from their classmates without disabilities, and on their needs for special resources, teachers, and materials (Kuroda et al, 2017).

Later interventions, following the introduction of the Cambodian Law on the Protection and Promotion of the Rights of Persons with Disabilities (2009), focused more on inclusive – rather than special - education, and a more nuanced understanding of disability began to emerge (Nishio, 2019). This more current approach seeks to embrace all children – regardless of ability - and to teach based on their unique needs together in a classroom. It does not seek to make children with disabilities adapt to regular classes, but instead calls for schools and teachers to adapt systems, curricula, and resources to the individual and unique needs of all children (Armstrong et al, 2010). Of course, implementation remains a pervasive problem, and the roll-out of inclusive education has been sporadic at best.

Because of these difficulties with implementation, many children with disabilities continue to be left out of both mainstream and special education due to misunderstandings about their capabilities, as well as a lack of general accessibility. As well as this, the quality of education across the board in Cambodia remains low, and high-quality, inclusive education remains difficult to attain for many children with disabilities.

3. Methodology

3.1 Research design

This study is qualitative in nature and is based on interviews and focus group discussions with people with disabilities, their communities, and advocates, which took place in 2022, as part of the author’s PhD research. Supplementing this, local teachers, principals, and parents of children with disabilities were engaged as key informants to provide the current context for this study. Qualitative methods are employed so as to provide an opportunity for disabled people to articulate the issue under study and describe problems and experiences in their own words, as well as to put the issue in context (Buettgen, 2012).

Utilizing a qualitative approach to research also aligns with the author’s position of bounded relativism, which explains that one shared reality often exists within one ‘bounded’ group, but across groups, different realities exist (Moon & Blackman, 2014). This is highly applicable to disability research and allows the author to reflect on the real-life meanings of social norms in terms of education in Cambodia.

As mentioned above, semi-structured interviews included both people with disabilities and key informants as part of this study. These methods are widely used in qualitative research, and allow the researcher to enquire openly about the situational meanings or motives for an action or statement, as well as allowing for deeper discursive understanding through the participants’ direct interpretations of his or her own experiences (Hopf, 2004).

Focus group discussions were also utilized during this study to supplement the data gathered in individual interviews. The interactive, fluid nature of focus group discussions was used to inform this study in order to create an environment where participants were able to express their beliefs and perspectives about disability and education, which may have been considered taboo in other settings. Focus groups are also useful for promoting dialogue, where participants

are able to transform social knowledge into action when they share ideas, and these discussions thus informed the recommendations of this study.

3.2 Sample size

Participants in this study were mainly from the disabled community in Siem Reap and Phnom Penh, Cambodia. As displayed in Table 1 below, interviews took place with people with disabilities, family and community members, local and international NGOs, and disabled persons' organizations (DPOs), and religious and community leaders, as well as teachers and parents of children with disabilities, for a total of 16 in-depth interviews, 2 focus group discussions, and 22 key informant interviews. Much of this access and information was facilitated by local organizations, in particular See Beyond Borders Cambodia. Participants were primarily chosen for their lived experience of disability and/or education, and to provide a real-world context for socio-cultural norms. Local NGOs and organizations acted as 'gatekeepers' in this study, facilitating access to participants and resources. Thus, a process of snowball sampling was used, where organizations introduced the researcher to interviewees, who then suggested others who might be interested in taking part in this study. 60% of participants in this study were female, and all were between the ages of 18 and 65.

Table 1. Sample Size and Participant Profile

Count	Category	Participant	Gender	Age
1	Interview	Person with disability	F	18–25
2	Interview	Person with disability	F	26–35
3	Interview	Person with disability	M	26–35
4	Interview	Person with disability	F	36–45
5	Interview	Person with disability	M	26–35
6	Interview	Person with disability	F	18–25
7	Interview	Person with disability	M	36–45
8	Interview	Person with disability	F	26–35
9	Interview	Person with disability	F	46–50
10	Interview	Person with disability	M	36–45
11	Interview	Person with disability	M	26–35
12	Interview	Person with disability	F	51–60
13	Interview	Person with disability	F	26–35
14	Interview	Person with disability	F	46–50

15	Interview	Person with disability	F	36–45
16	Interview	Person with disability	M	18–25
17	Focus group	NGO staff	M	26–35
18	Focus group	Family member	F	51–60
19	Focus group	DPO staff	F	36–45
20	Focus group	DPO staff	F	36–45
21	Focus group	NGO staff	M	46–50
22	Focus group	Person with disability	F	18–25
23	Focus group	Person with disability	F	26–35
24	Focus group	NGO staff	F	36–45
25	Focus group	NGO staff	F	36–45
26	Focus group	Family member	F	60+
27	Key informant	DPO staff	M	46–50
28	Key informant	DPO staff	F	26–35
29	Key informant	DPO staff	F	26–35
30	Key informant	Teacher	F	36–45
31	Key informant	Family member	M	51–60
32	Key informant	NGO staff	F	26–35
33	Key informant	NGO staff	F	26–35
34	Key informant	Religious leader	M	60+
35	Key informant	DPO staff	M	51–60
36	Key informant	Teacher	F	36–45
37	Key informant	Community leader	M	46–50
38	Key informant	Community leader	M	60+
39	Key informant	Family member	F	51–60
40	Key informant	DPO staff	F	36–45

41	Key informant	Teacher	M	36–45
42	Key informant	Teacher	F	26–35
43	Key informant	NGO staff	F	46–50
44	Key informant	Family member	F	46–50
45	Key informant	Principal	M	51–60
46	Key informant	Person with disability	F	46–50
47	Key informant	DPO staff	M	26–35
48	Key informant	Principal	F	60+

3.3 Data collection methods

The semi-structured interviews for this study were scheduled with the help of gatekeepers acting as intermediaries, at a time and place that was convenient for participants. All lasted approximately 40 minutes and followed the same set of questions. Beginning with some demographic information on participants, closed questions were used to understand the context from which participants were speaking. Then a series of open-ended questions was asked to participants. Participants were not limited in their response time and could come back to questions if needed. Each interview followed the same script and was conducted in Khmer, with the help of a translator. These interviews aimed to understand the lived experience of people with disabilities with regard to education and livelihoods. The supplementary key informant interviews also followed a semi-structured pattern, but with the open questions focused more on context, education, and interaction with people with disabilities.

Focus groups were arranged by the researcher, with the help of gatekeepers, with key contacts from across the NGO and education sectors. Focus groups set out to capture the general feeling about inclusion within the wider community in Cambodia. These discussions comprised 5 participants each, drawn from a wide variety of organizations, communities, and backgrounds, but all in some way related to the disability movement. Again, focus groups followed a set formula in terms of schedule, and a series of questions was put to the groups for discussion. Questions centered around perceptions of disability, stereotypes, traditional roles, and opportunities. Moderating these groups was a challenge for the researcher, making sure that no one dominated the conversation and everyone was heard, especially as these were conducted in both Khmer and English, with the help of a translator.

3.4 Data analysis

Once field data had been collected and centralized, interviews and focus groups were transcribed and organized in Google Drive. A process of hand color-coding was then employed to extract ideas from each interview. These ideas were categorized under themes and sub-themes to allow the researcher to find patterns and recurring ideas. These themes then informed the overall structure and findings of this study. Quotes and demographic data were also entered into Microsoft Excel, so that these could be easily referenced.

3.6 Ethical considerations

Ethical considerations are particularly important to this study, as people with disabilities are often considered to be a vulnerable population. Therefore, the researcher gave priority to the safety, well-being, and empowerment of participants throughout the study.

The ethical guidelines used for this study explain that vulnerable research participants should receive special attention as they experience heightened stigmatization, limited power, lower education, increased poverty, limited resources, and may be at risk of being exploited or harmed during research. Given their marginalization and vulnerability in Cambodia, researching educational opportunities for people with disabilities challenged the author to account for extra ethical considerations, as well as informed consent, confidentiality, and conflict of interest.

Firstly, participants were asked for their informed consent to participate in this study before agreeing to the interviews. Consent was gathered in Khmer, using plain language consent forms. Participants with extra needs were given the option to have consent forms read aloud to them, so that they could verbally agree on record. Participants were informed of the outcomes and outputs of this study and were free to withdraw from this study at any time. All data were anonymized at the transcription stage to protect confidentiality, and participants were informed that no identifying characteristics would be used. Conflicts of interest were dealt with through a continuous process of open and honest communication between the researcher and all participants.

Finally, to promote meaningful participation and empowerment, the researcher sent drafts of findings back to participants from this study, so that they could check findings and make any amendments needed. This held the researcher accountable to the communities and also promoted ownership and respect.

4. Findings

This part reveals the socio-cultural and institutional influences that affect the lives of children with disabilities in Cambodia from the findings of the study. The part examines dominant society beliefs, familial and communal opinions, and the influence of educators in creating educational options. The findings emphasize the interplay of traditional beliefs, gender norms, and restricted teacher ability in shaping access to and the quality of inclusive education, along with the obstacles encountered by children with disabilities during their educational experience.

4.1 Socio-cultural norms surrounding disability in Cambodia

Disability in Cambodia continues to be primarily understood through the medical model of disability, as evidenced by the Cambodian Disability Law (2009). This places much of the ‘burden’ of disability on the individual, without recognizing the disabling factors that exist within Cambodian society at large. Despite having ratified the CRPD in 2012, awareness of international, regional, and national disability rights legislation and policy frameworks is limited among government officials, particularly at the provincial, commune, and village levels, as explained by community leaders from the sample (37 and 38 in Table 1). This means that implementation of these policies at the local level is often poor and disjointed across different provinces (Gartrell & Soldatic, 2016). As well as this, the teachers referenced in Table 1 above explained that public awareness and mass education campaigns on the inclusion of people with disabilities in the country’s mainstream have historically been non-existent, and have only recently begun to emerge. This lack of disability awareness means that numerous

superstitions and misinformation regarding disability have lingered in Cambodia, especially in rural areas (Connelly, 2009). These beliefs and superstitions affect how Cambodians with disabilities are perceived in all areas of life.

While recent advancements in the understanding of disability have begun to take hold in Cambodia, perceptions around the causes of disability are often still influenced by both biomedical and traditional factors. The religious leader in this sample (34 in Table 1) reported that many Cambodians believe disability to be a result of karmic destiny, or the interference of Brahmic spirits. Under this karmic rule, people with disabilities are believed to have committed bad deeds in a past life, and are therefore being ‘punished’ with disabilities in this life. As such, people with disabilities often report facing discrimination and being shown little sympathy by others in society. As explained by participants 1 – 4 in Table 1, this means that people with disabilities in Cambodia – and especially women with disabilities - can experience significant exclusion, including direct discrimination and social isolation, as well as exclusion from political processes and development. This has led to widespread misunderstandings about the capabilities of people with disabilities, often furthering their exclusion from opportunities (Participant 46, Table 1).

In Cambodia, it is not just disabled identities alone that cause discrimination, but these interactions of social norms and culture with identities, which reproduce structural violence and ostracisation felt to varying degrees by the diverse population of people with disabilities (Gartell & Soldatic, 2016).

Goffman (2014) argued that most people understand themselves and their self-worth through the eyes of other people, and further explained that individuals tend to determine how they act based on their perceptions of themselves or others. This, he argues, often leads to people with disabilities being seen as ‘not quite human’ by those around them, and often being ‘discounted’ by society for their differences. This was echoed by participants across the board during this study, who reported feeling “different from others” and “looked down on” (Participants 6 & 9 in Table 1). One participant described how she feels people with disabilities are treated in society:

If people see a disability, people don't dare to ask or talk to them. Tuk-tuk drivers don't want to transport them. They [able-bodied people] are afraid they will infect them. (Participant 13, Table 1)

Socio-cultural perceptions of disability, therefore, have far-reaching implications for the entire life course of people with disabilities. At a basic level, the attitudes of family members and communities were found by both participants with disabilities and their family members to have a huge impact on the identities of people with disabilities and the opportunities they felt able to pursue.

In Cambodia (as well as many other societies), these assumptions are based on traditional beliefs, religion, and stereotypes, and present all people with disabilities as a homogenous group, all of whom lack the capacity to engage with the world in a way that is ‘normal’.

4.2 Attitudes of parents

Parents of children both with and without disabilities are a driving factor behind educational attainment, as they support and contribute to all aspects of learning. In particular, parents tend

to act as role models for their children, as children develop their own views by adopting their parents' attitudes and behaviors (Bopota et al, 2020).

According to teachers, family members, and community leaders included in this sample, the negative attitudes of parents towards children with disabilities represent a major factor in low rates of educational achievement in Cambodia. One-third of people with disabilities included in this study have never attended school and report a lack of encouragement from families as a contributing factor. Parents across the developing world are reported to be hesitant to invest in the education of children with disabilities, seeing it as a bad investment. In this study, participants with disabilities (Participants 12, 22, 23, and 46 in Table 1) explained that many families believe that children with disabilities cannot succeed at school, and will remain dependent on their parents in later life, whether these children are sent to school or not.

These negative attitudes are one of the most significant barriers to education for people with disabilities, according to interview participants, who explain that even at home, “[her] parents did not encourage [her] to study because of disability” (Participant 5, Table 1). It is important to highlight that these negative attitudes towards disability do not indicate a lack of love or care for children with disabilities, but rather reflect a culture and society that lacks the knowledge and resources to fully accept children with disabilities.

Aside from those participants who had never attended school, most had not completed secondary school, and only 1 participant had gone to university. Of the participants who did continue into secondary education, 68% of people with disabilities surveyed here did not complete secondary school. Participants explained that it was “hard to access education due to disability”, and that poverty and needs of the family were major barriers to their education (Participants 1 and 15, Table 1). A study by UNICEF (2018) also identified poverty as a significant barrier to inclusive education in Cambodia, and expands on this by explaining that many children with disabilities from poor households are unable to attend school due to the costs of uniforms, school supplies, and transportation.

As a result of this exclusion from school, children with disabilities miss out not only on the opportunity to develop their literacy and numeracy skills, but also the ability to develop the various types of human capital which will enable them to lead successful adult lives (Participant 48 in Table 1). Schools also play an important role in developing personal qualities and building the confidence of children with disabilities to embrace opportunities and tackle challenges that they may face in life (Cobley, 2023). All of this means that a large part of the correlation between disability, poverty, and exclusion can be attributed to low educational attainment (Filmer, 2008).

In interviews as part of this study, Cambodians with a wide range of disabilities described regularly experiencing negative attitudes surrounding disability from those around them. Particularly within the family, participant 9 stated that “my parents gave up on me because I have a disability.”, and many others described how their parents were not interested in sending them to school because of their perceived inability to contribute to the household.

These attitudes towards disability are also linked to the widespread belief in karma. Under this karmic rule, people with disabilities are believed to have committed sins in a past life, and therefore are being ‘punished’ with disabilities in this life. As participant 11 explained, “because of Karma, they think we are not good people from a previous life. They think the family has bad luck to have a child with disability.” According to both religious and community leaders (participants 34, 37, and 38 in Table 1), this karmic belief, combined with assumptions

about capacity as outlined above, creates patterns of dependence and pity, which ultimately restrict the potential of children with disabilities.

As well as this, key informants also described practical barriers to education, including issues with commuting and guardianship. For example, a local parent explained:

I can't be at the school every day to support my child who [is in a] wheelchair and unable to help himself because I have to work to earn income. The main barrier pulling me from sending him to school is my concern that he is there at school alone, and the difficulty for him to move around. (Participant 31, Table 1)

This was echoed by a guardian at another school, saying:

His parents are both working, and he is fortunate to have grandparents who send and supporting him at school. Now he is in grade four, and we are happy that he can learn even though he had to repeat grade one and grade two. (Participant 44, Table 1)

These practical ‘pinch points’, combined with the social devaluation of the abilities of people with disabilities, can lead to experiences of significant exclusion from education.

This is particularly true for girls with disabilities, who are often denied education due to societal perceptions of both their gender and their impairment. Here, gendered norms remain heavily rooted in society, creating inequality between men and women and depriving women of their basic rights. In Cambodia today, there are still fewer girls than boys who complete school. The level of education often correlates with a woman’s power to be able to exercise her reproductive rights later in life (e.g., the right to decide the number and spacing of her children, when to get married, and when to have children) (UNFPA Cambodia, n.d.). When combined with the social perceptions of disability described above, this means that girls with disabilities continue to be deemed unsuitable for schooling and often, for success in the labor market (Reavill, 2022).

For example, participant 3 explained:

There are many jobs that people think are only for boys... and when opportunities are given to people with disabilities, they are always given to men with disabilities first. They have more opportunities than women.

DPO and NGO staff interviewed here explained that this is often because a woman’s main role in Cambodia is still to be a wife, mother, and homemaker, while the man is the main decision-maker and income-earner. Since education and vocational training are seen as investments for higher-value employment, a woman with disabilities is less likely to have the opportunity to receive them (Kiani, 2009). Consequently, girls with disabilities are systematically denied access to education and opportunities, due to their perceived roles in society.

This discrimination, which often starts in the home, can be further amplified by community members and peers, and may have a profound impact on the self-worth and self-belief of children – and particularly girls – with disabilities. Therefore, in order to combat this, a whole-community approach is needed, including families, peers, teachers, and community leaders.

4.3 Attitudes of teachers

Another major factor that influences the educational opportunities available to children with disabilities in Cambodia is the attitude and ability of teachers. Specifically, studies have demonstrated that teachers who have knowledge of and experience with disability tend to be more receptive towards children with disabilities and inclusion in classrooms (Kartika & Kuroda, 2019), and conversely, those who lack training and awareness around the capabilities of children with disabilities may view children as problematic or disruptive (Trani et al, 2011). Both principals and teachers included in this sample explained that teachers' beliefs and attitudes are critical to ensuring the success of disability inclusive education, because the practical implementation of policies and laws for inclusion ultimately lies with them. Therefore, there has been a move across the country to promote inclusive education among teachers in recent years.

According to Article 39 of the Cambodian Law on Education, children with disabilities have the right to be educated in inclusive classrooms along with their peers without disabilities (Cambodia National Assembly, 2007). To support these commitments, the Ministry of Education, Youth and Sport developed the Policy on Inclusive Education in 2018. This new policy aims to ensure inclusive and equitable quality education for all children. Its goal is to provide children with disabilities the knowledge and skills necessary to become active and engaged citizens (Ali et al., 2024).

Despite these progressive policy shifts, teachers across all provinces included in this study express concerns about inclusive education. For example, a teacher near Battambang stated:

I don't think we have the expertise to educate children with disabilities, but indeed, there are specific schools supported by NGO that accommodate children with disabilities. We don't discriminate against them, but we need to get trained on special education support if they come to our school. (Participant 30, Table 1)

This exemplifies that while teachers may express positive attitudes towards inclusion, their own capacities are often limited.

In particular, teachers and principals in this sample were found to have significant concerns surrounding practical inclusion in classrooms, primarily centered around a lack of resources and training. Teachers, principals, and community leaders all report that the inadequate availability of instructional materials and teaching aids is of primary concern, as well as a lack of knowledge and skills required to teach inclusively. One teacher explained:

It is very challenging to have over 35-40 children in the class, and also helping children with autism learn, because in Cambodia, there is only one teacher in a class. If I locate them in the front, I can easily support them, but they also interrupt other students. Sometimes, I place them at the back, so they won't cause difficulties for others. (Participant 45, Table 1)

This highlights the need for a greater investment of resources, including textbooks and support staff, in large schools.

As well as this, inadequate training on inclusive practices significantly reduces teachers' confidence in inclusive education. Cambodia currently has no specific qualifications or courses focused on disability inclusive education, except for a basic overview in early training. Teachers primarily rely on the *Teacher Training Guide in Inclusive Education for Teacher Trainers*; however, this is not taught in adequate detail, covering only the basics of inclusion,

without any hands-on experience or significant focus on pedagogy (Pov & Kawai, 2025). Many teachers also report not having access to this kind of training and development, and those who did felt that training did not adequately prepare them for effective inclusion.

Furthermore, Pov and Kawai (2025) also found that years of teaching experience had a significant impact on attitudes of teachers towards inclusion, where teachers with more years of teaching experience had significantly greater concerns about inclusion than those with fewer years of experience. This is likely representative of the changing social norms and attitudes towards people with disabilities more generally in Cambodia, where older people and more rural populations tend to have lower understandings of disability and capacity, and stereotypes remain entrenched. This also positively highlights a change in these attitudes in younger teachers, as well as a greater focus on inclusive teaching.

In order to progress disability inclusion across schools in Cambodia, it is crucial to provide teachers with the support and resources that they need. Training on inclusive pedagogies in particular should be foregrounded, with a focus on hands-on, practical applications of theory. While it is very clear that the will to practice inclusive education does exist within teachers in Cambodia, greater emphasis should be placed on policies and frameworks related to the continuous professional development of teachers, including the Continuous Professional Development Framework and Action Plan, among others.

It is also important to address the widespread lack of resources through sustained investment and innovation, as well as to enhance teachers' motivation to address their concerns about the practicalities of inclusion. Pov and Kawai (2025) proposed that teachers working in inclusive ways should receive additional incentives for their increased workloads, increased access to resources, and additional support from special education teachers.

While implementing these recommendations remains challenging, it is important to recognize that social change is a slow but steady process, involving all members of a community.

5. Discussion

As described above, superstitions and misinformation about disability have led to misunderstandings about the capabilities of people with disabilities, often leading to their exclusion from both education and the wider community (Connelly, 2009). The basis of this exclusion is context-dependent, and in Cambodia, the primary barriers are physical, monetary, and institutional. Households that do not send disabled children to school are often contending with the culmination of multiple barriers, where physical access to schools might be an issue, parents may be unable to pay school fees, and children are not properly included in classes.

This also shows that while enrolment and attendance at school are important for children with disabilities, their inclusion, empowerment, and participation are arguably more important in later life. Meaningful inclusion seeks to go beyond merely having children with disabilities at school, but rather encourages their participation, involvement, and deep engagement with material as well as their peers. This kind of retention and participation is important because higher levels of education tend to lead to improved self-belief and self-confidence in later life, which are valuable assets to people with disabilities as they navigate a complex web of discrimination and marginalization in later life.

This is particularly important for girls with disabilities, who are at greater risk of dropping out than their male counterparts. A 2017 report from the UNGEI found that while there has been

evidence of greater numbers of girls with disabilities being enrolled and retained in school, there is also evidence of girls with disabilities dropping out of school at a higher rate than boys, and often due to gender-related challenges (Al-Ghaib et al., 2017). These challenges often include a lack of accessible basic infrastructure, including hygiene facilities, a lack of gender-responsive teaching practices, and school-related gender-based violence. This same report also found that interventions relating to the education of girls with disabilities have often been concentrated on their enrolment and attendance, rather than on their meaningful participation and empowerment. To overcome these barriers for all children with disabilities going forward, inclusion and participation must be central to education.

6. Conclusions and recommendations

In conclusion, a progressive shift in attitudes and social norms must take place across communities in Cambodia to better understand the needs of children with disabilities. Inclusive education is a nascent area in Cambodia, and while there have been many commendable changes in recent years, the area would benefit from more action research. This would provide concrete measures of progress, highlight areas for improvement, and broadly speed up the rate of positive change.

Beginning in the home, as described above, the attitudes of parents of children with disabilities can have a profound impact on the opportunities available to them. Where parents do not see the value in educating their children with disabilities, and especially girls with disabilities, they are prevented from participating fully in society. Conversely, encouraging parents to foster the independence and autonomy of children with disabilities is instrumental in removing some of the barriers to societal inclusion.

In a school setting, teachers in Cambodia are generally open and receptive to inclusive education; however, in most cases, they lack proper training and sensitization. In rural schools and resource-poor settings, it can be difficult for teachers to manage all of the demands placed on them, thus limiting the possibilities for meaningful inclusion. The shift towards inclusive education is also gradual, as it may be easier to include children with certain types of disabilities than others. For example, a teacher at a school near Siem Reap explained, “I feel that if students have minor disabilities, they will be able to

learn the same way as other students. For instance, one student in my class has a problem with hearing, but she wears hearing aids to school every day. She can catch up with others and receive the same education from me as others.” This progressive approach to inclusion can be gradually improved upon and expanded, as teachers’ capacity and resources increase.

Further to this, teacher training should be improved, specifically with reference to inclusive education. Developing and implementing a separate course focused on this inclusive education in teacher training is crucial to ensure that pre-service teachers feel well-equipped to meet the needs of students with disabilities. This should include hands-on experience, as well as updated training materials and resources.

This focus on improving teachers’ capacity should also extend to the resources available in schools across the country, and this study advocates for greater investment in inclusive education. When students with disabilities are provided appropriate instruction and supports, they can learn grade-level general education curriculum, communicate in ways that are commensurate with their same-age peers without disabilities, have meaningful social relationships, and graduate career-ready.

Related to this, while this study and many of those cited here do consider students with a variety of different types of disabilities (including physical, intellectual, social, sensory, etc.), it can be difficult to disaggregate by impairment in much of the literature surrounding children with disabilities and their educational needs. It is important going forward to recognize that disability is not a homogenous concept when it comes to education, and to give more weight to the nuances of children's needs based on impairments and other identity-related factors, including class, gender, age, and socio-economic status, among others.

Finally, this study argues for a whole-community approach to inclusion, where children and people with disabilities, their parents, teachers, friends, and extended communities work together to foster meaningful and context-appropriate inclusion. Both parents and teachers, as well as other stakeholders in the community, can and should be involved in these inclusion practices. As explored above, cultural norms impact perceptions and stereotypes around disability in a variety of ways, and collaboration and shared learning are the best ways to change these. To this end, when designing interventions focusing on inclusion, it is important to consider the attitudes of multiple stakeholders, as well as students themselves.

These recommendations, while broad and far-reaching, would have a profound impact on the learning experiences of children with disabilities across the country, and would meaningfully contribute to their self-worth, self-belief, and ultimately to the opportunities available to them in later life.

Acknowledgments

The author wishes to convey her profound appreciation to the reviewers and the editing team of CJESS for their evaluation and proofreading of the manuscript. This study would not have emerged in academic circles without their assistance. Consequently, their contributions are seen as indispensable and beneficial to society at large, particularly within the academic community of research and publication.

Conflict of interest

No potential conflict of interest was reported by the author.

Funding

The author received no financial support for the study, authorship, and/or publication of this study.

Declaration of AI usage

The author used Grammarly to polish the language in some parts of the article. However, she declared that the content of the article is totally hers.

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Introductory note on the intended meaning of public accountability and the influence of information and communication technologies

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Article Info

Article history

Received: May 15, 2025

Revised: July 24, 2025

Accepted: August 7, 2025

Keywords

Accountability

ICT

Public sector

Responsibility

Transparency

Article type

Review article

Abstract

Accountability is necessary in the public sector for a variety of reasons, including enhancing public goods and services and preventing public problems from arising. However, making accountability happen in the public sector is a difficult task. The reason is that people do not have the same ideas about how accountability works. The concept of accountability is often juxtaposed with other concepts such as transparency, liability, controllability, responsibility, and responsiveness. At present, the journey to accountability has been shaped by advanced information and communication technologies (ICTs) such as computerized systems and artificial intelligence systems. While ICTs are widely deemed useful for the administration, management, and governance of the public sector, the usefulness of ICTs in public accountability mechanisms is still under debate. This review article does not intend to contribute to the debates but rather to simplify the complex concept of public accountability and discuss how advanced ICTs shape it. To cut a long story short, it serves as an introductory note for general readers, particularly those with limited knowledge of the concept, to improve their understanding of the concept.

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1. Introduction

Accountability is essential for any society (Behn, 2001; Dimitrov, 2013). The use of the term can be dated back to the 18th century or even before that (Dubnick, 1998), and it has been examined in a wide range of academic disciplines such as accounting, public administration, political science, international relations, and even social psychology (Bovens et al., 2014). However, the conceptualization of accountability has never been easy because of different views of how it should work (Mulgan, 2000). In the public sector, the notion of accountability has become even more complex because it is often used to refer to the relationship among multiple actors, such as government organizations, private businesses, civil society actors, and citizens that are involved in the formulation and implementation of public policy (Klijn & Koppenjan, 2012).

Nonetheless, it is widely believed that transparency brings about accountability (Bovens, 2007; Fox, 2007; Hood, 2010; Koppell, 2005). Following the rise of information and communication technologies (ICTs), it is believed that making transparency happen has become more

convenient. For example, with the internet, the government can disseminate its reports online, and the public can access those online reports without having to go to physical offices and meet physical people to request hard copies of the reports. With easily accessible information, the public will find it more convenient to hold the government accountable. However, expectation is not always the same as reality. It is found that ICTs can undermine transparency and accountability (McGee et al., 2018).

This review article intends to simplify the complex concept of public accountability, which has been debated for some decades in the wider literature, and raise public awareness of the influence of advanced ICTs on public accountability. The following sections are organized as follows: the evolving meaning of public accountability; the influence of ICTs on public accountability; real-world lessons from digital participatory budgeting; and conclusion.

2. The evolving meaning of public accountability

The literature has shown that accountability is subject to diverse explanations. According to Behn (2001), accountability is about the relationship between two types of people: (a) people who hold somebody accountable (called “accountability holders”) and (b) people who are held accountable (called “accountability holdees”). In the public sector, Behn (2001) suggested that this relationship exists to serve three purposes: finance, fairness, and performance. For finance, an accountability system is to encourage the wise use of public money to serve public interests. For fairness, an accountability system is to encourage individuals or organizations with public power to treat everyone fairly. For performance, an accountability system is to encourage individuals or organizations with public duties to deliver public goods and services that conform to public expectations.

Behn (2001) further noted that accountability holdees need to face a consequence for their conduct regarding the three purposes. They will not be rewarded for their good conduct, but if they commit wrong, the consequence they need to face is punishment. However, Behn (2001) argued that how a person holds someone else accountable (or punishes someone else) is less understood, and the term “accountability” becomes a cliché that is overused by people without clearly understanding its original meanings and purposes. He emphasized that the purpose of an accountability system is not merely to catch wrongdoers but rather to prevent wrongdoings in the future. Therefore, the success of an accountability system comes when accountability holdees stop repeating the same mistakes.

Meanwhile, Koppell (2005) questioned why an organization should be held accountable. He noted that there must be a reason for holding an organization accountable for its conduct. For example, before punishing an organization for a result of its conduct, it is necessary to know first whether the organization acts as ordered by its principal, by applicable rules and regulations, or in what way. Without proper reasons, it is not appropriate to hold the organization accountable when things go wrong, and an accountability system may not achieve its intended purpose. He suggested that accountability has five dimensions, and each dimension implies a reason why an organization or an individual should be held accountable.

The five dimensions of accountability, as proposed by Koppell (2005), are as follows:

- **Transparency:** Information is needed to understand the conduct of an organization. Therefore, an accountable organization must explain or account for its actions.

- **Liability:** An organization does not stand still, and it engages in a wide range of activities. Therefore, an accountable organization must face consequences for its conduct, and these consequences can be either rewards or punishments.
- **Controllability:** An organization can carry out its actions because it is authorized by its principal. Therefore, an accountable organization must do what its principal demands.
- **Responsibility:** An organization cannot always do what it wants to do. It is guided by certain formal and informal rules. Therefore, an accountable organization must follow these rules.
- **Responsiveness:** An organization has its clients or customers. Therefore, an accountable organization must meet the demands and needs of its clients.

Nonetheless, Koppell (2005) dimensions of accountability are not universally accepted. Some scholars (e.g., Mulgan, 2000) have suggested that concepts such as transparency, liability, controllability, responsibility, and responsiveness can stand on their own and should not be regarded as the dimensions of accountability, although they are connected to accountability.

Based on the experiences of European countries, Bovens (2007) defined the term “accountability” as “a relationship between an actor and a forum, in which the actor must explain and justify his or her conduct, the forum can pose questions and pass judgment, and the actor may face consequences” (p. 450). Based on this definition, Bovens (2007) suggested that there are four dimensions to view accountability: (a) the nature of the forum, (b) the nature of the actor, (c) the nature of the conduct, and (d) the nature of the obligation. The implication from these dimensions is that there are multiple forms of accountability. In his typology, there are at least 15 different forms of accountability relationships. They are briefly explained below.

Based on the nature of the forum, there are five forms of accountability relationships:

- **Political accountability:** For a common democratic country, the public elects the legislative body (i.e., the parliament), and the legislative body appoints the executive body (i.e., the government). Therefore, the executive body is accountable to the legislative body and then to the public.
- **Legal accountability:** No one is above the law. Therefore, like the public at large, government organizations and their members are accountable to the law. Here, the courts act as the forum.
- **Administrative accountability:** Government organizations are subject to external administrative and financial control by independent review bodies such as auditors, inspectors, and controllers. Therefore, they are also accountable to these bodies.
- **Professional accountability:** Some government organizations, such as hospitals, schools, and police departments, are regarded as professional organizations. They need to comply with certain professional codes. Therefore, they are accountable to these codes. Here, professional bodies that formulate the codes act as the forum.
- **Social accountability:** In society, governments receive taxes from the public, revenue from the provision of their goods and services, funding support from donors, and so on. Therefore, they are accountable to the public at large, including interest groups and donors.

Based on the nature of the actor, there are four forms of accountability relationships:

- **Corporate accountability:** Each organization is the actor to be held accountable. No natural person is held accountable.

- Hierarchical accountability: In the hierarchy of an organization, lower echelons are accountable to higher echelons, and the top manager is accountable to external forums.
- Collective accountability: Each person in the organization shares the burden of accountability.
- Individual accountability: Each person is proportionately accountable for their contribution to the conduct of their organization.

Based on the nature of conduct, there are three forms of accountability relationships:

- Financial accountability: Government organizations are accountable for their financial conduct (e.g., how they use public money).
- Procedural accountability: Government organizations are accountable for their procedure or processes (e.g., how they reach a policy decision that affects the public).
- Product accountability: Government organizations are accountable for their products and services.

Based on the nature of obligation, there are three forms of accountability relationships:

- Vertical accountability: This accountability relationship is based on a principal-agent contract. For example, the parliament (principal) appoints the government (agent); therefore, it holds the government accountable.
- Horizontal accountability: The actor and the forum stand on equal footing, and their accountability relationship is not established by a principal-agent contract. For example, one government organization is accountable to another government organization.
- Diagonal accountability: In this accountability relationship, the actor is not directly accountable to the forum. The actor and the forum are separated by an intermediary. For example, the government is accountable to the parliament through independent review bodies such as external auditors and inspectors.

Based on Bovens' (2007) explanation of accountability relationships above, it can be implied that all actors in the public sector, such as government organizations, private businesses, civil society actors, and citizens, can be either accountability holders or accountability holdees. It depends on the level of their respective contribution to the formulation and implementation of public policy (Klijn & Koppenjan, 2012). However, as society changes and develops, “no one typology has yet emerged as standard or generally accepted” (Mulgan, 2003, p. 30). Therefore, it is hard to identify a single definition, a typology, or a framework that is accepted by all people.

Nonetheless, there seems to be a consensus in the literature that public accountability is needed to prevent public problems from occurring, and all individuals/organizations can be held accountable for their respective contributions to public problems. Also, based on different scholarly explanations above, it is reasonable to argue that an accountability system can be regarded as a three-phase process: (a) the information phase, (b) the debating phase, and (c) the consequence phase.

- Firstly, the information phase requires accountability holdees to report their conduct to accountability holders. To make subsequent phases possible, it is necessary that information about the conduct of accountability holdees reach accountability holders and be understood by them.

- Secondly, the debating phase involves asking additional questions (usually uncomfortable questions) to hold accountability holdees for their conduct. And accountability holdees are obliged to answer the questions and justify their conduct.
- Thirdly, the consequence phase involves judging the conduct of accountability holdees. Accountability holdees may face consequences (e.g., rewards or sanctions), and these consequences depend on the judgment of accountability holders.

3. The influence of ICTs on public accountability

Following the rise of ICTs in recent decades, governments in many countries have attempted to make the best use of available ICTs to improve the delivery of public goods and services and to promote public accountability. ICTs are “technological tools and resources used to transmit, store, create, share or exchange information” (UNESCO Institute for Statistics, 2009, p. 120). Some examples of ICTs include artificial intelligence (AI) systems, computerized systems, websites, blogs, emails, live broadcasting technologies, recorded broadcasting technologies, etc. The increasing use of ICTs in the public sector has also brought about the concept of electronic governance (Heeks, 2001) or, more broadly, digital-era governance (Dunleavy et al., 2005, 2006). However, due to the dynamic nature in practice, digital-era governance is subject to diverse interpretations, and it is beyond the scope of this article to delve deeper into the complexity of digital-era governance.

According to Dunleavy et al. (2005), digital-era governance is characterized by three features: (a) reintegration, (b) needs-based holism, and (c) digitalization change.

- Reintegration is about gathering back the disparate, but related functions into a single function. Through the medium of ICTs, communication within and between government organizations can be simplified. Therefore, the duplication of public sector hierarchies can be reduced. For example, the tax-policy-making agency can be reintegrated with the tax-collecting agency to form a single tax agency that focuses on both tax policy and tax collection.
- Needs-based holism is about redesigning public organizations to be around citizens. The aim is to increase the speed of response from public organizations to citizens. For example, through the medium of ICTs, one-window service offices can pull together related public services that are under the responsibility of different authorities and then provide these services to ordinary people in local communities.
- Digitalization change is about using ICTs to deliver public goods and services and engage with citizens. Through digitalization change, citizens, private businesses, and civil society actors can connect to governments through web-based processes without going through gatekeepers or intermediaries inside government organizations, and such a practice can reduce the possibility of corruption in the delivery of public goods and services.

Through the lens of the digital-era governance model, ICTs are deemed essential for the administration, management, and governance of the public sector. However, the usefulness of ICTs in public accountability mechanisms is still under debate. The literature has suggested that ICTs may be useful in the information phase (Fox, 2007) and the debating phase of an accountability system (Haro-de-Rosario et al., 2016), but not in the consequence phase of an accountability system (Behn, 2001). Two subsections below outline key arguments for and against ICTs.

3.1. Key arguments for ICTs

The basic argument that supports the usefulness of ICTs is that ICTs facilitate the flow of information from accountability holdees to accountability holders. For example, government organizations may post their periodic financial and performance reports on their official websites and social networking sites (SNS) such as Facebook or Telegram, and citizens can then download and read those reports online from anywhere. They do not have to go to physical offices and meet physical people to request the hard copies. In doing so, government organizations can increase transparency (Fox, 2007). This effort is often popularized under the heading of the “open government” initiative (Parks, 1957). For example, in the United States, different datasets can be freely accessed from data.gov, which is a web portal hosted by the government. The public at large can access the data freely to serve their purposes. In other countries like Singapore, the Philippines, and Indonesia, similar websites are also offered by the governments.

ICTs such as SNS and other online discussion forums also provide platforms for citizens to express their opinions (Haro-de-Rosario et al., 2016). This is particularly useful to the debating phase of an accountability system. People can share information from various online sources (such as news reporting websites, government websites, etc.) on SNS and express their opinions on that information. Governments can then use those collective opinions to justify or change their behaviors to increase their popularity. In a well-functioning democratic system, Key (1966) in his seminal book argued that “the fear of loss of popular support powerfully disciplines the actions of governments” (p. 10). Empirical studies in recent decades (e.g., Boulianne, 2009; Khazaeli & Stockemer, 2013) have also found evidence supporting this argument.

On top of that, ICTs allow citizens to take part in addressing public sector problems by reporting those problems online to their governments. For example, in the United Kingdom, FixMyStreet.com enables people to inform their local authority about damaged streets. Schillemans et al. (2013) regard this practice as an example of “citizen-initiated accountability”. They suggest that governments may not be aware of all public sector problems or flaws in their goods and services. In many ways, citizens have better ideas about public sector problems because they are the direct users of public goods and services. Therefore, citizens are expected to be proactive and should not wait for governments to address the problems. This mechanism allows governments to see public sector problems better, justify their behaviors, and improve their performance.

3.2. Key arguments against ICTs

Through the medium of ICTs such as SNS and online discussion forums, everyone can post and share any information, and the amount of information on the internet has increased rapidly from time to time (Gillmor, 2004). The basic argument against ICTs is that the flow of information from governments to citizens can be easily disrupted by opinion-based or fake news articles. Opinion-based articles may be useful for citizens to some extent, but fake news articles are not. Fake news is usually spread intentionally to increase internet traffic and generate revenue (Thomas, 2018). However, it is found that the spread of fake news can serve non-financial purposes, and the purpose is different from one person to another (e.g., defaming public figures or influencing elections) (Marwick, 2018). For ordinary citizens, it may be difficult to distinguish between what is real and what is fake on the internet (McBeth & Clemons, 2011; Tandoc et al., 2018). Therefore, if proper mechanisms do not exist to deal with the spread of fake news, citizens may misunderstand their governments.

Besides, it is argued that government organizations tend to release only positive information and do not open the door to uncomfortable questions (Yu & Robinson, 2012).¹ This tendency is reinforced by a variety of legitimate reasons, including the need for maintaining social harmony and protecting national security (Lord, 2006). Because the consequence phase of public accountability involves rewards and sanctions, it is unclear how citizens use online disclosed information to reward or punish their governments (Behn, 2001). For well-functioning democracies, it can be argued that citizens can reward or punish their governments during election time (see Key, 1966; Marshall, 1950). However, in some political contexts, it may be difficult for citizens to do that. Some authors argued that ICTs are influenced by the institutional environments in which they are adopted (Lips, 2012; McGee et al., 2018; Orlikowski & Barley, 2001).

The last argument worthy of note here is that unexpected errors may occur in ICTs. Generally, developers and users of ICTs are supposed to be accountability holdees because they decide how ICTs are used. However, when ICTs such as computerized systems or AI systems can make decisions on behalf of humans and cause problems, identifying accountability holdees is challenging because it depends on the level of autonomy of ICTs in public accountability mechanisms (Busuioc, 2021; McGee et al., 2018; Novelli et al., 2024). In the case of law enforcement, for example, it is found that AI-powered facial recognition technology can be biased too when identifying who is a suspect (Gentzel, 2021). Therefore, ICTs do not determine the success of public accountability. In other words, ICTs are not useful for the consequence phase of public accountability.

4. Real-world lessons from digital participatory budgeting

To provide a clearer explanation of the influence of ICTs in public accountability, this article examines the experience of Brazil when introducing and implementing participatory budgeting (PB) for the first time in history. PB is defined as “a process by which citizens and/or civil society organizations participate directly in different phases of the preparation and monitoring of public budgets” (World Bank, 2008, p. 1). Generally, it is adopted by subnational administrations. One main purpose is to empower citizens to decide how public money should be spent for the sake of their community. However, only a certain portion of the state budget is allocated for the PB process. According to Wampler (2007), to adopt a PB system, there are four basic pre-conditions including (a) strong support from subnational governments, (b) willingness and ability of citizens to participate in policy debates, (c) political support that protects PB from the attack of legislators, and (d) financial resources at the subnational administration level to support the selected projects.

According to Wampler (2007), PB works in two different ways. Firstly, it functions as a mechanism that allows citizens to participate and decide on specific public projects (e.g., paving specific streets or building community schools) that are useful to their community. This mechanism is about solving immediate problems or fulfilling the immediate needs of citizens. Secondly, it functions as a mechanism that allows citizens to decide on the spending priorities of their community. Citizens are empowered to work with local government officials to determine the best way to use their resources to serve the common interest of their community. Based on how it works, PB is therefore known as a “citizenship school” because it offers an

¹ From a theoretical perspective, any organizations (be they governments or not) decouple the official information from the actual information (see Meyer & Rowan, 1977).

opportunity for citizens to know their rights as citizens and the responsibilities of their governments.

As a public accountability system, PB can then be characterized as follows:

- The information phase: Citizens are provided with information on development projects in their community and the amount of public budget available for the projects, and they are empowered to make a decision on which project should be carried out by their government for the common interest of their community.
- The debating phase: Citizens are accountability holders who will monitor the progress of the chosen development project. Government agencies in charge of the project are accountability holdees that need to report and justify the progress of the project.
- The consequence phase: Depending on the progress of the project and the conduct of their government, citizens may choose to reward or punish their government, for example, during election time.

According to Montambeault (2019), the Brazilian PB model is regarded as an “institutional blueprint” for other countries that intend to adopt PB. Historically, PB was first adopted in Porto Alegre, the capital city of the state of Rio Grande do Sul in southern Brazil, in the late 1980s (Shah, 2007; World Bank, 2008). Later, in 2006, with the advancement of ICTs, “digital PB” was introduced. Citizens who have access to the internet could then participate in the budgeting process through online voting. The first city to adopt digital PB is Belo Horizonte, the capital city of the state of Minas Gerais in southeastern Brazil (Montambeault, 2019; Peixoto, 2009). As a basic mechanism, Belo Horizonte residents with a voter identification number could go online and vote for one project from the given projects for each administrative region of the city. With ICTs, the implementation in 2006 and in 2008 was a great success because more people could participate in the budgeting process (Barros & Sampaio, 2016; Montambeault, 2019).

However, in 2011, the number of online participants decreased. A study by Barros and Sampaio (2016) found that it was due to the lack of options to vote, the inability (or the delay) to deliver the promises, and the lack of responses from the city administration. These findings suggest that ICTs cannot replace people because public goods and services still need to be delivered by people. Another study by Coleman and Sampaio (2017) further found that the decrease in the number of online participants was because there were some changes to the regulation of digital PB to respond to corrupt practices found in 2006 and 2008. According to Coleman and Sampaio (2017), in those years, participants just indicated their voter identification number to vote, and there was an opportunity that they could use fake identities to create additional voter identification numbers. Therefore, to prevent corrupt practices, in 2011, the city administration modified the procedure of digital PB by focusing on the eligibility and identity of participants. Such experience suggests that ICTs can be easily manipulated by people and thus need to be governed by strict rules.

Compared to the experiences of other countries in Europe and Asia, where PB is also implemented (Shah, 2007), the experience of Brazil is unique. Brazil can be regarded as the birthplace of PB. However, the implementation of digital PB in Brazil has gradually become less effective from year to year due to several reasons, such as limited institutional capacity, gradual change in relevant rules and regulations (which results in less budget support), and limited political support (de Paiva Bezerra & de Oliveira Junqueira, 2022; Montambeault, 2019). As a result, at present, PB or digital PB is no longer attractive and popular in Brazil. Elsewhere, for example, in Spain, despite several challenges, the implementation of digital PB

is deemed successful due to favorable institutional factors (Royo et al., 2020). The story of Brazil's PB suggests that the success of an accountability system depends on many contributing factors, and the beneficial effects of ICTs in promoting accountability depend on the environment in which ICTs are adopted.

5. Conclusion

In conclusion, from the literature, the concept of public accountability can be summarized as follows. Firstly, the goal of a public accountability system is not merely to catch and punish wrongdoers but rather to prevent wrongdoings. The success of public accountability comes when accountability holders stop repeating the same mistakes. Secondly, public accountability is a problem of many hands and a problem of many eyes. Depending on the level of their involvement in the process of public policy formulation and implementation, any actors, such as government organizations, private businesses, non-government organizations, or citizens, can be either accountability holders or accountability holders. Thirdly, transparency is necessary for an accountability system. Without information, it is impossible to hold an individual or an organization accountable for their conduct. Also, accountability holders need to understand the information.

Following the rise of ICTs in recent decades, governments in many countries have integrated ICTs into their business processes to improve the public sector and to promote public accountability. Although the usefulness of ICTs in the public sector is widely recognized and the model of digital-era governance is formally introduced, the literature has shown that ICTs do not guarantee public accountability. ICTs allow citizens to better understand their governments and engage with their governments, but they can be easily manipulated and influenced by their users. Although developers and users of ICTs can be held accountable for how they use ICTs, identifying accountability holders can be challenging when ICTs such as computerized systems and AI systems can make decisions on behalf of humans and cause problems. Therefore, ICTs should not be regarded as the driver of the success of public accountability. Rather, what is essential for public accountability is the exchange of authentic information. However, the meaning of authentic information may not be easily defined. It is subject to further examination.

The contribution of this article is the simplification of the complex concept of public accountability and how it is influenced by ICTs, but two main limitations of the article are worth noting. Firstly, as the article is intended for the public, it is written in an easy-to-read manner so that everyone, particularly those who are new to the concept, can better their understanding of the concept. Therefore, experienced academic scholars may not find this article significant for the academic debate. Secondly, the article is not based on a systematic review method. Therefore, it does not propose the current knowledge gap or provide a clear future research agenda to fill in the gap. However, based on the review result, the article suggests that improving ICT literacy and access to ICTs is necessary to promote social inclusion. More importantly, because ICTs can be easily manipulated, they should be adopted under strict rules to combat ICT fraud and to ensure the exchange of authentic information.

Acknowledgments

The author would like to thank the editors and reviewers of the Cambodian Journal of Educational and Social Sciences (CJESS) for their helpful comments on earlier versions of this article.

Conflict of interest

No potential conflict of interest was reported by the author.

Funding

The author received no financial support for the research, authorship, and/or publication of this article.

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ICT adoption in supporting teachers' instruction in higher education: A review of benefits and challenges

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Article info

Article history

Received: July 06, 2025

Revised: October 21, 2025

Accepted: October 28, 2025

Keywords

Benefits

Challenges

Higher education

ICT

Teachers' instruction

Article type

Review article

Abstract

While a growing number of studies have examined information and communication technology (ICT) adoption in supporting teachers' instruction in higher education, a comprehensive and cohesive analysis of its benefits and challenges remains limited. This paper aims to address this gap by integrating and thoroughly exploring both benefits and challenges into a unified framework. Using a literature review method and secondary sources, this paper shows that ICT adoption offers the major ICT applications, including online class applications, online assessment applications, and innovative teaching applications. Additionally, it provides a wide range of benefits, including its use as a tool for in-lecture activities, collaborative learning, and computer-based testing, serving as a pivotal strategy to enhance teachers' instruction in innovative approaches. Despite significant challenges beyond ICT adoption, such as a lack of ICT literacy among instructors and students, and insufficient ICT infrastructure, the findings highlight the dynamic role of ICT in creating adaptable, independent, active, modern, and inclusive learning environments. Finally, this paper provides valuable insights for educational and academic institutions seeking to incorporate ICT to improve instructional practices in 21st-century higher education.

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1. Introduction

In recent years, information and communication technology (ICT) has significantly transformed social interactions, enabling individuals from diverse locations to connect effectively through digital platforms (Jha, 2017). ICT development is multifaceted, involving the expansion of telecommunication infrastructure that supports data, voice, and electronic services (Cieslikowski et al., 2009). ICT facilitates industry-specific applications across various sectors, including banking, electronic governance, healthcare, and education (Cieslikowski et al., 2009; Meenakshi, 2013). Beyond its role in business and public services, ICT integration in higher education serves as a core dimension across all educational levels, providing essential tools to enhance instructional practices and access to learning resources (Alam, 2016; Gulbani & Joshi, 2012).

ICT plays a crucial role in supporting instructional practices and fostering effective lecturing, initiating active learning, and engaging in research activities in higher education (Meenakshi, 2013). Recently, several studies have supported and promoted the integration of ICT into educational programs as a means to enhance effective instruction (Kirkwood & Price, 2014; Alemu, 2015; Oliver & Short, 1996). For example, ICT assists educators in discovering effective and efficient approaches for teaching students, provides opportunities to inspire students in learning, and offers teaching adaptability (Oliver & Short, 1996). Besides, ICT navigates academic programs to fulfill the needs of each student (Kennedy & McNaught, 1997) and promotes the utilization of the internet and World Wide Web as tools for information and connection access (Oliver & Towers, 2000).

Another study by Toro and Josh (2012) provided an overview of ICT integration in universities from 2004 to 2011, and found that ICT has allowed teaching styles to become more professional, including technological materials, skills development, academic administration, action plans, and educational flexibility. A study by Ghavifekr and Rosdy (2015) highlighted that ICT adoption has supported both teachers and students, such as enhancing class environment, increasing efficient teaching and learning through digital tools, and fostering the national education ranking. Ultimately, a study by Duță and Martínez-Rivera (2015) claimed that ICT adoption offered numerous benefits in the university context, including enhancing the acquisition, instruction, management, reporting, processing, and presentation of information in various formats, including data, visuals, and audio. Beyond its potential benefits, ICT adoption leaves considerable challenges (Chiluiza, 2008; Sithole & Mbukanma, 2024).

Another study by Chiluiza (2008) found that ICT implementation faced diverse challenges, including insufficient technology, limited internet connection, high cost of digital tools, and inadequate technical assistance. Likewise, Sithole and Mbukanma (2024) revealed that this adoption confronts complicated challenges, such as a lack of digital infrastructure, weak internet access, and low digital literacy levels pose considerable impediments. Although prior studies have examined the benefits and challenges related to ICT adoption in supporting teachers' instruction in higher education, the studies have mainly been investigated separately and in limited contexts. This remains an insufficient analysis that assesses jointly into a unified construct, including benefits and challenges, to formulate the ICT adoption knowledge. This significant gap highlights the need for a thorough analysis that integrates the findings across diverse settings, thereby offering merit and insightful knowledge into the ways faculty members and stakeholders need to be aware of this adoption.

This review utilizes a literature review method. According to Paré et al. (2015), a literature review is one of the academic methods to reveal a rigorous analysis of relevant knowledge on a definite topic by identifying, selecting, unifying, and interpreting accessible scholarly works, combining all significant concepts beyond each finding into a single design. Additionally, Google Scholar, Elsevier, and ResearchGate served as major databases that are used for assessing the credible and relevant sources. This paper incorporates the scholarly literature to synthesize how ICT adoption supports teachers' instruction in higher education, illustrating the modern ICT tools for academic instruction.

2. Core concept of ICT in higher education

ICT is the commonly used abbreviation for information and communications technology (Tamilselvan & Sivakumar, 2011). Nevertheless, ICT has been defined in various ways by different organizations and authors (Karaman Aksentijević et al., 2021). According to UNESCO (2009, p.120), ICT is defined as “a diverse set of technological tools and resources

used to transmit, store, create, share or exchange information. These technological tools and resources include computers, the Internet (websites, blogs, and emails), live broadcasting technologies (radio, television, and webcasting), recorded broadcasting technologies (podcasting, audio and video players, and storage devices), and telephony (fixed or mobile, satellite, vision/video-conferencing, etc.).” Similarly, ICT is recognized as a diverse range of technological tools and materials employed for digital communication to create, deliver, gather, and monitor information (Sarkar, 2012).

It is defined as the range of gears and systems used for gathering, interpreting, storing, and transmitting information immediately through modern applications (Yuwono et al., 2024). ICT tools encompass hardware, such as mobile phones, tablets, computers, digital cameras, and scanners, and software, including databases, spreadsheets, system software, and word processors (Lembani, 2021). These ICT resources play a major role in supporting, enabling, and disseminating information more effectively (Lembani, 2021). Building on this foundation, ICT is now widely present in higher education, supporting teachers in research, material preparation, and instructional design, while also enabling innovative and inclusive teaching approaches through advanced instructional platforms (Lembani, 2021; Sarkar, 2012). This incorporation of ICT not only fosters engaging learning environments but also enhances the overall effectiveness of teaching and learning globally (Lembani, 2021; Sarkar, 2012).

3. Key ICT applications in higher education

The integration of ICT has become a fundamental component of contemporary higher education, reshaping traditional teaching and learning practices. With the rapid advancement of digital technologies, higher education institutions increasingly rely on ICT applications to enhance instructional delivery, assessment methods, and student engagement. These technologies not only support flexible and accessible learning environments but also promote innovative pedagogical approaches that respond to the evolving demands of 21st-century education. Consequently, key ICT applications, particularly online class platforms, online assessment tools, and innovative teaching applications, play a critical role in improving the effectiveness and quality of higher education.

3.1. Online class applications

The higher education sector has undergone an evolved transformation, marked by the notable growth of electronic learning, which enables teaching to be conducted remotely through ICT tools and primarily relies on connected internet access for effective operation (Banson, 2022). Online learning is an innovative application as well as the most widely implemented form of online education today (Wong et al., 2019). Similarly, electronic classes are operated, accessing the internet or any ICT applications for learning, and are more adaptable and convenient for students (Swamy et al., 2021). Instructors commonly implement five major online class applications to support their online teaching approaches (Swamy et al., 2021). Table 1 presents a comparison of features across these online class applications.

Table 1. Comparison of features of online teaching tools

Online teaching tools	Zoom	Cisco Webex Meetings	BlueJeans	Google Hangout Meet	Go ToMeeting

Open access	Available	90-day trials	30-day trials	Available	14-day trails
Screen sharing	Available	Available	Available	Available	Available
Video meeting	Available	Available	Available	Available	Available
Sharing tools	Available	Available	Available	Available	Available
Recording	Available	Available	Available	Available	Available
Maximum participants	100	25	75	250	26
Chatting	Available	Available	Available	Available	Available
Software support	Mac, iOS, Android, Windows	Mac, iOS, Android, Windows	Mac, iOS, Android, Windows	Mac, iOS, Android, Windows	Mac, iOS, Android, Windows
White board	Available	Unavailable	Unavailable	Unavailable	Unavailable
Remote access	Available	Available	Unavailable	Unavailable	Unavailable

Source: Swamy et al. (2021).

According to Konotop et al. (2021), Zoom was introduced in 2011, and its headquarters were located in San Jose, California. Zoom is an advanced video conferencing tool that offers several valuable features for seamless communication from one side to another; furthermore, it particularly supports teachers in teaching students from anywhere, providing an effective and smooth teaching connection (Kohnke, 2021). Zoom facilitated innovative learning approaches and expanded educational opportunities, served as an effective medium for sustaining teacher–student interaction through features such as document sharing, in-class chat, screen sharing for presentations, and customizable participant settings, particularly during the COVID-19 pandemic (Madhubhashini, 2021). Additionally, Cisco Webex Meetings is one of the most popular tools, utilized for video conferencing contributes highly secure integrated video, voice, and sharing tools from Cisco Webex cloud (Hur et al., 2023).

It is the most common tool that can be used to support educators in conducting their online teaching effectively with vital functions such as video meetings, recording, screen sharing, chatting, and offering free 90-day trials (Swamy et al., 2021). BlueJeans supports a useful cloud-based video meeting solution that facilitates interconnectivity, allowing the maximum number of attendees to join seamlessly using various conferencing applications and devices, and it offers three levels for video conferencing, such as Meetings, Rooms, and Events (Hurst, 2020). First, in Meetings, BlueJeans equips some core options for users to host, manage, join, and schedule conferencing with attendees, encompassing chat, whiteboard, screen share, annotation, breakout session, and participant management (Hurst, 2020). Second, in Rooms, BlueJeans permits a gateway solution to link BlueJeans meeting rooms to Microsoft Teams

meetings; moreover, it supports users with advanced functions, security, and monitoring navigation (Hurst, 2020).

Last, in Events, BlueJeans offers a timely webinar solution, allowing participants to operate the premium features, such as chat, hand raises, questions and answer pods, and live polling (Hurst, 2020). Google Hangout Meet is an electronic communication application offered by Google, which can be conducted through a Google account (Swamy et al., 2021). It was presented in 2017, which originated from Google Hangouts, launched in 2013 as a modernized communication tool (Swamy et al., 2021). It allows 30 participants to join and can be accessed on iOS, Android, and web platforms (Swamy et al., 2021). Finally, GoToMeeting is an innovative web-hosted tool that supports seamless screen sharing from a host device to multiple network-connected user platforms (Swamy et al., 2021). It facilitates real-time interaction between instructors and students, providing modern features, such as screen demonstration, reactions (hand raising function), message boards, and chats for inquiries (Konotop et al., 2021).

3.2. Online assessment applications

Online assessment is a term that is commonly employed interchangeably with terms such as electronic assessment or e-assessment (Jordan, 2013), computer-mediated assessment (Hout, 1996), and computer-based assessment (Fluck et al., 2009). Online assessment can be conducted using various teaching features that are part of distance learning environments (Webb & Ifenthaler, 2018). Similarly, it can be operated formatively during the learning process or combatively after a teaching period (Gikandi et al., 2011). In the traditional system, educators could evaluate students across several approaches, such as quizzes, assignments, workshops, or presentations, and examine students' comprehension (Swamy et al., 2021). However, those assessments can now be performed online by implementing innovative and dynamic assessment tools for teaching assessment (Swamy et al., 2021). Table 2 presents a comparison of some assessment applications integrated based on specific teaching requirements.

Table 2. Comparison of online assessment tools

Online assessment tools	Google Forms	Moodle	Socrative
Open access	Available	Available	Available
Free users	Available	Available	Available
Custom analytics	Available	Available	Available
Online learning monitor	Unavailable	Available	Available
Visuals	Available	Available	Available
Videos	Available	Available	Available
Mobile access	Available	Available	Available

Source: Swamy et al. (2021).

In an online learning context, instructors can utilize various accessible applications to assign research tasks and learning assessments, with Google Forms being one of the commonly implemented tools (Mulatshi, 2020). Google Forms is a convenient and freely usable tool for digital modes and supports across questions (Anderson, 2019), and can be managed to conduct an assessment seamlessly (Hadianti et al., 2021). It enables educators to efficiently disseminate and prepare assessments based on instructors' preferences in evaluations (Mardiana & Purnanto, 2017). Several studies found that Google Forms has supported teachers' instruction in higher education (Nguyen et al., 2018; Sandhya et al., 2020). A study highlights that it fosters a learning environment by encouraging students to share comments and capture students' feedback after sessions (Nguyen et al., 2018). Another research by Sandhya et al. (2020) revealed that Google Forms is an essential tool for data collection, permitting users to generate and share surveys that can be accessed and completed anytime and anywhere, and offering a user-friendly interface.

Moodle is a commonly adopted learning management system (LMS) different the globe and is frequently used in blended learning (García-Murillo et al., 2020). It offers an excellent solution for educators in online teaching, including seamless, adaptable, and interactive instruction that closely mirrors a face-to-face session (Makruf et al., 2022). In the educational context, online platforms play a significant role in supporting the teaching and learning process, and many students are actively engaging in online learning, practicing, and utilizing online assessment tools to strengthen their comprehension (Swamy et al., 2021). A study by Costa et al. (2012) showed that Moodle provides user-friendly functions that support instructors in enhancing student assessment, involving online quizzes, exercises, surveys, and the arrangement of learners' tasks within the application. Ultimately, Moodle enables the student learning process by implementing flexible and modern tools that promote involvement with advanced teaching methods (Coates et al., 2005).

Socrative is another beneficial application used to develop instructional delivery, facilitate the design of learning instruments, and support various characteristics for generating student evaluations (Swamy et al., 2021). Instructors can implement a variety of activity structures, such as quizzes, exit tickets, and space races, and disseminate real-time questions in different formats, including short-answer, true/false, and multiple-choice questions (Swamy et al., 2021). Several studies have confirmed that Socrative is a significant application to enhance teachers' instructions (Cerqueiro & Martín-Macho Harrison, 2019; Dakka, 2015). A study by Dakka (2015) revealed that Socrative integration has developed students' learning activities and enhanced their academic performance, and fostered learning innovation. Overall, another study found that Socrative significantly supported teachers' instruction and enabled learning engagement, such as collaborative reading, lecture, and cooperative review games (Cerqueiro & Martín-Macho Harrison, 2019).

3.3. Innovative teaching applications

In the digital age, higher education institutions are incorporating modern learning and teaching systems that facilitate the emerging new learning process in the 21st century (Gajjar, 2013). The adoption of ICT develops teachers' instructional methods (Pheeraphan, 2013) and provides innovative teaching techniques and a win-win solution for both educators and learners (Zhu et al., 2013), promotes student participation, facilitates class activities, strengthens online assessment tools, and manages tasks through digital applications (Pheeraphan, 2013). In addition, the digital-based teaching approaches can develop the learning process (Hellman et al., 2014). Current technology offers dynamic teaching tools to facilitate learning and enable

effective pedagogy, such as YouTube, TED-Ed, and ThingLink (Swamy et al., 2021). Table 3 shows the features of major innovative tools and their limitations.

Table 3. Features and limitations of innovative teaching applications

Innovative Teaching Tools	Features	Limitations
YouTube	▪ Available for uploading all video types. ▪ Auto-updating of subtitles and User-friendly settings. ▪ Accessible to Share Information. ▪ Option to make the video private or public. ▪ Unrestricted space for posting videos. ▪ Free access. ▪ Conducted initial trials with live streaming. ▪ It supports various platforms.	▪ Requires high-speed internet to upload large videos. ▪ Be careful when uploading the video; proper screening is necessary. ▪ Most of the time, everything is Public. ▪ Users' accounts can be disabled for any reason. ▪ Any advertiser can add advertising to your video.
TED-Ed	▪ Instructors can make videos with different content for the classroom. ▪ The animated or featured videos designed by universities can be tagged or labeled using the TED-Ed application. ▪ Instructors can customize videos with new features to make them more attractive. ▪ The Dig Deeper sections enable instructors to add supplementary clips, articles, references, links, app, or even their relevant blog content. ▪ Instructors can provide course content through email or social media, permitting students to access and interact with the resources and questions, allowing teachers to follow their engagement. ▪ The TED-Ed includes functions that enable educators to receive feedback.	▪ Lessons can be generated with video on this platform may require supplementary content to transmit the learning effectively.
Thing Link	▪ Good tools for supporting classrooms, encompassing varied language proficiencies and literacy levels. ▪ Teaching content can be tailored for a student-centred learning approach.	▪ Without registration, users can not generate a presentation. ▪ It does not have a feature for comments on a new video or image.

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- This supports students in strengthening practical skills in a real-time environment.
 - Facilitates user secure verification and inclusive access.
 - Advanced integration with Microsoft Office 365.
 - Complimentary professional enhancement program.
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Source: Swamy et al. (2021).

YouTube, launched in 2005, is a video-sharing platform recognized as a relatively recent transformation (Maziriri et al., 2020). It plays an important role in supporting the instructional field by providing online resources (Almurashi, 2016) and is commonly freely accessible (Buzzetto-More, 2014). Moreover, YouTube supports a formal educational channel through YouTube Edu, enhancing learning beyond casual or informal means of interaction (Buzzetto-More, 2014). It enables instructors by providing relevant resources, such as brief video instructions, professional instruction, academic video programs (Buzzetto-More, 2014), and valuable and motivational videos (Mullen & Wedwick, 2008). For instance, a study in Saudi Arabia highlighted that integrating YouTube as a teaching material effectively supported instruction and positively influenced students' understanding of English lessons (Almurashi, 2016). Another study in Indonesia confirmed that YouTube was recognized as an electronic resource that has a significant impact on students' performance in building their academic English writing course (Meinawati et al., 2022).

TED-Ed is an innovative tool that enables instructors to encourage students' engagement worldwide, employing short, fun, and animated videos (Sanjmyatav & Sumiya, 2020). It provides instructors with new teaching methods, such as designing lesson methods, creating comprehensive questions and assessments, and enabling students to gain a deeper understanding of a certain topic (Sanjmyatav & Sumiya, 2020). For instance, a study by Russell (2016) indicated that TED-Ed adoption into psychology classes enhances instruction, inspires student motivation and participation, increases comprehension, and improves class environment. Similarly, another study highlighted that applying authentic TED-Ed videos in an EFL (English as a Foreign Language) program empowers students to strengthen both hard and soft skills and connects to the necessities of 21st-century learners (Sanjmyatav & Sumiya, 2020). It serves as an effective instructional approach, positively impacting students by fostering self-confidence and determination in developing English independently (Sanjmyatav & Sumiya, 2020).

ThingLink is a platform that enables instructors to create interactive visuals and videos, such as text, audio, and video materials, and modern tools to assess students' comprehension, and advanced functions to assist teachers' instruction (Jeffery, 2021), and customizable functions and user-friendly features support (Jeffery, 2022). Numerous studies claimed that Thing Link serves as a major application to enhance learning engagement and competencies, including individual or group discussion, skill development, class activities, and learning materials (Alghetany et al., 2024; Batista et al., 2022), and empowers students' knowledge, cognitive retention, and intrinsic motivation (Inozemtseva et al., 2018; Pringle et al., 2022; Roslan & Sahrir, 2020). A study found that the Thing link platform at the Elqabbary Institute of Nursing in Egypt supports students' learning by enhancing knowledge and motivation, and facilitating an easier understanding of the lessons through videos, images, pictures, or 360-degree

interactive images (Alghetany et al., 2024). Another study conducted in an Arabic language course at a public university in Malaysia found that Thing Link adoption led to better student learning outcomes compared to traditional language teaching methods (Roslan & Sahrir, 2020).

4. Benefits of ICT adoption in supporting teachers' instruction

The adoption of ICT in higher education offers multiple instructional benefits that significantly support teachers' instructional practices. ICT enables instructors to enhance lecture delivery, facilitate collaborative learning, and implement efficient assessment methods through digital platforms. By integrating ICT into teaching, educators can create interactive learning environments, promote student engagement, and apply innovative approaches to instruction and evaluation. Accordingly, this section examines the benefits of ICT adoption in supporting teachers' instruction, focusing on its use during lectures, in collaborative learning, and in computer-based testing.

4.1. ICT as a tool for in-lecture use

The integration of ICT in higher education serves as a valuable tool for instructors, enabling interactive and modern learning environments that empower teaching practices and foster creative teaching materials (Imathiu, 2018). ICT implementation can help educators deliver real-time, effective, and modern teaching environments, including new teaching strategies, motivation, and innovative teaching materials for students (Schulz et al., 2015). For instance, many instructors use ICT tools to create lecture materials that enhance teaching resources and student engagement (Schulz et al., 2015). These tools foster constructive interaction and support instructional needs, comprising two types: general tools used across subjects and specific tools tailored to particular disciplines (Schulz et al., 2015).

Accordingly, Schulz et al. (2015) identified 20 ICT tools used by instructors, with slides or presentations being the most common (84%), followed by LMS (67%) and email (52%). Other frequently used tools included videos (49%), quizzes (38%), and online questionnaires or material sharing (22%), while learning games and audio tools were least used (9%). For instance, a study by Guerra et al. (2010), conducted across four Spanish universities as part of a national research project, investigated how higher education instructors utilize ICT in teaching. The findings revealed that half of the educators believe ICT plays a crucial role in facilitating instruction, enhancing learning competencies, designing electronic portfolios, and promoting collaboration within the higher education community (Guerra et al., 2010).

4.2. ICT as a tool for collaborative learning

Collaborative learning is widely recognized as an effective teaching strategy, implemented by instructors to foster student learning through student-to-student interaction aimed at achieving a common task or goal. Previous studies have demonstrated that collaborative learning enables learners to initiate knowledge, enhance learning involvement, increase group discussion, and encourage a student-centric approach. Moreover, collaborative ICT tools play a significant role in supporting instructors in designing active learning environments, facilitating team-based learning, organizing group assignments, and promoting group discussions.

The utilization of ICT in education is increasingly promoting advanced learning approaches, including personalized learning patterns, group discussions, and collaboration across different times and locations (Anwar & Mathew, 2014). It is more useful for instructors to utilize for promoting online interaction both inside and outside the classroom, permitting learning

adaptability and autonomy, empowering students' knowledge acquisition, and developing collaborative learning. For example, a study at a college in Nagaland involving 200 educators in India found that ICT positively influenced teaching by guiding curriculum delivery, facilitating effective communication, promoting independent learning, enhancing student collaboration, and providing diverse resources for designing instructional materials (Jamir & Pongen, 2021).

4.3 ICT as a tool for computer-based testing

The utilization of computers is an advanced approach to evaluate students' knowledge, serves as the test deliverer, and is called computer-based testing (CBT) (Suleiman et al., 2020). CBT is a modern assessment method that utilizes computers as the primary tool for delivering test items, recording responses, and automatically scoring assessments upon submission (Lim et al., 2006). It represents the modern approach for evaluating students' performance through the integration of computers (Conole & Warburton, 2005). CBT significantly supports instructors in developing a wide range of electronic assessment tools that are adaptable, customizable, innovative, and reliable, thereby empowering the overall effectiveness of instructional assessment (Fagbola et al., 2013).

A study conducted at the University of Nigeria highlighted that CBT has increased student engagement in exams, making the assessment process more efficient and effective (Ebimngbo & Lgwe, 2021). CBT has improved the student experience by mitigating issues such as negative exam-related experiences, reducing examination malpractice, and eliminating the risk of missing scripts (Ebimngbo & Lgwe, 2021). Similarly, another study conducted at the University of Jos discovered that CTB integration was an effective method for establishing standard levels comparable to other universities, such as supporting innovative tools and promoting online assessments (Dung et al., 2022).

5. Challenges of ICT adoption in supporting teachers' instruction

Despite the numerous benefits of ICT adoption in supporting teachers' instruction, its implementation in higher education is not without significant challenges. Various barriers hinder the effective integration of ICT, particularly those related to human capacity and institutional resources. These challenges affect instructors' ability to utilize digital tools efficiently, limit students' engagement with ICT-based learning, and constrain the overall effectiveness of technology-enhanced instruction. Therefore, this section examines the major challenges of ICT adoption in supporting teachers' instruction, focusing on the lack of ICT literacy proficiency among instructors and students, as well as insufficient ICT infrastructure.

5.1. A lack of instructors' ICT literacy proficiency

According to the Educational Testing Service (2002), "ICT literacy proficiency is the ability to use digital technology, communication tools, and/or networks appropriately to solve information problems to function in an information society" (p. 11). The knowledge and competencies of ICT play an essential role in bridging the advancement of ICT integration (Tatto, 2006) and are a substantial tool for developing educational qualifications in higher education (Blackwell et al., 2013). The effective integration of ICT is closely associated with educators' ICT literacy levels, which serve as a key component for the successful implementation of ICT (Comi et al., 2017; Nikolopoulou & Gialamas, 2016), and enrich teaching and learning approaches more productively in higher education (Hafifah & Sulistyo, 2020; Teeroovengadam et al., 2017).

Consequently, limited ICT literacy among instructors could pose a major challenge to ICT integration (Comi et al., 2017; Nikolopoulou & Gialamas, 2016). A few studies have indicated that a lack of instructors' ICT literacy proficiency significantly impacts ICT adoption in higher education (Al Mulhim, 2014; Buabeng-Andoh, 2012). A study by Buabeng-Andoh (2012) conducted at Pentecost University College in Ghana revealed that ICT adoption faced various challenges, including a lack of instructors' ICT literacy proficiency. These challenges include low self-confidence in using ICT platforms, limited experience with advanced applications, a lack of training in innovative technologies, and weak computer competencies (Buabeng-Andoh, 2012). Ultimately, an investigation by Al Mulhim (2014) demonstrated that ICT adoption commonly encounters challenges due to a lack of instructors' ICT literacy proficiency. These challenges involve educators' attitudes toward ICT adoption, limited knowledge and skills, and insufficient time for developing ICT competencies (Al Mulhim, 2014).

5.2 A lack of students' ICT literacy proficiency

ICT literacy skills have become a significant factor in achieving greater academic performance and improved results in higher education (Alemu, 2015). Students' ICT literacy proficiency represents the students' ability to apply their knowledge and competencies to seek, examine, and analyze the relevant resources through digital applications (Olatoye et al., 2021). It plays a crucial role in supporting students' learning to achieve their academic objectives (Olatoye et al., 2021) and enhances their ability to use digital devices, including computers, to design and prepare learning tasks (Davies, 2011). For instance, advanced digital applications have been integrated into classrooms to support students' learning, such as computer classes, digital learning materials, and instructional software, effectively enhancing the academic environment and improving students' ICT literacy (Makori & Mauti, 2016). ICT literacy skills are major tools for self-actualization globally (Olatoye, 2019)

Despite these optimistic notions regarding the adoption of ICT in academic education, several studies have claimed that ICT integration encounters various challenges and often leads to ineffective implementation due to students' limited ICT literacy proficiency in higher education (Idowu, 2025; Sithole & Mbukanma, 2024). A study by Sithole and Mbukanma (2024) conducted in South African universities highlighted that the wide variation in students' ICT literacy constituted a pivotal barrier in academic education. These challenges include insufficient access to technology, limited use of technological applications, weak online security, and restricted access to online courses (Sithole & Mbukanma, 2024). Overall, an investigation by Idowu (2025) found that a lack of students' ICT literacy is one of the major factors contributing to unsuccessful ICT implementation, including limited knowledge in using digital applications and accessing innovative materials for academic purposes.

5.3 Insufficient ICT infrastructure

ICT infrastructure serves as a substantial foundation for ICT integration in higher education in assisting teaching instruction more effectively, conveniently, and inclusively (Joshi & Khatiwada, 2024). Previous studies have highlighted that while ICT adoption represents a significant advancement, it also emerges as a key challenge in academic integration (Adarkwah, 2021; Joshi & Khatiwada, 2024; Rahiem, 2020a). These limited ICT infrastructures include weak internet connections, a lack of access, and high costs for digital platforms or applications, creating significant barriers for educators, students, and educational centers to implement ICT solutions related to these issues. (Rahiem, 2020a). Hence, several studies across contexts yielded that insufficient ICT infrastructure was recognized as the

critical challenge for integration into the academic contexts to enhance learning and teaching styles in innovative approaches (Adarkwah, 2021; Kennedy, 2023).

A study by Adarkwah (2021) involving higher education in Ghana showed that digital devices definitely contribute to the main challenges in students' academic learning. These include infrastructure limitations and poor, unstable internet access, especially in remote areas, which leads to inadequate online learning opportunities and disrupts learning activities (Adarkwah, 2021). Similarly, Kennedy (2023) conducted an exploration at the College of Education in Liberia, revealing that inadequate ICT infrastructure posed a major challenge to digital integration in higher education. These critical barriers include the lack of advanced digital applications and the continued restriction of internet access (Kennedy, 2023). Ultimately, insufficient ICT infrastructure significantly impacts academic learning and performance, specifically in developing economies or areas, leading to a limited inclusive education (Joshi & Khatiwada, 2024).

6. Conclusion and Recommendations

This study highlights the key benefits of ICT adoption in supporting teachers' instruction in higher education, while also acknowledging the considerable challenges. It demonstrates that ICT plays a substantial role in enhancing academic instruction for both educators and students.

The adoption of ICT in teachers' instruction provides an innovative and modern approach to academic education for students, enabling convenience, effectiveness, and inclusive learning through applications such as online classes, online assessments, and creative teaching tools. Moreover, this integration enables effective and efficient teaching methods, such as ICT as a tool for in-lecture use, ICT as a tool for collaborative learning, and ICT as a tool for computer-based testing. These benefits provide educators with modern teaching approaches, efficient course preparation, ample teaching resources, diverse learning platforms, an inclusive learning environment, and improved student learning outcomes through digital platforms that support independent learning, increase academic capability, provide extensive knowledge, and enable the students to engage in their educational activities in both inside and outside classes and group discussion virtually through modern platforms.

Despite the potential benefits of ICT adoption, there remain critical challenges beyond its dynamics that pose impediments to the application of ICT adoption in supporting teachers' instruction in higher education. These involve a lack of instructors' ICT literacy proficiency, a lack of students' ICT literacy proficiency, and insufficient ICT infrastructure. The implementation of ICT in academic institutions literally faces restricted educators' self-confidence, experience, and poor computer skills, driving this integration to unreachable purposes. Moreover, students' ICT literacy level can create a significant factor, including limited knowledge, inability to use innovative platforms, and a lack of ICT infrastructure, which can pose major impacts, such as an inaccessible internet network and poor digital application. Overall, the adoption of ICT in supporting teachers' instruction to empower their academic teaching methods more effectively, efficiently, and inclusively, and enhance students' academic performance and digital knowledge; however, it still creates an impact on ICT adoption in supporting educators' instruction in a higher education context.

Since this study is a review article, it represents a limited investigation and relies solely on existing literature. Future research should rigorously and insightfully assess ICT adoption in supporting teachers' instruction in higher education. It should examine the fundamental benefits and challenges, emphasizing how each specific determinant enhances teaching and

identifying key barriers that hinder ICT adoption. Additionally, future studies should explore the significant benefits and challenges discussed above across diverse cultural, geographical, and environmental settings, and examine how modern digital platforms, such as Artificial Intelligence (AI), Virtual Reality (VR), and Learning Management Systems (LMS), can enhance instructional and learning effectiveness in higher education. Mixed methods and longitudinal methods are encouraged to identify an in-depth analysis of the benefits and challenges in ICT adoption in supporting teachers' instruction.

Acknowledgments

The authors would like to thank the editors and reviewers of the Cambodian Journal of Educational and Social Sciences (CJESS) for their helpful comments on earlier versions of this article.

Conflict of interest

No potential conflict of interest was reported by the authors.

Funding

The authors received no financial support for the research, authorship, and/or publication of this article.

Declaration of AI usage

The authors used QuillBot to polish the language grammatically in some parts of the article. However, they declared that the content of the manuscript is totally theirs.

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The integration of English language teaching with environmental sustainability: A comprehensive review of pedagogical strategies and global impacts

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Article Info

Article history

Received: April 19, 2025

Revised: August 5, 2025

Accepted: October 6, 2025

Keywords

English language teaching

Promoting sustainability

Environmental sustainability

Skills development materials

Role model

Article type

Review article

Abstract

Governments and other entities worldwide are becoming increasingly aware of the need to promote sustainable living. Today, some institutions have a policy on sustainability in any field. This understanding has led to the organization of various courses and educational materials being published in all areas of education, including English language teaching (ELT). This paper examines how ELT is promoting environmental sustainability, and how ELT contributes to sustainability can be divided into three broad categories: direct, collaborative, and teacher-based. This paper also examines and analyzes the categories, as well as proposes the best way to strengthen the focus on sustainability through a variety of approaches. Collaboration between ELT teachers and teachers from other fields is not only an important way but also a concept that is often overlooked. Therefore, teacher education programs should focus on teaching the principles of sustainability, not just teaching skills, regardless of sustainability skills. English teacher education programs should support innovation for sustainability, not just English teaching methods, and finally, future studies should examine the effectiveness of this combination.

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1. Introduction

Due to its extensive global perspective and lengthy and prestigious history, English language teaching (ELT) is crucial in promoting and pursuing greater environmental sustainability (Rose et al., 2020). Additionally, Xhaferi and Bekteshi (2020) provided a wide range of effective strategies and methods for successful application in the context of teaching English as a second language. In this sense, ELT aims to empower and equip students with the essential knowledge, attitudes, values, and skills needed to promote active participation and facilitate group decision-making about environmental concerns by providing a wide range of resources and carefully planned lessons that encompass various teaching objectives.

The widely accepted and well-known ELT curriculum embodies English empowerment. ELT classrooms may foster a profound understanding and appreciation for the interconnectedness of our global community and the vital necessity of sustainability by drawing on the diversity and richness of many cultures and practices (Misiaszek, 2020). The cornerstone of ELT is

forming learners' attitudes and values; it is a natural catalyst that instills in people a steadfast commitment and sense of duty to save and maintain the environment. ELT empowers individuals of all ages and comprehension levels to actively contribute to the preservation and enhancement of our planet, thereby ensuring a more sustainable and peaceful world for future generations (Saiful, 2023). With its plethora of educational opportunities, ELT opens a potent platform that fosters the qualities and ecologically conscious mindset needed to satisfy the demands of our future society (Jodoin, 2023). Indeed, the constantly changing landscape of curriculum review and the urgent need to improve methods of resource conservation hinder our efforts to effectively address environmental issues within English classrooms, despite growing concerns and anxieties about our fragile global environment (Raposo et al., 2020). Nonetheless, it is critical to acknowledge how vital it is to include environmental sustainability within ELT settings. ELT provides a means of fostering critical awareness and enabling students to make decisions that have a positive environmental impact and manage the difficulties and complexities of the present day (Huot & Loch, 2025).

Therefore, to incorporate environmental sustainability into the curriculum, ELT experts must constantly adjust and modify their approaches (Galloway & Numajiri, 2019). ELT can integrate a wide range of issues, including ecological responsibility, conservation, and climate change, to produce a coherent and all-encompassing learning experience. Being aware of the school environment and getting any best practices from teachers not only gives students language skills but also cultivates an intense sense of environmental consciousness, which is another way to improve student learning outcomes (Huot et al., 2024). With this comprehensive method of teaching languages, students are likely to develop into initiative-taking agents who can promote sustainability both within and outside the classroom (Sidiropoulos, 2022). ELT can also optimize its influence through interdisciplinary projects by collaborating with other academic divisions, community organizations, and environmental campaigns. Students can collaborate with peers from other areas to develop innovative solutions for environmental concerns by engaging in firsthand problem-solving (Chen et al., 2023). By fostering collaboration and a sense of shared responsibility that extends beyond the classroom, ELT can have an impact on communities and societies as a whole (Chan, 2016).

This paper focuses on how ELT can help mold individuals into citizens by emphasizing the significance of incorporating strategies and approaches that promote environmental sustainability in ELT classrooms. Following this discussion about the importance of raising consciousness in ELT educational settings, the obstacles related to integrating sustainability into the curriculum will be explored, along with suggestions for collaborative actions to enhance ELTs' effectiveness in promoting sustainability efforts. The methods used in education (EE) explore how different disciplines can be integrated into EE practices and suggest ways to enhance EEs' impact on creating a more sustainable future, is examined.

2. Designing an ELT Curriculum for Environmental Awareness

Psychodrama, co-counseling, Gestalt, biofeedback, echo awakening, stimulating sensitivity, listening, mythology, and many other schools and techniques all point to natural style as a way of living in an intimate relationship with our Mother Earth and with our wider universe (Chawla & Gould, 2020). All religions have obligations of stewardship of the environment. What a pity that this lack of respect and understanding has resulted in many of these ideas becoming antiquated. The pursuit of the material benefits possible from economic efficiency has meant that for a substantial proportion of the world's population, the school curricula tend to deny younger members of the population access to such learning, driven by fears for their security, and are taking much more than they are giving (Dillon & Herman, 2023).

The economics of success is more important than human welfare; overconsumption is more important than conservation. The quality of environmental capital has seriously deteriorated, and ELT as a subject should address these issues using both a process and a content approach (Ahmad et al., 2022; Xiao et al., 2020). Many of these problems stem from a lack of social concern, a lack of trust, a lack of respect, and a basic instinct to exploit Earth's resources (Corning, 2023). Camagni (2023), along with Sedlacek (2023), delved into the work of Jean Liedloff (1926–2011), an author and researcher known for her understanding of human growth and child-rearing practices in society. In her publication titled “*The Continuum Concept: In Pursuit of Forgotten Joy*,” published in 1975, Liedloff explored behavior and how contemporary societal norms impact individual well-being. Based on her experiences with the Yequana community in South America, she concluded that Western traditions often hinder development, resulting in social obstacles for individuals. She emphasized the significance of touch. Being attentive to babies’ needs while engaging children in activities typically done by adults is crucial for proper development. Her beliefs have influenced how parents raise their children and sparked conversations about matching standards with our instincts. She feels that this emphasis breeds feelings of superiority and inferiority. Money rates success: hard work not only leads to this success but also to prestige, property, the accumulation of things that form the right background, and power, according to Rublack (2023).

Implementation of an ethical framework with caring, love, respect, implicit trust, and a concern for social welfare or the common good is caring (Lemon & Boman, 2022). Menggo (2022) explores the extent of exposure, effectiveness, and orientation of ELT curriculum concerning environmental sustainability and various pressing issues of growing significance, such as world peace, global economic disparities, human rights and responsibilities, child development, illiteracy, hunger, population growth, and shortages of water and energy. These issues demand not only stabilization but an increase in awareness and action to ensure the well-being of current and future societies. Establishing a persuasive argument, based on scientific theory, concept, or phenomenon, to increase a sense that a problem is relevant, important, and intriguing (Tang, 2022). Enable empirical self-validation for sides of issues, e.g., overpopulation. One way to implement an elicitation process of this nature is to include not only a for-advocate but also an against-advocate presentation, each required to expound arguments with equal time and opportunity for challenge from the other (Yuan et al., 2022). Zhou et al. (2020) stated that determining a customer’s Will Pay and Willing to Pay about the proposed inclusion of these emerging societal challenges in the curriculum is a crucial part of the market assessment requirement. According to Murphy (2023), this social message enhances citizenship, highlighting the council's role in meeting with parliament to voice complaints, a powerful lobbying tool during legislation deliberations that often benefits a select few.

2.1. Key Concepts and Principles

The concept of sustainability emerged during environmental crisis debates in the early 1970s (Mol et al., 2020). Today, amid the ongoing environmental challenges of late capitalism, particularly climate change, sustainability has become a central component of cultural, political, and economic landscapes worldwide (Taylor, 2020). It is a notion that transcends borders, bringing together various stakeholders in a shared commitment to a balanced coexistence between humanity and the natural environment. Broadly defined, sustainability advocates for a holistic approach to living within our means, enjoying a quality of life that does not compromise that of future generations. This includes a deep sense of responsibility to protect the planet’s integrity while supporting the well-being and prosperity of both present and future inhabitants (Mazzocchi, 2020). A core principle of sustainability is intergenerational

equity, which asserts that future generations have a right to access essential resources for their survival and growth (Sanson & Burke, 2020). This principle also acknowledges the current generation's right to live with dignity, equal opportunities, and social justice. Sustainability intersects with environmental, economic, social, and political spheres, and a comprehensive approach emphasizes the interconnections within these dimensions, recognizing their mutual influence (Ruggerio, 2021).

While sustainability theory encompasses these interconnected aspects, conflicts can arise when balancing priorities (Feeney et al., 2022). Some emphasize the need to protect ecosystems and biodiversity as the foundation of sustainability, while others prioritize poverty reduction and equitable resource distribution. Navigating these complexities requires innovative approaches that harmonize environmental preservation with social equity (Moallemi et al., 2020). Historically, humanity's relationship with Earth's limited ecosystem calls for adaptation rather than exploitation, urging a shift from short-term gains that benefit only a privileged few to practices that address broader social needs and reduce poverty (Em, 2022). Sustainable practices, therefore, promote an interconnected view of human and environmental health, fostering a more inclusive society for all (Upreti, 2021).

According to Cheer (2020), ultimately, the interdependence of environmental, social, and economic dimensions underscores the need for an integrated approach to sustainability. The health of natural ecosystems is intrinsically linked to social progress and economic resilience, and only through this holistic approach can they create a sustainable, dynamic balance for future prosperity.

2.2. Incorporating Environmental Topics into Language Lessons

Besides teachers with a specialization in environmental sciences or environmental education, many language teachers do not feel qualified to teach complex scientific content (Timm & Barth, 2020). However, it must be emphasized that, as experts in pedagogy, language teachers are highly qualified to help their students understand complex issues that are not necessarily straightforward scientific facts. In many cases, the very nature of the needs that get addressed in the classroom, whether creating presentations for students in different grades or countries, responding and writing to emails, creating blog entries, or putting together articles, makes working with the language learner a piece of a complex, interconnected puzzle (Kubota, 2021). It is not about simply drilling grammar structures or teaching thematic vocabulary; it is about facilitating the real communication of language learners. Task-based projects are particularly suitable for promoting student interaction and involvement, and at the same time, creativity, around complex topics (Sang & Dan, 2022).

In addition, the increasing evidence of global climate change, the biodiversity crisis, and the depletion of natural resources present a moral and indeed pedagogical imperative for subjecting students and language teachers to the most important news and trends concerning environmental sustainability and the maintenance of a functioning planet (Shivanna, 2022). One of the key ways that countries, policymakers, and people in general can influence the political process and policy development concerning environmental sustainability is through informed, engaged democratic dialogue (Ross et al., 2021). For their democratic system to allow people to engage in appropriate dialogues around important topics, language learners should develop an awareness of the importance of environmental issues as well as the language, strategies, tools, and rhetorical structures necessary to deliver their persuasive speech in diplomatic ways that allow them to build consensus (Dillon & Herman, 2023). In addition, it makes good sense to help these participants understand the current state of the problem so that

they can help find reasonable and realistic solutions, realizing that the problem will not likely go away by itself without cooperative initiatives by countries and people around the world (Khan et al., 2022).

3. Integrating Project-Based Learning in ELT: Pedagogical Overview

To achieve a better social, economic, and environmental balance, the primary goal of implementing an environmental project is to identify and analyze the causes and effects of environmental problems to promote attitudes of respect for other people's rights and interests (Grilli & Curtis, 2021). Through active participation in a critical, transformative, and humanizing action, students learn to investigate problems in this type of project, which enhances and changes their learning experience (Garzón, 2018). This pedagogical approach, which is based on constructivist theory and Howard Gardner's theory of multiple intelligences, aims to develop students' skills and attitudes through effective collaborative work, in addition to knowledge acquisition. This will allow students to apply their newly acquired knowledge in real-world scenarios (Grilli & Curtis, 2021).

This method identifies a communicative goal that transcends simple academic benchmarks. It combines several cognitive processes to accommodate each student's unique learning preferences and range of skills. It also takes into account the emotional side of people, acknowledging the close relationship between feelings and intelligence (Sari & Muttaqin, 2021). This instructional approach promotes holistic growth and a greater awareness of environmental issues by bringing the emotions and the intellect together (Torres, 2024). Additionally, it stresses the use of many sensory registers, recognizing the role that sensory experiences have in the learning process and allowing students to interact with the material in a multimodal way (Spiegelhaar, 2022). To guarantee thorough pedagogical integration, one also needs to carefully carry out the educational articulation of abilities, habits, and attitudes in the educational project. This necessitates a tight connection between the project goals, curriculum requirements, and the strategic planning of the school (Dawe et al., 2021). Regarding the school's pedagogical structure, the project approach permits students to choose how many elective hours to take, enabling them to explore their interests and learn more about environmental issues. Additionally, it promotes interdisciplinary work, which encourages students to draw connections between various courses and use a variety of viewpoints to tackle challenging environmental issues (Van et al., 2020).

Furthermore, the project method places a high importance on student interest and involvement since it understands that student motivation is essential to their ability to learn and succeed. This method fosters a sense of ownership and empowerment among students, enabling them to become engaged citizens and responsible environmental stewards by providing chances for independent discovery and self-directed learning (Joseph & Gandolfi, 2020). Additionally, the project strategy engages the community, promoting significant alliances and cooperative efforts with outside entities, interested parties, and subject matter experts (Lehtinen & Aaltonen, 2020). The project fosters a common sense of responsibility and action toward environmental sustainability by actively involving the community (Colding et al., 2021).

Finally, the project method is integrated into society and extends beyond the confines of the school. The project enhances learning and increases understanding and respect for the wide range of expertise present in society by presenting the knowledge and cultures of many professionals. This cooperative knowledge-sharing promotes a culture of ongoing learning and innovation by strengthening the connections between professions, academic institutions, and the general public (Grilli & Curtis, 2021).

All things considered, the project method for environmental project execution provides students with a comprehensive, captivating, and life-changing educational experience. This pedagogical approach empowers students with the essential knowledge, skills, and attitudes needed to address complex environmental challenges, promote sustainable practices, and improve society by combining constructivist principles, multiple intelligences theory, and a student-centered approach (Torres, 2024).

3.1. Benefits of Project-Based Learning in Raising Environmental Awareness

Li and Li (2022) investigated students' environmental engagement by examining their interest in learning more about environmental topics, their inclination to discuss environmental issues at home and with classmates, and their plans to promote sustainable practices among family and peers. This approach aimed at assessing the extent to which participation in environmental projects enhanced students' environmental awareness. Furthermore, Johnston et al. (2021) examined the impact of environmental initiatives on students, focusing on how these initiatives are integrated into students' daily lives. Additionally, Howell (2021) emphasized the goal of fostering a lasting connection between students and their environment by encouraging critical thinking and active participation.

The quantity of field trips and other ELT-related activities with an environmental theme has proven to be an excellent information source throughout this campaign (Crack, 2019). These outings illuminated the students' developing understanding of the value of environmental conservation in addition to providing practical insights into the significance of face-to-face engagement with nature (Fernández et al., 2020). The diverse range of experiences these expeditions provided enhanced our comprehension of the students' larger viewpoints (Em et al., 2022).

Barak and Yuan (2021) found that project-based learning effectively inspires and educates both college and high school students about pressing environmental issues. Droz (2021) further highlighted the importance of these projects in educating and empowering students by emphasizing their unique roles and responsibilities in creating a sustainable environment, promoting the idea that environmental awareness is a collective effort requiring active participation from everyone. Students actively embraced eco-friendly approaches as the projects developed. Seeing the ripple effect as the kids initiated discussions and devised solutions for environmental issues within their social circles was quite touching. With their newly acquired environmental consciousness, they assumed accountability for their deeds as well as for motivating their classmates and families to make changes (Kolenaty et al., 2022).

Akharraz (2021) highlighted that the primary objective of project-based learning activities is to raise students' awareness of environmental issues. Through these activities, students explore the interdependence of living organisms and the delicate balance necessary for ecosystems to thrive, fostering a personal connection with nature. Astuti et al. (2020) observed that such immersive experiences with nature provide students with a profound understanding of the interconnectedness of life, instilling a sense of responsibility and a genuine desire to protect the environment.

3.2. Examples of Project Ideas for ELT Classes

This section presents a variety of project ideas tailored for ELT classes across different proficiency levels, designed to foster collaborative learning through pair or small group work. These projects are intended to stimulate and engage students by encouraging the active use of

diverse language functions, with final outputs that may include written, oral, and visual reports. Aligned with this approach, Zheng et al. (2020) emphasize the importance of guiding students to develop critical skills such as questioning, describing, comparing, and classifying. Additionally, they advocate for activities where students organize, monitor, summarize, and evaluate their work, which promotes an active and reflective learning experience. Together, these projects and skill-building activities enable students to deepen their language abilities through meaningful, cooperative engagement.

These projects can successfully incorporate online resources and interactive activities to provide a dynamic learning environment. These elements not only boost learners' interest and motivation in the material but also help them form a strong sense of responsibility and belonging (Rahmi et al., 2021). To complete a sequence of related tasks, students must observe and analyze situations, suggest and make well-informed decisions based on specific solutions, and apply their newly gained understanding of language functions practically (Kaharuddin, 2021). Additionally, to thoroughly test students' speaking, listening, reading, writing, and critical thinking skills, these assignments call for the use of a wide variety of assessment techniques (Redman et al., 2020). Through the implementation of these projects, educators can offer students an all-encompassing language learning experience that transcends the boundaries of the conventional classroom. Students can foster their creativity and critical thinking skills, gain a deeper comprehension of the English language, and improve their communication skills (Suryawati et al., 2020). Furthermore, by allowing students to take charge of their education and actively participate in their language development, these programs help pupils acquire a sense of autonomy and independence. Incorporating online materials and interactive activities gives the projects a more modern feel while also making it easier to integrate technology into language learning and providing students with the tools they need to become digitally literate (Sailer et al., 2021).

Students learn the value of collaboration, group decision-making, and effective interpersonal communication as they work in groups or pairs, strengthening their teamwork abilities. Students develop critical self-reflection and self-assessment skills through the act of organizing, supervising, and assessing their work (Brass et al., 2023). These projects foster meaningful and authentic language use by encouraging students to draw links between language and their everyday experiences through the integration of language functions with real-life tasks and challenges (Utami et al., 2021). These projects' wide choice of assessment techniques guarantees a thorough analysis of students' language proficiency and critical thinking abilities, giving teachers important information about their development and areas that could need more help. Teachers can foster students' curiosity, inventiveness, and enjoyment of the English language by adopting these project ideas and establishing a lively and participatory language learning environment (Block, 2020).

By putting these projects into practice, students can improve their language proficiency while also gaining valuable life skills that will benefit them outside of the classroom and enable them to become successful communicators in a world that is becoming more interconnected (Baran et al., 2021; Yusuf, 2022).

4. Conclusion and Future Directions

Attaining sustainable development is fundamental to the mission of the United Nations Development Program (UNDP) to fulfill current requirements without jeopardizing the capacity of future generations to satisfy their own needs. This idea is increasingly important in various areas of contemporary life, affecting energy use, personal choices, and city planning.

The broad integration of sustainable methods is vital for community well-being, highlighting the importance of equipping people with the knowledge and abilities required to apply these methods successfully.

In the field of education, ELT is essential for promoting both language skills and environmental consciousness. Learning a language influences one's perspective, creating a perfect setting for nurturing awareness of cultural and environmental issues. Presenting environmental subjects in ELT can foster a sense of duty and appreciation for the natural environment, ultimately affecting societal norms and contributing to the development of shared ecological awareness. To achieve these outcomes, educational institutions must integrate environmental education into the ELT curriculum, providing students with both the knowledge and practical skills for sustainable living. Effective integration involves moving beyond theoretical lessons by incorporating experiential activities, community-based projects, and partnerships with environmental organizations, thereby reinforcing sustainability's relevance in real-world contexts.

This paper highlights the importance of embedding sustainability within ELT and offers several key implications. First, educators are encouraged to prioritize sustainability-related content, using language learning as a platform to engage students in meaningful discussions on environmental issues. Second, institutions should allocate resources to support hands-on, project-based learning experiences that can deepen students' understanding of sustainability. Future research is recommended to further investigate the impact of language learning on environmental attitudes, especially how second language acquisition may influence students' perspectives on sustainability. Research could explore effective strategies for integrating environmental topics within ELT and examine how these approaches affect students' long-term engagement with sustainable practices. By emphasizing environmental education within ELT, future generations can be empowered to contribute actively to a sustainable future, embedding sustainable living as a core societal value.

Acknowledgments

The authors wish to convey their profound gratitude to the anonymous reviewers and the editorial team of CJESS for facilitating the publication of this research in the academic realm. This paper would not exist without their efforts. Consequently, their contributions are deemed indispensable and beneficial to society at large, particularly within the scholarly community of research and publication.

Conflict of interest

No potential conflict of interest was reported by the authors.

Funding

The authors received no financial support for the study, authorship, and/or publication of this paper.

Declaration of AI usage

The authors used Grammarly to polish the language in some parts of the article. However, they declared that the content of the article is totally theirs.

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Appendices

Appendix 1. Foreign Experts of CJESS

No.	Full Name	Degree	Country
1.	Buratin Khampirat	PhD	Thailand
2.	Robby Yuli Endra	PhD	Indonesia
3.	Aung Myo Hein	MA	Myanmar
4.	Ganda Febri Kurniawan	MA	Indonesia
5.	Tharatep Sanlee	MA	Thailand
6.	Ei Thandar Win	MA	Myanmar

Appendix 2. Core Editorial Members of CJESS

No.	Full Name	Role	Degree	Country
1.	Sereyrath Em	Chief Editor	PhD	Cambodia
2.	Dina Pen	Manager	PhD	Cambodia
3.	Buratin Khampirat	Editor	PhD	Thailand
4.	Saban Bon	Editor	PhD	Cambodia
5.	Mardy Serey	Editor	PhD	Cambodia
6.	Ganda Febri Kurniawan	Editor	MA	Indonesia
7.	Tharatep Sanlee	Associate Editor	MA	Thailand
8.	Ei Thandar Win	Associate Editor	MA	Myanmar
9.	Robby Yuli Endra	Technical Support	MA	Indonesia

Appendix 3. Current Guidelines for Authors and Reviewers

1. For authors

You must read and acknowledge that you've completed the requirements below before proceeding.

- The submission has not been previously published, nor is it before another journal for consideration (or an explanation has been provided in Comments to the Editor).
- The submission file is in Microsoft Word document file format.
- Where available, DOIs or URLs for the references have been provided.
- The text is single-spaced; uses a 12-point font; employs italics, rather than underlining (except with URL addresses); and all illustrations, figures, and tables are placed within the text at the appropriate points, rather than at the end.
- The text adheres to the stylistic and bibliographic requirements outlined in the Author's Guidelines.
- The manuscript must be written in English with no plagiarism and must have never been published before, or must not be currently being submitted for publication elsewhere.
- The manuscripts require a minimum of at least 1500 words for book reviews, 3000–4000 words for short articles, and 6000–8000 words for full-length articles, including everything.

- Manuscripts, except for book reviews, must include an English abstract of no more than 250 words, followed by five keywords.
- Use a reference management and formatting program like [Mendeley](#), [EndNote](#), or [Zotero](#). The authors can also do citations and references manually, but they must ensure consistency between citations and references. The reference list needs to follow APA 7th style, and the citation needs to be in-text.
- Make sure to prepare your manuscript using the paper template and format provided by CJESS.

2. For reviewers

- **Contribution to editorial decisions**

Peer review assists editors in making editorial decisions and, through editorial communications with authors, may assist authors in improving their manuscripts. Peer review is an essential component of formal scholarly communication and lies at the heart of scientific endeavor. CJESS shares many views that all scholars who wish to contribute to the scientific process must do their fair share of reviewing.

- **Promptness**

Invited reviewers who feel unqualified to review the research reported in a manuscript or know that its prompt review will be impossible should immediately notify the editors and decline the invitation to review so that alternative reviewers can be contacted.

- **Confidentiality**

The Editor-in-Chief (who would only do so under exceptional and specific circumstances) must authorize the display or discussion of any manuscripts received for review as confidential documents. This is also true for invited reviewers who decline the review invitation.

- **Standards of objectivity**

To improve the manuscript, authors should conduct objective reviews and formulate observations clearly with supporting arguments. Personal criticism of the authors is inappropriate, and the reviewers may reject this.

- **Acknowledgment of sources**

Reviewers should locate pertinent published work that the authors have not yet cited. The relevant citation should accompany any statement, observation, derivation, or argument reported in previous publications. Reviewers should also notify the editors of any substantial similarity or overlap between the manuscript under consideration and any other manuscript (published or unpublished) of which they have personal knowledge.

- **Disclosure and conflicts of interest**

To contact alternative reviewers, any invited reviewers who have conflicts of interest due to competitive, collaborative, or other relationships or connections with any of the authors, companies, or institutions connected to the manuscript and the work described therein should immediately notify the editors, declare their conflicts of interest, and decline the invitation to review.

Reviewers cannot use unpublished material from a submitted manuscript in their research without the authors' express written consent. The reviewers must maintain the confidentiality of privileged information or ideas acquired through peer review and refrain from using them for personal gain. This is also true for invited reviewers who decline the review invitation.

Appendix 4. Peer Review Process



Figure 4.1 Peer Review Process

1. Submitting a manuscript

The corresponding or submitting author submits the manuscript to the journal through the Open Journal System (OJS). Occasionally, our journal may accept submissions by email.

2. Editorial office assessment

The journal checks the manuscript's composition and arrangement against the journal's author guidelines to make sure it includes the required sections and stylizations. The journal does not assess the manuscript's quality at this point.

3. The Editor-in-Chief's evaluation

The editor-in-chief ensures that the paper is appropriate for the journal, sufficiently original, and interesting. If not, the editor-in-chief may reject the paper without further review.

4. The Editor-in-Chief assigns an editor

Some journals have associate editors who handle peer review. At this stage, if they undergo peer review, they will receive an assignment.

5. Invitation to reviewers

The handling editor sends invitations to individuals he or she believes would be appropriate reviewers. After receiving responses, the handling editor issues additional invitations as

needed, aiming to secure the required number of acceptances, typically two, although journal-specific variations may exist.

6. Respond to invitations

Potential reviewers consider the invitation against their expertise, conflicts of interest, and availability. They then accept or decline. If possible, they might also suggest alternative reviewers when declining.

7. A review-initiative process

The reviewer sets aside time to read the paper several times. The reviewer uses the first read to form an initial impression of the work. If the reviewer finds major problems at this stage, they may feel comfortable rejecting the manuscript without further work. Otherwise, they will read the paper several more times, taking notes to build a detailed point-by-point review. The journal then receives the review, either with a recommendation to accept or reject it or else with a revision request (usually flagged as either major or minor) before reconsideration.

8. The journal's review assessment

Before making an overall decision, the handling editor considers all of the returned reviews. If the reviews differ widely, the editor may invite another reviewer to get an additional opinion before making a decision.

9. The decision's communication

The editor sends a decision email to the author, including any relevant reviewer comments. Whether the comments are anonymous or not will depend on the type of peer review that the journal operates.

10. Next steps

After acceptance, the paper goes into production. If the handling editor rejects the article or sends it back for a major or minor revision, they should incorporate constructive comments from the reviewers to assist the author in improving the article. From here, the handling editor should email or write to the reviewers to inform them of their results. If the handling editor sends the paper back for revision, the reviewers should expect to receive a revised version, unless they have chosen not to participate further. However, if only minor changes were required, the handling editor could complete this follow-up review.

Appendix 5. All Editorial Team Members as of December 2024

Editorial	Total Count	Cambodian	Foreigner	Master	Doctoral
Advisory Board	06	04	02	03	03
Editor-in-Chief	01	01	n/a	n/a	01
Editors	09	07	02	05	04
Associate Editors	03	01	02	03	n/a
Technical Support	01	n/a	01	n/a	01
Reviewers	25	23	02	20	05

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Our editorial board also reaches out to external reviewers when we do not have experts specialized in the manuscripts submitted.

Appendix 6. Call for papers

The Cambodian Journal of Educational and Social Sciences (CJESS) welcomes original research articles, review articles, and book reviews. CJESS publishes two issues a year in June and December, and the authors are welcome to submit their articles year-round. However, they must notice that each article needs at least three months from submission to publication. Authors need to [register](#) and follow the instructions to submit articles to CJESS, or if they are not familiar with the open journal system (OJS), they may submit their papers directly to cjessjournal555@gmail.com along with the full name(s), affiliation(s), short bio(s), and email address(es).

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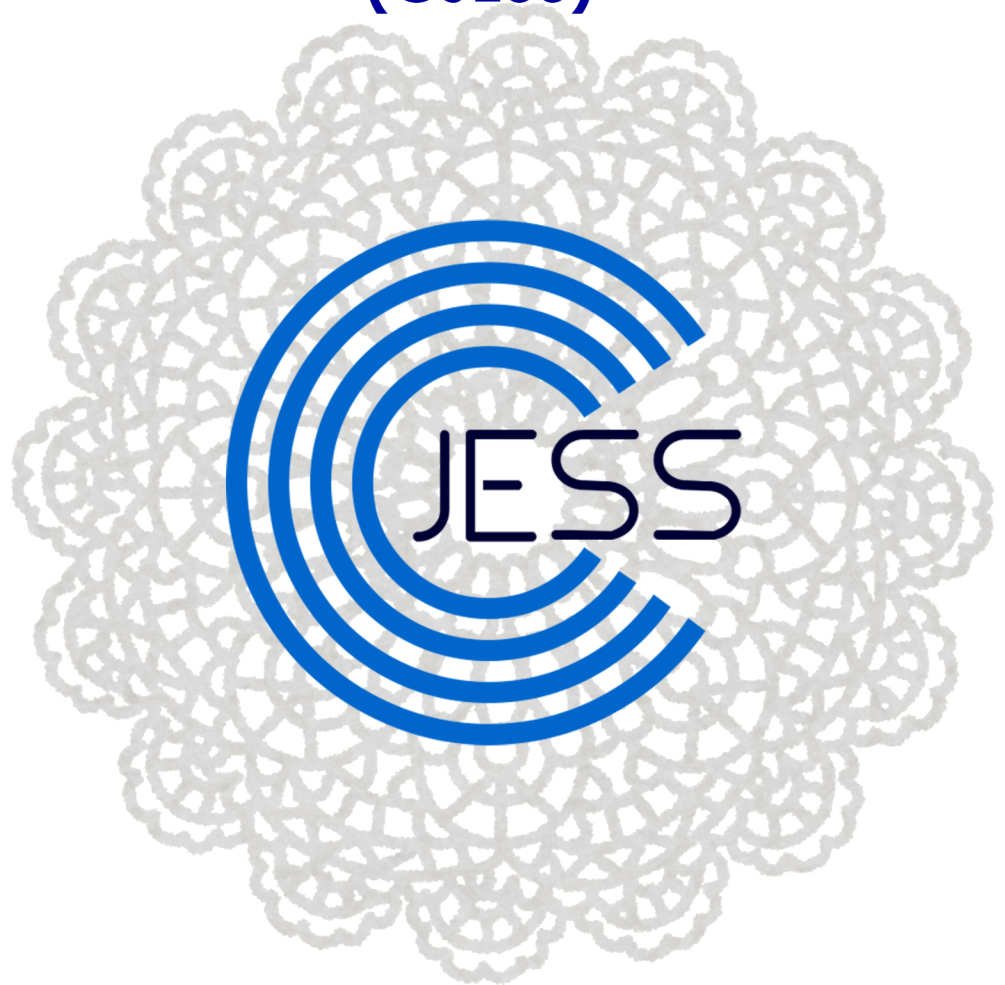
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E-ISSN: 3007-2328

P-ISSN: 3007-4649

DOI: 10.69496/cjess

Cambodian Journal of Educational and Social Sciences (CJESS)



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**Editorial Office of the Cambodian Journal of Educational
,and Social Sciences (CJESS) | Takeo Province
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Published by English Academic Essay